2020
UNDERGRADUATE RESEARCH SYMPOSIUM
10 YEARS of dreams and discovery
undergradsymposium.uoregon.edu
EVENT PROGRAM
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Research as a Beacon During a Pandemic

May 14, 2020

The Undergraduate Research Symposium debuted in 2011 with 69 presenters and 40 faculty mentors spanning 20 majors and four colleges, and reached a high-water mark in size and breadth its ninth year with 513 presenters and 290 faculty mentors spanning 75 majors, 21 minor programs, 33 minors, and eight colleges. In response to the COVID-19 pandemic we have shifted to a virtual symposium for the 10th anniversary and are honored to still host 380 presenters and 213 faculty mentors from across all eight colleges, 69 majors, 19 minor programs, 30 minors, and 20 institutes and centers. Over the past 10 years the symposium has hosted nearly 2,500 student presenters.

We believe that hosting a virtual symposium, rather than cancelling the 10th annual event, was an important action for our institution to take to demonstrate that as a research university we remain committed to supporting our undergraduate students’ research and creative work. The event will allow students to continue developing their presentation skills and academic portfolios for scholarships, graduate school, and career paths—especially during a time when traveling to present in-person at regional and national conferences is not possible. Participating students range from first-year students in Academic Residential Communities, First-Year Interest Groups, and Runways sharing their group research projects to senior theses, studios, portfolios, and capstones.

The virtual platform also creates new opportunities for expanding the reach of the symposium and we have fostered new collaborations with constituencies that have traditionally been unable to participate. For example, the Summer Academy to Inspire Learning (SAIL) has partnered with the symposium and the Office of Admissions to create an interactive digital workbook for local high school students and teachers, as well as those throughout the state
of Oregon and beyond, to integrate into their online curriculum. Invitations to engage in the live-streamed and recorded presentations on the symposium YouTube channel have also been shared with prospective and incoming students, current students’ parents and families, alumni, and donors. We are also honored to continue growing our partnerships with Lane Community College and McNair Scholars Programs throughout the Pacific Northwest.

We welcome visitors from far and near and hope that this showcase of undergraduate research and creative work—which will endure as a permanent online exhibit—can inspire hope, curiosity, innovation, and discovery during these uncertain times.

Congratulations to all the student participants and faculty mentors who have made this event happen! Best wishes from your fans and supporters in Undergraduate Education and Student Success!

Josh Snodgrass
Cochair, Undergraduate Research Symposium Planning Committee

Kevin Hatfield
Cochair, Undergraduate Research Symposium Planning Committee
Agenda

Pre-Symposium, May 18–20
Individual poster presentation videos released for viewing

May 21
8:30 a.m. Symposium welcome video: Remarks from symposium co-chairs, Provost Patrick Phillips, and VPRI David Conover
Announcement of faculty mentor awardees

Live Oral Sessions via Symposium YouTube Channel
10:00–11:30 a.m. Oh, the Humanities!
11:45 a.m.–1:15 p.m. Summer Academy to Inspire Learning—Student Panel
1:30–3:00 p.m. Pens and Clicks Are Mightier than the Sword
3:15–4:45 p.m. Earning Your Stripes: Zebrafish Research

High School Visit Day—College Student Panel Q&A
Noon–1:00 p.m. Register here

Live Poster Sessions via Symposium YouTube Channel
5:00–6:00 p.m. To the Moon and Back—Relativity Matters
6:00–7:00 p.m. Interact and React

May 22
All presentation videos (live streamed and recorded) will be available on the symposium YouTube channel as an ongoing digital exhibit of undergraduate research and creative work, curated through thematic playlists.
Virtual Symposium Navigation Guide

Welcome to our 10th Annual (virtual) Undergraduate Research Symposium. In place of our floor maps of the Erb Memorial Union and poster location diagrams, we offer the following virtual map to the Symposium.

Please consult the detailed Concurrent Sessions Schedule and list of Presentation Abstracts to help identify the session, presenter, or faculty mentor you are searching for.

Live Stream Presentation Sessions via Symposium YouTube Channel

Six sessions will be available via a livestream on the symposium YouTube channel. These livestream sessions are open to the public (with comments disabled) and do not require an RSVP or invitation. Livestream sessions are denoted in the Concurrent Sessions Schedule and listed below:

10:00–11:30 a.m.  
Noon–1:00 p.m.  
1:30–3:00 p.m.  
3:15–4:45 p.m.  
5:00–6:00 p.m.  
6:00–7:00 p.m.
Oh, the Humanities!  
Summer Academy to Inspire Learning (SAIL) Student Panel  
Pens and Clicks are Mightier than the Sword  
Earning Your Stripes: Zebrafish Research  
To the Moon and Back—Relativity Matters  
Interact and React

Zoom Presentation Sessions

All other presentation sessions (see Concurrent Sessions Schedule) will be hosted in Zoom meetings. Guests interested in watching and/or participating in a Zoom presentation session live are invited to submit their RSVP via the symposium guest list survey. Requests are received on a first-come, first-serve basis. Guests that can be accommodated based on
capacity will receive a personal invitation link (URL) to the Zoom meeting via email. **RSVPs must be submitted by Wednesday, May 20, at 5:00 p.m.**

For security and manageability reasons, Zoom meetings will be capped at approximately 40 total participants, including student presenters, session moderators, faculty mentors, and RSVP guests. All faculty mentors will automatically receive invitations to their mentee’s sessions and do not need to submit an RSVP.

Zoom presentation sessions include oral and creative work presentations from during the first four concurrent session time slots, and interactive poster presentations during the final two concurrent session time slots. A special McNair Scholars Program session is scheduled from 5:00-7:00 p.m.

**Prerecorded Presentations**

Student choosing not to present “live” during a livestream presentation session or Zoom presentation session have prerecorded their oral and poster presentations. These videos of student presentations will be released for asynchronous viewing on the symposium YouTube channel at 8:30 a.m. on the morning of the symposium.

**Online Exhibit of Undergraduate Research and Creative Work**

All livestream presentations and Zoom presentations will be recorded and posted on the symposium YouTube channel after the symposium to create a permanent digital exhibit of UO undergraduate research and creative work. These presentation videos will be organized in thematic playlists along with the prerecorded poster and oral presentations. Guests are encouraged to watch these presentations if they are unable to participate during the live event.

Questions and comments for the presenters may be submitted during and after the event to ugresearch@uoregon.edu.
Concurrent Sessions Schedule

Session 1: 10:00–11:30 a.m.

Flicks and Pics—Creative Work
Moderator 1: Holly Roberts
Moderator 2: Jacy Berg

Presenters
Katherine Wilson
The University of Oregon’s EMU: Cultural Epicenter and Incubator for Oregon’s Film Industry (1967-77)
Katherine Wilson
Katherine Wilson
The Cinema 7 History

Session 1: 10:00–11:30 a.m.

Global Views—We vs. Them
Moderator 1: Yvonne Braun
Moderator 2: Francis Pastorelle

Presenters
Raimy Khalife-Hamdan
Lebanon, the European Neighborhood Policy, and the Syrian Refugee Crisis: A Lebanese equation for EU national security?
Raimy Khalife-Hamdan
Uneven Citizenship: Post-September 11th Immigration Enforcement and Separation of Arab, Middle Eastern, and Muslim Families

Dylan Land
Enhancing Education through Improved Communication: Case Study of Senegal

Ella Young
Investigating the structural differences between Norway and the US that lead to the different incarceration and recidivism rates

Session 1: 10:00–11:30 a.m.

Human Behavior—I am Who I Am
Moderator 1: Nick Winder
Moderator 2: Megan Faulkner

Presenters

Kayla Davis
Post-stroke Dysphagia’s Impact on Survivors and Spousal Caregivers: The Importance of Perceptual Congruence

Nolan Kriska
Phase One of a Free Curriculum for Treating Anxiety and Increasing Productivity With Evidence Based Methods

Maggie Murphy
Outlasting the Binary: Analysis of Gender and Queer Representation in Outlast II

Kathryn Paulus
Co-Presenter(s): Claire Amistoso, Bryan Salazar, Owen Morgan
How Does Our Background Influence Social Output?
Session 1: 10:00-11:30 a.m.

It’s a Science Thing
Moderator 1: Franny Gaede
Moderator 2: McKenzie Winders

Presenters
Jeremy Guenza-Marcus
Time-SPIDER: Characterizing the Electric Field of Pulsed LASERS

Jake Olsen
The Atomistic Reconstruction of Coarse-Grained Polymeric Systems via Machine Learning Techniques

Timothy Schatz
Peirce’s phenomenological grounding of Science and Matters therein

Session 1: 10:00-11:30 a.m.

Oh, the Humanities! (LIVE STREAM)
Moderator 1: Paul Peppis
Moderator 2: Jena Turner

Presenters
Daisy Burge
The Incomplete Male: Sex, Control, and Womanhood in Classical-Era Greek Medical and Philosophical Texts

Ryan Cooper
Questioning Stability: Nonbinary Bodies in Contemporary Horror Film

Gracia Dodds
She’s Straight but She’s a Dyke: Sexuality Discourse on the Lesbian Lands

Tucker Engle
The Experience of Hyperobjects: From Percy Shelley to the 21st Century Instagram User
Katelyn Jones
‘All Surface and No Soul’: John Singer Sargent’s Portraits of Modern Mannequins

Momo Wilms-Crowe
Desde Abajo, Como Semilla: Narratives of Puerto Rican Food Sovereignty as Embodied Decolonial Resistance

Session 1: 10:00–11:30 a.m.

Speech and Sound—Can you Hear Me?
Moderator 1: Keegan Livermore
Moderator 2: Lynn Huynh

Presenters
Chasen Afghani
The role of financial rewards in foreign accent adaptation

Danni Black
Co-Presenter(s): Mel Birke, Lydia Murtha, Sam Montagne
Demographic Influences on Perception of Singular They/Them Pronouns

Hayli Brown
Acoustic Sources of Accent in Second Language Japanese Speech

Session 1: 10:00–11:30 a.m.

Time for Your Check-Up—Decolonizing Global Health
Moderator: Kenlei Cowell

Presenters
Julia Liu
Quantifying Diabetes Disparities Related to American Indian and Alaskan Native Residency on Reservations
Arden Saravis
The Correlation Between Stigma Stemming from HIV and Antiretroviral Packaging: Design Recommendations for Introducing Discrete Packaging for Adolescents in Western Kenya

Samantha Sidline
Policy Mapping onto Bodies: The nexus between immigration policy, local community support networks, and migrant health outcomes in Tijuana

Mitchell Yep
Observations of Mobile Health Clinics in Honduras: A Case Study on El Centro De Salud Integral

**Session 1: 10:00–11:30 a.m.**

**Learning during a Pandemic: The First-Year University Student Experience**
Moderator 1: Anne Laskaya
Moderator 2: Hiroe Sorter

**Presenters**
Co-Presenter(s): David Lee, Emily Shinn, Chloe Stevenson
Learning during a Pandemic: The First-Year University Student Experience

**Session 1: 10:30 a.m.–Noon**

**Environmental Leaders Academic Residential Community**
Moderator 1: Kathryn Lynch
Moderator 2: Sarah Stoeckl

**Presenters**
Alexandra Acosta-Torres
Co-Presenter(s): Jaemie Bynum
COVID-19, Climate Change, and Collages—A creative analysis disguised as an educational approach to inform about the connection between climate change and COVID-19.
Abigail Gravatt
Co-Presenter(s): Olivia Holah, Payton Lagomarsino, Astbigail Daffner
Redefining Menstruation: Awareness through an event that creates a tangible reusable menstrual pad while facilitating conversation around stigma, menstruation, and the life cycle of period products.

Megan Rangel-Lynch
Co-Presenter(s): Grace Kowalski, Freya Rhodes, Isaac Wasserman
The T-shirt Problem: Environmental Issues Caused by Fast Fashion and Simple Ways to Upcycle a Cotton T-shirt.

Sarah-Anne Bedrosian
Co-Presenter(s): Cian Whalen, Garren Lum
Yerba Mate—Production Analysis and Education of Sustainable Alternatives

Garrett Bunkers
Co-Presenter(s): Michael Chung, Isabella Flynn, Anna Jatsura, Hannah Weaver
Demonstrating the Importance of Implementing Reusing, Recycling, and Sustainable Practices in Creative and Accessible Ways

Session 2: 11:45 a.m.–1:15 p.m.

Cells R Us
Moderator 1: Kate Thornhill
Moderator 2: Jacy Berg

Presenters
Mikala Capage
Hunting for prions: Using inheritance patterns in yeast cells to attribute epigenetic states to prion proteins

Isabelle Cullen
Altered Motor Response to Aversive and Attractive Odors as Potential Biomarker for Autism Spectrum Disorders
Nora Kearns
The influence of prenatal inflammation on postnatal maternal and infant behavior

Madelyn Scott
Quantifying the spatial morphology of organic films through polarization-dependent imaging

Session 2: 11:45 a.m.–1:15 p.m.

Common Reading
Moderator 1: Julie Voelker-Morris
Moderator 2: Rachel Bash

Presenters
Brooke Machi
Migrant Farmworkers’ Exposure to Pesticides and What Is Being Done Legally

Kat Sincuir Alvarez
Estrella’s Symbolic Portrait

Session 2: 11:45 a.m.–1:15 p.m.

Media and Social Action Academic Residential Community
Moderator 1: Charlie Butler
Moderator 2: Natascha Reich

Presenters
Devyn Jacobson
Co-Presenter(s): Maxwell Ely, Nick Lamora, Makenzie Elliott, Alan Torres, Isabel Kristensen
The Media and Social Action Academic Residential Community
Session 2: 11:45 a.m.–1:15 p.m.

Oregon Trails
Moderator 1: Jeff Staiger
Moderator 2: Helen Huang

Presenters
Isabel Acker
Co-Presenter(s): Sofia Chicote, McKenna Porter, Spencer Thoene
How Labels Affect Our Self-Confidence

Maya Mackey
Ethnolinguistic Vitality of Eugene

Calvin Penkauskas
Hogs and Hazelnuts: resolving conflict between oak conservation and organic agriculture

Marie-Rose Tonguino
Measuring instructor quality and student learning at the University of Oregon, using a value added measure

Session 2: 11:45 a.m.–1:15 p.m.

US Outbreak Breakout—COVID-19 Research
Moderator 1: Kristin Yarris
Moderator 2: Katherine Donaldson

Presenters
Amelia Hardeman
Co-Presenter(s): Myriah Kunipo-Aguirre, Hannah Heskin, Angelique Wallman
Colorado's Government and Public Health Response to COVID-19

Hannah Heskin
Co-Presenter(s): Myriah Kunipo-Aguirre, Amelia Hardeman, Angelique Wallmann
Novel Coronavirus Outbreak and State Level Response, a Case Study of Oregon
Myriah Kunipo-Aguirre  
Co-Presenter(s): Hannah Heskin, Amelia Hardeman, Angelique Wallman  
Los Angeles County Response to COVID-19  

Angelique Wallmann  
Co-Presenter(s): Amelia Hardeman, Hannah Heskin  
Government Response, Epidemiology, and Impacted Communities in New York during the Coronavirus Pandemic  

**Session 3: 1:30–3:00 p.m.**

**An Unprecedented Creative Work**  
Moderator 1: Kathy Stroud  
Moderator 2: Jacy Berg  

**Presenters**  
Adeline Fecker  
Co-Presenter(s): Nolan Kriska, Hailey O'Donnell  
Ecopoetry and Us  

Marcella Rosen  
Digital Infrastructure and Physical Displacement in Portland, Oregon.  

**Session 3: 1:30–3:00 p.m.**

**Beyond a Melody**  
Moderator 1: Tera Reid-Olds  
Moderator 2: Jackie Etchinson  

**Presenters**  
M. Joelle Ahler  
Disrupting the Cyclical Narrative of Castration in the Rape Revenge Genre; distinguishing violence from vengeance
Martha DeCosta
The Harp-Weaver and Other Poems: A Haunting Maternal Presence in Edna St. Vincent Millay’s Poetry

Natalie North
The Pearl of Santa Radegonda: An Investigation into Chiara Margarita Cozzolani Musical Fortune and Success during the Early to Mid-Baroque Era

William O’Brien
A Critical Examination of Abstraction in John Dewey’s Reflective Thought

Session 3: 1:30–3:00 p.m.

Pens & Clicks are Mightier than the Sword
Moderator 1: Peter Laufer
Moderator 2: Lara Fernandez

Presenters
Alexander Har
Rajneeshpuram and Media Outcomes

Zack Demars
From 1960 to Now: Beginning a Pen Pal Program Between Oregon and Russia

Julia Mueller
Guidelines for the Representation of Women in Written News

Erin Sandvold
Murderess in the Headlines

Session 3: 1:30–3:00 p.m.

The Substance of Us
Moderator 1: Josh Snodgrass
Moderator 2: Alicia DeLouize
Presenters

Cailan Feingold
Development of a new live imaging technique to uncover the mechanisms of heat-induced male infertility

Jeanette Helgerson
Differences in Old and Young Patient-Derived Myotubes Response to Amino Acid Stimulation

Nelly Nouboussi
Glomerular Signals Underlying Olfactory Navigation

Alina Salagean
Defining the roles of conserved DNA repair complexes in maintenance of C. elegans meiotic genome integrity

Dan Tudorica
The role of the Chemoreceptor Zinc-Binding Domain in bacterial signal transduction

Session 3: 1:30–3:00 p.m.

The Way We Were
Moderator 1: Kenlei Cowell
Moderator 2: Abigail Rotholz

Presenters

Kyley Canion Brewer
Points in Play: Reacting, Student Engagement and the Evolving College Classroom

Monica Silverman
Abortion legalization in Spain: A window into the history of Spanish reproductive rights

Session 3: 1:30–3:00 p.m.

To Care and How Not to Care, that is the Question
Moderator 1: Anna Schmidt-McKenzie
Moderator 2: Christabelle Dragoo
**Presenters**

**Emily Boeschoten**  
Death of expectations: understanding grief associated with a disability diagnosis

**Harrison Jensen**  
Procedural Barriers to Health Care: Applying for Coverage through the Oregon Health Plan

### Session 4: 3:15–4:45 p.m.

**Cultural Considerations—The Other**

Moderator 1: Abigail Rotholz  
Moderator 2: Christina Turchetto

**Presenters**

**Sawyer Alcazar-Hagen**  
Overcoming The Crux: Adaptive Rock-Climbing Product Development

**Alexis Garcia**  
Silent Slaves: Reconstructing slave perspectives on the Grave Stele of Hegeso

**Lorelei Kelsey**  
A Lost Whisper: Recovering Vanessa Howard

**Sarah Pishioneri**  
Meeting Needs and Reclaiming Communal Autonomy: Post-Conflict Community Organizing in Rural Colombia

**Kezia Setyawan**  
Dimana? Disini: The effects of migration and political strife on the Chinese Indonesian family, name, and identity.

**Miriam Thielman**  
You Shall Not Oppress a Resident Alien: The Conception of Immigrants in the Hebrew Bible
**Session 4: 3:15–4:45 p.m.**

**Earning your Stripes: Zebrafish Research (LIVE STREAM)**
Moderator: Doneka Scott

**Presenters**

Robin Black
Beta cell regeneration upon the addition of Beta-Cell Expansion Factor A (BefA)

Max Grice
Understanding microbial modulation of neuronal morphology in zebrafish

Emily Niebergall
Advancing threespine stickleback as an outbred immunogenetics model by pinpointing the onset of adaptive immunity

**Session 4: 3:15–4:45 p.m.**

**Let’s KIDD Around (KIDD Creative Writing Program Session)**
Moderator 1: Brian Trapp
Moderator 2: Rachel Bash

**Presenters**

Sophia Mick
Suspending Disbelief in the Unreal: The Craft of Magical Realism

Chelsea Pitarresi
Emery Owens Abstract

Katie Quines
What I Wanted to Say, But Couldn’t: Epistolary Poetry’s Effects on Access and Intimacy for Asian-American Diasporic Poets

Hayley Schlueter
How the second person perspective utilizes distance as a way to tell traumatic stories, specifically from marginalized perspectives
Session 4: 3:15–4:45 p.m.

Preserving Mother Earth
Moderator 1: Heather Kropf
Moderator 2: Lara Nesselroad

Presenters
Brendan Adamczyk
Effectiveness of International Environmental Agreements: A Review of International Environmental Governance Theory

Abigail Gyetvai
Biomagnification and Bioaccumulation of Pollutants and How They Disproportionately Impact the People of “Cancer Alley”

Connor Lane
Genomic ancestry is explained by both geography and ecology in Mimulus aurantiacus

Session 4: 3:15–4:45 p.m.

Environmental Leaders Program
Moderator 1: Peg Boulay
Moderator 2: Kathryn Lynch

Presenters
Jordan Barton
Co-Presenter(s): Madeline Schmidt, Alexander Fitzgerald, Mikey Brooks, Bryce Izlar, Henry Tannler
Recommendations for Forest and Wildlife Climate Change Adaptation in Hendricks Forest, Eugene, Oregon

Hannah Buckingham
Co-Presenter(s): Nikos Skoufos, Tenley Ong, Ethan Baher, Spencer Palanuk, Alli Gerhardt, Grace Diaz
Accessibility and Trails Marketing in Lane County
Lenora Davis
Co-Presenter(s): Lenora Davis, Daisy Jones, Drew Macko, Tenley Ong, Connor Paschke, Madison Rush, Marychris Sitton, Kaylynn Wohl
Fostering the Next Generation of Climate Leaders: Environmental Education in the Virtual World

Lauren Frantz
Co-Presenter(s): Dan Liu, Gianni La Carrubba, Danielle Maves, Will Northington, Rachel Rosé, Joshaniel Tan
Protocols for Pollinator Management and “Pollinator Friendly” Certification on an Organic Blueberry Farm.

Katy Kuechle
Co-Presenter(s): Zoe O’Toole, Garrett Reagan, Ellie Townsley
Restoring Connections: An Online Environmental Education Curriculum

Nicole Long
Co-Presenter(s): Ryan Downey, Julia Olson, Julia Troxell, Casey Clavecilla, Emily Cook
Environmental Leadership Program Oregon Oaks Phase II Management Plan and Grant Proposal for Thurston Hills Natural Area

Session 4: 3:15–4:45 p.m.

Who’s Allowed In?
Moderator 1: Jeanne Hall
Moderator 2: Kevin McDowell

Presenters
Kate Ackell Katrina Baker, Hadlie Cyrus, Brynn Estrada, Coltin Hill, Kennedy Holcomb, Faith Hsieh, Nisren Levin, Khai Perry, Jackie Ramirez-Tobon, Lulu Rivera, Nellie Sears, Erin Smith, Georgia Wells, Katey Williams
“Who’s Allowed In?” Cultural Assets and Advocacy: through identity poems, research, and artistic expression
Session 5: 5:00–6:00 p.m.

(Interactive Poster Sessions)

Global Engagement Academic Residential Community
(It’s a Small World After All)
Moderator 1: Matthias Vogel
Moderator 2: Hiroe Sorter

Presenters
Derek Evans
Co-Presenter(s): Soren Scheu, Porter Wheeler
Neoliberalism Was Born and Will Die in Chile

Garret Simmer
Co-Presenter(s): Jon Laus
The 2008 Economic Crash and the Breakdown in Venezuelan Democracy

James Taylor
The Extent, Contributing Factors and Responses to Depression and Suicidal Ideation in Modern South Korea

Evelyn Woo
Co-Presenter(s): Tina Chan
Preserving the Authenticity of Chinese New Year in Process of Modernization Through Generational Perspectives

Session 5: 5:00–6:00 p.m.

The Bonds that Make Us
Moderator 1: Joseph Bruckner
Moderator 2: Erin Stoddart
Presenters

Stacey Andreeva
Metal-Ligand Bond Dynamics in Metal-Organic Frameworks Confirmed by Variable Temperature Vibrational Spectroscopy

Aryanna Entezari-Schweiger
Stem Cell Research

Alexandria Montgomery
Anaerobic digestion of wastewater sludge in the atmospheric gases of Mars

Laura Reich
Utilizing Behavioral and Molecular Techniques to Study Gap Junction Channels in Developing Zebrafish

Bryson Tyler Ricamona
Polycomb Repressive Complex 2 Ensures Robust Skeletal Growth and Patterning During Zebrafish Fin Regeneration

Nathan Stovall
Ultrathin Iridium Oxide Catalyst on a Conductive Support for the Oxygen Evolution Reaction in Acid

Nicole Wales
Quantification of Point Defects in Perovskite Solar Cells

Daria Wonderlick
Ensembles link RNA sequence to function

Session 5: 5:00–6:00 p.m.

The Wonders of the Brain
Moderator 1: David McCormick
Moderator 2: Paige Schoenborn
Presenters

John Francis
The Relationship Between Cholinergic and Noradrenergic Activity and Behavioral State

Vanessa Hufnagel
Electrophysiological Patterns of Skilled Motor Movements

Emmalyn Leonard
Determining the role of the pulvinar in visual attentional control

Dakota Paulus  Co-Presenter(s): Nisha Sridhar, Katia Pramono
Effects of Feedback-Related Negativity on Executive Function and Development in Preschoolers

Raj Shah
Optical access to auditory cortex for in-vivo two-photon calcium imaging

Session 5: 5:00–6:00 p.m.

To the Moon and Back—Relativity Matters (LIVE STREAM)
Moderator 1: Scott Fisher
Moderator 2: Kathleen Freeman

Presenters

Sylvia Mason
Visualizing Topocluster Algorithms for the Global Trigger

Laura Nosler
Supersymmetric Long Lived Particle Search Using Proton-Proton Collision Data and Simulations from the ATLAS Experiment

Noah Pettinari
Characterizing the relationship between bacterial motility and range expansion

Daniel Sellers
Equilibrium Solutions for 2-Dimensional Nonaxisymmetric Disks
Maggie Thompson
The SETI Scouts Project: Developing Scientifically Literate Young Women through an Astronomy Destination Camp at Pine Mountain Observatory

Session 5.5: 5:00-7:00 p.m.

McNair Scholars Presentations
Moderator 1: Kevin Hatfield
Moderator 2: Keegan Livermore

Presenters

Desirae Brown
Black Student Protest at the University of Oregon: Fifty Years in the Making

Faith Collins
Valence modulates self/other neural recapitulation during interpersonal perception.

Matthew Dawson
Identifying Neurons Necessary for Social Behavior

Matthew Dawson
Cell Specific Ablation: An Examination of Zebrafish Social Circuitry

Ashley Easter
Cost May Be a Barrier to Healthy Eating Depending on Education and Income for Rural Oregon Residents

Joan Hicks
Age-related and culturally specific causes of depression underdiagnosis among older adults: Results from the Study on global AGEing and adult health

Neila Kerkebane
The Impact of Tuition Increases on the Enrollment of Low-income Students

Tristan McKibben
The Evolution of Coronaviruses: Cross-Species Transfers and Mechanisms of Infections
Joseph Moore
Intersectional Analysis of Heroin Use

Joseph Moore
Race and Space: Gentrification in Tacoma/Eviction Crisis

Yomaira Tarula-Aranda
Stress and Implications for Poor Mental and Physical Health Among Latinx Emerging Adults

Val Arbonias Flores (University of Puerto Rico, Rio Piedras Campus)
To Whomever Wants to Write this Novel: Towards a Hipertextual Approximation of Museo de la Novela de la Eterna by Macedonio Fernández

Session 6: 6:00–7:00 p.m.

(Interactive Poster Sessions)

Cerebral Matters
Moderator 1: David McCormick
Moderator 2: Mandie Pritchard

Presenters
Clare Brinkman
Naturalistic Perspective Taking: Themes Found in People’s Naturalistic Accounts

Ray Jackson
Augemented Reality Effects on Mood, Stress & Cognition

Jingjie Lu
Parental Stress Correlate Children’s Cognitive Ability

Tillena Trebon
Co-Presenter(s): Zoe Haupt, Allegra Wesson, Maggie Wallace
The competitive relationship between linguistic perception and production when learning a new sound contrast
Session 6: 6:00-7:00 p.m.

Interact & React (LIVE STREAM)
Moderator: Annie Zeidman-Karpinski

Presenters

Dylan Bardgett
The Reactions Between Iron and Selenium

Jazmin Cole
Association between a non-invasive assessment of frailty and vascular dysfunction in old mice

Adeline Fecker
Visual Input Principally Drives Zebrafish Social Behavior

Lisa Kwan
Co-Presenter(s): Noa Cohen
Impacts of Environment on Degree of Despotism in Semi-Free Ranging Japanese Macaques (Macaca Fuscata)

Byron Lee
Robo4 Project

Ryan Leriche
Electrical brain waves modulate with movement speed and uncertainty

Alina Salagean
Defining the roles of conserved DNA repair complexes in maintenance of C. elegans meiotic genome integrity

Ian Torrence
Sensors and Materials for In-field Aqueous Analysis of Nitrate and Other Ions

Abbey Ward
Language Proficiency and Lexical-Semantic Processing in Bilingual Toddlers
Session 6: 6:00–7:00 p.m.

The Earth, Sky & Everything In Between
Moderator 1: Michael Hurst
Moderator 2: Franny Gaede

Presenters

Shyla Davison
New specimen of Monosaulax typicus (Mammalia, Castoridae) from the Mascall Formation of Twin Buttes in the Crooked River Basin, Oregon

Justin Day
Arbuscular Mycorrhizal Fungi Colonization Decreases Under High Precipitation and Compost Treatment in Semi-Arid Rangelands

Michaela Fishback
Population Dynamics in Endemic Serpentine Grassland Plant Communities Amid Anthropogenic Environmental Change

Eleanor Froehlich
The Evolution of Camelids in the Pacific Northwest in Response to the Grassland Expansion

Megan Pollak
Lobodon carcinophaga: Evolutionary constraints on the spatial variability of crabeater seal postcanine teeth for successful filter-feeding foraging strategies

Joshaniel Tan
Examining the Effect of Collection Method on the Microbial Communities Detected by Shotgun Metagenomics in Elephant Dung
Asynchronous/Prerecorded Oral and Poster Presentations
(available for viewing beginning 8:30 a.m., May 21, 2020)

Health Sciences Academic Residential Community Infographic Challenge

Presenters
Adriana Diaz
Co-Presenter(s): Brian Le, Kelly Marzolf, Mia Niccol
Health Sciences ARC College Health Infographic Challenge

Individual Presentations
Melissa Adler
The Effect of Emotion on Associative Memory: Anger Versus Fear
Maya Auld
What does it mean to be Latinx to you?: An Analysis of Oregon Latinx Students and Their Ethnic Identity
Lyla Balthazaar
Co-Presenter(s): Max Braker, Zoey, Cynkin, Jake Heinonen, Rose McNamee, Carmen Reddick, Garret Smith, Xitlali Torres, Micah Woods
Researching with the Kesey and Le Guin Papers during the 2020 Covid-19 Crisis—Research Posters by Honors College 223 Students
Wizard Baptista
Inducing Powerful Negative Hallucinations Using Hypnosis
Zack Basham
Influence of a prion protein on the TOR pathway in Saccharomyces Cerevisiae
Youri Benadjaoud
Convergence of dyadic similarity ratings predicts similarity in neural representations of others within social networks
Lejla Biberic  
Determining detergent dependence of Cytolysin A oligomeric state through native mass spectrometry

Nichole Biggs  
Male Personality and Fitness in a Semi-Free Ranging Group of Japanese Macaques (Macaca fuscata)

Alex Boxberger  
The Effect of Maternal Borderline Personality Disorder Symptoms on Child Externalizing Problems, as Mediated by Parenting Stress and Maternal Warmth

Mohini Bryant-Ekstrand  
Cardiopulmonary Differences in Apnea Divers Breathing Isocapnic Normobaric Hypoxia

Alex Bui  
Cluster C Personality Disorder: A Hermeneutic Phenomenological Approach

Arantxa Calles  
“It Was A Miracle:” How Salt of the Earth’s Production Model Threatened The Hollywood Blacklist, Existing Power Dynamics in Film Production & Labor Relations

Anabel Chang  
Co-Presenter(s): Maya Pande  
Characterizing the Conformational Fluctuations of DNA Under Physiological and Salt-Stabilized Conditions

Amy Chen  
Individual differences in memory self-efficacy and learning ability

Isabelle Cullen  
Imaging Glomerular Signaling of Unrestrained Olfactory Search in mice

Dominique Denning  
Comparison of Stop-Signal and Continuous Movement Reaction Stop Times to Measure Inhibitory Control
Carissa Diantoro
Investigating the Effect of Second Language Learning on the Acquisition of a Third Language Rhythm Pattern

Caryssa Dieni
The Role of Star Lore in Hunter-Gatherer Subsistence

Ali Eggling
Co-Presenter(s): Sera Kaplow
A Study of Parathyroid Hormone Secretion Patterns on Bone Density in Hibernating Black Bears (Ursus americanus)

Jacob Evarts
Propagating Putative Prion States in RNA Modifying Proteins

Emma Fallon
A Qualitative Study of Accessibility, Quality, and Affordability of Healthy Foods Within a Rural Oregon Town

Theemeshni Govender
Interactive Effects of Social Support and Self-Complexity on Depressive Symptoms in Adolescent Girls

Eric Graboyes
Co-Presenter(s): Carissa Hartmann, Natalie Hanson
Differences in respiratory-swallowing patterns across eating conditions among healthy older adults

Kylie Harchut
The Role of Women in a Migrant Farmer-Worker Lifestyle

Chaney Hart
Characterization of the Cohesin Complex in the Model Organism Neurospora crassa

Emily Hill
Linking mycorrhizal fungal diversity with pathogen abundances in a vineyard agroecosystem.
Daniel Hinckley
Reinforcing Dignity: Clinic Organizers at the Fred Hampton Memorial People’s Health Clinic in Portland

Zachary Hoffman
Using Unity to obtain Eye-tracking data from the VIVE Pro Eye headset

Donna Hooshmand
Longitudinal Analysis of Major Video Streaming Services in the US

Janae Houston
Health disparities faced by female caregivers when caring for older adults and children in middle-income countries

Mimi Hudson
The under-diagnosis of diabetes and its associated risk factors in older adults from Mexico, China, and South Africa

Alyssa Huque
Attacker Behavior Modeling and Learning in Security Using Deep Neural Networks

Takako Iwashita
Effects of Repeated Exposure to Negative Stimuli on Associative Memory

Jennifer Jensen
How Western Hair Markets Prey on Vulnerable South and Southeast Asian Women

Katherine Jones
A review of Normative Male Alexithymia literature

Tyra Judge
Suicidal thoughts and attempts in the Study of global AGEing and adult health (SAGE)

Matthew Kafker
Simulation of Bacterial Motion in Sterically Complex Environments

Abigail Keep
“Peace Canal?: Conflict, Cooperation, and the Red Sea-Dead Sea Conveyance
Rennie Kendrick
Distinct representations of perceived and remembered information in parietal and ventral temporal cortices

Sydney Kobak
Histamine and Cardiovascular Adaptation to Endurance Exercise

Kara Krnacik
The Effects of Abstinence-only Sexual Education on Teen Health and Behavioral Outcomes in the United States

Anna Kulawiec
The Contributions of Polycomb Repressive Complex 2 and H3K27me3 in Gene Repression

Katie Leonard
Co-Presenter(s): Emily Harris
The Effect of Nonprofit Mission Trips to Latin American countries and the Promotion of the White Savior Complex

Ryan Leriche
Learning to learn: Making sense of electrophysiology data

Marie LeRoux
A Preliminary Analysis of Cambodian Spindle Whorls

Ya Li
The effect of seasonal changes on reproductive status of Clytia gregaria along the Pacific North-West

Brooklynn Loiselle
How the 2019 IAAF World Outdoor Track and Field Championships impacted both the image of host country Qatar and its leadership’s plan to use sport for increased international visibility

Nicole Long
Dams in the McKenzie Watershed

Celina Maldonado
Memory specificity and generalization: Competing or complementary memory processes?
Bri McAllister
Investigating the Viability of a Carbon Nanotube Surface as a Gastric Cancer Screening Tool

Saad Mirza
Co-Presenter(s): Elena Ortega
Behavior of C. elegans and C. inopinatus

Maryam Moghaddami
The Influence of Russia in the Former Soviet Republics and Beyond.

Parker Morris
Rational Design and Synthesis for Nickel Catalyzed Hydrosilylation

Catherine Morse
Antihaitianismo in the Dominican Republic

Maggie Murphy
Examining Validity of MTurk Workers Responses Based on Monetary Reward: A Qualitative Data Analysis

Matthew Nardoci
Co-Presenter(s): Jewlyssa Pedregon
Characterization of sound-evoked responses of photo-identified auditory striatal neurons

Sydney O’Neil
Coercion of Seventeenth Century Laity Under the Guise of Religion

Natalie Padilla
Co-Presenter(s): Elizabeth Chandler, Jamie Arpan
Lolicon and Its Effects on Japanese Society

Maya Pande
Co-Presenter(s): Anabel Chang
Characterizing the Conformational Fluctuations of DNA Under Physiological and Salt-Stabilized Conditions
Joshua Pearman
What Parts of Status Matter? Comparing Respect and Admiration to Social Influence

Andrea Quintanilla
3D GM study of effects of age on cranial shape large-bodied Papionins, using molar wear as a proxy for age

Maurisa Rapp
Intergenerational Effects of Maternal Obesity on Offspring Mitochondrial Reactive Oxygen Species Production and DNA Damage

Ava Reisman
Co-Presenter(s): Cece Locati, Nico Sorensen, Hannah Hannley
Perception of Language and Gender

Nolan Rudolph
New Capabilities for Self-Driving Networks

Shelby Saper
Assessing Typology of Pre-Mazama Corner-notched Points in the Northern Great Basin

Shelby Saper
Assessing Typology of Pre-Mazama Corner-notched Points in the Northern Great Basin

Daniel Sellers
Vacuum Airship Design With Finite Element Analysis

Karina Shah
Investigating the Relationship between Acute Mountain Sickness, Patent Foramen Ovale, and Systemic Inflammation

Amy Shannon
Alutiiq Use of Birds at Rice Ridge (49-KOD-363), Kodiak Island

Caitlin Shreeve
Affiliative David’s Scores: An Analysis of Social Change over Two Years in a Semi-Free Ranging Group of Japanese Macaques (Macaca fuscata)
Madeleine Smith
Planning for the Future: The International Future Time Orientation and Life Project Scales

Eric Strand
Rational Design of s-Indacene-cored Small Molecule Organic Semiconductors as a Paradigm to Tune Electronic Characteristics

Alan Strickland (Lane Community College Student)
Co-Presenter(s): Matthew Shields
Barred Owl Survey

Eugene Tan
Characterizing the Structure of Twitter Network Through Socially-Aware Clustering of Users

Maggie Thompson
Confirming the 3-dimensional shape of Asteroid 283 Emma from Observations at Pine Mountain Observatory

Gabriel Tsui
Vices in the Middle East: Censorship and Substance Control Laws in Dubai

Avery Turner
Demographic Differences between Mothers with and without Substance Use Disorders

Kira Veselka
Co-Presenter(s): Meama Scott
Global Perspectives on Wide Scale Outbreaks

Yessenia Villalobos
Association between marital status and number of chronic health conditions among US Latinx adults

Kayla Walker
The Role of Semantic Predictability in Adaptation to Nonnative-Accented Speech

Maya Ward
Women Most Vulnerable: The Role Traditional Gender Roles Played in the Salem Witch Trials
Sydnee Warren  
Co-Presenter(s): Sara Harvey  
Human Trafficking in Haiti

Caitlyn Yost  
Co-Presenter(s): Calvin Parker-Durost  
Yakuza in Japan: Why are they still there?

Emma Ziari  
Co-Presenter(s): Edwin Guerrero, Eloise Navarro  
How does legislation of foot traffic in Machu Picchu affect the economic livelihood of indigenous groups in Peru?
Presentation Awards

The awards given out at the symposium are intended recognize students who have an exceptional poster, oral presentation, or creative work.

Biology Poster Award

The Department of Biology will offer one $300 award and two $100 awards for posters with honorable mentions in the fields of biology or marine biology. Judging will be performed by senior level graduate students.

Sponsor

UO Department of Biology

Eligibility and Conditions

• A current UO biology or marine biology major working in any science lab at the University of Oregon.
• An undergraduate student (from any major) who is doing work in a lab run by a biology department faculty member.
• The recipients must be accepted to and present at the 2020 UO Undergraduate Research Symposium.
• The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

CAS Dean’s Poster Award

The University of Oregon College of Arts and Sciences (CAS) serves as the “heart and soul” of the institution, providing nearly 50 majors across the humanities, natural sciences, and sciences. The college boasts a highly accomplished and renowned research faculty who provide students with an unparalleled academic experience.
Award Amount: Three $350 Awards
• CAS Dean’s Poster Award in Humanities
• CAS Dean’s Poster Award in Social Sciences
• CAS Dean’s Poster Award in Natural Sciences

Sponsor
UO College of Arts and Sciences

Eligibility and Conditions
• Participants must be current University of Oregon undergraduate student majoring in the Humanities, Social Sciences, or Natural Sciences
• The award recipients must be accepted to and present at the 2020 UO Undergraduate Research Symposium.
• The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

Center for Environmental Futures Award
With generous funding from the Andrew W. Mellon Foundation, this award recognizes oral and poster presentations involving undergraduate research in the field of environmental humanities, which contextualizes and complements environmental science and policy by pursuing research on narrative, critical thinking, history, cultural analysis, aesthetics, and ethics of diverse environmental topics and issues, such as land use, animals, resource allocation, agriculture, species conservation, climate change, water, and other related issues. Research in environmental justice is also an integral part of the environmental humanities at the UO.

Sponsor
Center for Environmental Futures (CEF)

Award Amount: Three $500 Awards

Eligibility and Conditions
• Open to current UO undergraduate students from all academic disciplines and majors.
• Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
• Oral presenters must submit a two- to three-minute “elevator pitch” (mini-TedTalk) video, summarizing the key points of their oral presentation no later than May 14.
• The video can be recorded on a mobile device. No additional video recording equipment is required.
• The Center for Environmental Futures will review the videos and decide on the award recipient prior to the Symposium date.
• Submitted posters will be evaluated by CEF judges on Monday, May 18, 2020.

Data Stories Presentation Award
This award recognizes a data story presented at the Undergraduate Research Symposium. The grand prize recipient will receive a $300 award. Two honorable mention recipients will each receive $100 awards.

Sponsor
UO Libraries/Data Services

Eligibility and Conditions
• Open to current UO undergraduate students from all academic disciplines and majors.
• The recipients must be accepted to and present in the Data Stories format at the 2020 UO Undergraduate Research Symposium.
• The award may be used to support the student’s pursuit of research or continued research methods or data education or training.
• Judging will be performed by a cross-functional team comprised of members of the UO Libraries Data Services Department, and graduate students and faculty from multiple disciplines across the university community.

UESS Oral Presentation Award
The award recognizes undergraduate students who are delivering an oral presentation at the symposium, and judging is based on the evaluation of a three-minute video “elevator pitch” that is submitted, for this award consideration, by the presenter. The award has a value of $500 and must be used to attend an academic conference within one year of receiving the
award. A graduating Senior is eligible to receive the award as a scholarship. The Center for Undergraduate Research and Engagement (CURE) can assist the recipient with identifying a conference and preparing their application and presentation.

**Sponsor**
UO Division of Undergraduate Education and Student Success

**Eligibility and Conditions**
- Open to current UO undergraduate students from all academic disciplines and majors.
- Must be accepted to present orally at the 2020 UO Undergraduate Research Symposium.
- The oral presenter must submit a two- to three-minute “elevator pitch” (mini-TedTalk) video, summarizing the key points of their oral presentation.
- The video can be recorded on a mobile device. No additional video recording equipment is required.
- The Undergraduate Research Symposium committee will review the videos and decide on the award recipient, prior to the Symposium date.
- The award will be provided in the form of a scholarship to the student’s billing account.

**Food Studies Award**
The Food Studies Award recognizes oral presentations or posters focused on a topic in the broad, interdisciplinary field of food studies and characterized by excellence in research and clarity of delivery. One $300 award and one $100 award for honorable mention will be awarded.

**Sponsor**
Food Studies Program and the Division of Undergraduate Education and Student Success

**Eligibility and Conditions**
- Open to current UO undergraduate students from all academic disciplines and majors.
- Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
- The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.
**Department of Global Studies Award**

The Department of Global Studies Award recognizes oral presentations or posters focused on an international or intercultural topic and characterized by excellence in research and clarity of delivery. One $300 award and two $100 awards for honorable mention will be awarded.

**Sponsor**
Department of Global Studies

**Eligibility and Conditions**
- Open to current UO undergraduate students from all academic disciplines and majors.
- Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
- The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

**Human Physiology Poster Award**

The Department of Human Physiology, on behalf of the American Physiological Society (APS) Local Undergraduate Research Awards in Physiology (LURAP), will offer one $200 LURAP Award for a poster in the field of physiology. In addition, the Department of Human Physiology will offer five $100 honorable mention awards for posters in the field of physiology. Judging for the awards will be performed by two faculty members, one of whom is a current member of the APS, in collaboration with faculty members and/or senior level graduate students.

**Sponsor**
Monetary component of each award provided by the Department of Human Physiology. One-year student APS membership and memorabilia kindly provided by the American Physiological Society.

**Eligibility and Conditions**
- For the LURAP Award, a current undergraduate UO Human Physiology major working on physiology in any science lab at the University of Oregon.
- For the Honorable Mention Awards, a current undergraduate UO human physiology major working in any science lab at the University of Oregon.
For the Honorable Mention Awards, an undergraduate student (from any major) who is doing work in a lab run by a human physiology faculty member.

The award recipients must be accepted to and present at the 2020 UO Undergraduate Research Symposium.

The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

**Museum of Natural and Cultural History Undergraduate Research Poster Award**

The award recognizes a project involving museum collections and/or research projects. The award has a value of $250, and may be taken in cash or used to cover fees and travel costs associated with the presentation of student work at disciplinary or national conferences or symposiums. Judging will be performed by the UO Museum of Natural and Cultural History staff.

**Sponsor**
UO Museum of Natural and Cultural History

**Eligibility and Conditions**

- Open to current UO undergraduate students from all academic disciplines and majors.
- Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
- The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

**Phil and Penny Knight Campus for Accelerating Scientific Impact Poster Award**

The Knight Campus Poster Award recognizes undergraduate poster presentations characterized by excellence in research and in clarity of design and presentation. The award has a value of $500 and must be used to attend an academic conference within one year of receiving the award.

**Sponsor**
Phil and Penny Knight Campus for Accelerating Scientific Impact
Eligibility and Conditions

- Open to current UO undergraduate students conducting research in a Knight Campus Faculty Lab or Knight Campus Associate Faculty Lab.
- Must be accepted to present at the 2020 UO Undergraduate Research Symposium, and must be returning to the UO the following academic year.
- The award may only be used to assist with attendance to present research at a local, regional, or national conference within one year of award announcement.
- The award may be used to pay for travel, conference registration and/or accommodations.
- The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

Psychology Poster Awards

The Department of Psychology will offer one $300 Grand Prize Award for the best psychology poster. In addition, two $100 specialty awards will be offered: The Innovation and Independence Award will be given to a poster demonstrating a particularly novel research question, methodology, and/or application; and the Methodological Excellence Award will recognize best practices in replicability, transparency, and open science. Judging will be performed by psychology researchers (i.e., psychology faculty, post docs, graduate students, and researcher associates affiliated with the UO).

Sponsor
UO Department of Psychology

Eligibility and Conditions

- Open to current UO undergraduate students who are conducting research in a lab run by a psychology department faculty member.
- The award recipients must be accepted to and present at the UO 2020 Undergraduate Research Symposium.
- The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.
RHA Award First-Year Student Presenter Award

The Residence Hall Association (RHA) award recognizes presentations of any format and in all disciplines by first-year students. A single $500 award will be given to the best individual presentation, and may be used to attend an academic conference or visit a graduate school prior to the recipient’s graduation. One $500 award will be given to the best group presentation (e.g., ARC or FIG) and may be used for a group-related professional development or academic activity (e.g., travel to Pine Mountain Observatory).

Sponsor
UO Residence Hall Association

Eligibility and Conditions
• Open to current first-year (first-time, full-time), as well as upper division UO undergraduate students from all academic disciplines and majors, who lived in a University Housing residence hall at any time during the current academic year (fall 2019 through spring 2020).
• Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
• The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.

UO Common Reading Presentation Award

UO Common Reading is a campus-wide conversation that begins between you and the book. But it doesn’t end there: the Undergraduate Research Symposium Committee wants to support students in continuing this conversation with the whole campus community. To that end, the Undergraduate Research Symposium Committee is offering one $100 award for the best presentation related to this year’s selection, Helena María Viramontes’s Under the Feet of Jesus. Judging will be performed by faculty and staff volunteers.

Sponsor
Center for Undergraduate Research and Engagement (CURE)

Eligibility and Conditions
• Any current UO undergraduate with a presentation (oral, poster, creative work, or data stories) responding to Under the Feet of Jesus.
• Award recipients must be accepted to and present at the 2020 UO Undergraduate Research Symposium. The Symposium will host a special “Common Reading Experience” session on Thursday, May 21.

**UROP Poster Award**

The award recognizes undergraduate poster presentations characterized by excellence in research and in clarity of design and presentation. The award has a value of $500 and must be used to attend an academic conference within one year of receiving the award.

**Sponsor**

Undergraduate Research Opportunities Program (UROP), Office for Research and Innovation

**Eligibility and Conditions**

• Open to current UO undergraduate students from all academic disciplines and majors.
• Must be accepted to present at the 2020 UO Undergraduate Research Symposium.
• Must be returning to the UO the following academic year.
• The award may only be used to assist with attendance to present research at a local, regional, or national conference within one year of award announcement.
• The award may be used to pay for travel, conference registration and/or accommodations.
• The digital poster must be submitted no later than Monday, May 18, to be eligible for judging.
Acknowledgements

Sponsors
Division of Undergraduate Education and Student Success (Doneka Scott)
University Housing (Michael Griffel)
UO Libraries (Mark Watson)
Robert D. Clark Honors College (Gabe Paquette)
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Associate Professor, Department of Physics

Mandie Pritchard
Interim Assistant Director, Accessible Education Center

Ann Shaffer
Music and Dance Librarian, UO Libraries/School of Music and Dance

Kieley Trempy
Undergraduate Student, Human Physiology

SJ Wilhelm
Community Director, Carson Hall

Andrew Wang
Art and Architecture Librarian, UO Libraries

Braxton Winders
Friend of the Undergraduate Research Symposium Committee
Presenter Statistics

The Undergraduate Research Symposium debuted in 2011 with 69 presenters and 40 faculty mentors spanning 20 majors and four colleges, and reached a high-water mark in size and breadth its ninth year with 513 presenters and 290 faculty mentors spanning 75 majors, 21 minor programs, 33 minors, and eight colleges. In response to the COVID-19 pandemic we have shifted to a virtual Symposium for the 10th anniversary and are honored to still host 380 presenters and 213 faculty mentors from across all eight colleges, 69 majors, 19 minor programs, 30 minors, and 20 institutes and centers. Over the past 10 years the symposium has hosted nearly 2,500 student presenters.

Presenter Profile

Total presentations ...................... 238
Total presenters ......................... 380
Total faculty mentors ................... 213

All Colleges: Major and Minor Programs Represented

Colleges ........................................ 8
Majors .......................................... 69
Minor programs .............................. 19
Minors .......................................... 30

Institutional Profile

UO–FTFT students ............................ 346
UO–Transfer students ...................... 34
Lane Community College students ...... 1

Class Standing

First-year (0–44.99 credits) ............ 81 (21.5%)
Sophomores (45–89.99 credits) ...... 60 (16%)
Juniors (90–134.99 credits) ........... 40 (10.5%)
Seniors (≥135 credits) ................. 199 (52%)

Research Type

Academic Residential Community (ARC) .. 78
Clark Honors College .................... 89
Course-based/Single-term ............... 42
Departmental honors ................... 57
First-Year Interest Group (FIG) ........ 13
Indep/Faculty-mentored/Multi-term .... 84
Runway ........................................ 6
Service learning ........................... 2
Study abroad/International projects .... 4
Summer term ............................. 11
Presentation Type
Poster ........................................... 132 (56%)
Oral .............................................. 89 (37%)
Data Stories ................................. 5 (2%)
Creative works ............................... 12 (5%)

Research Area by Presentations
Natural/Physical sciences .............. 95 (40%)
Social science projects ................. 109 (46%)
Humanities projects ...................... 21 (9%)
Fine/Performance arts projects .......... 3 (1%)
Design ........................................... 10 (4%)

Major and Minor Programs
Represented by College

College of Arts and Sciences ......... (43)
Psychology ....................................... 38
Biology .......................................... 34
Environmental Studies .................. 28
Human Physiology .......................... 26
Political Science ............................. 24
Environmental Science .................. 22
Exploring ....................................... 14
Anthropology .................................. 13
Biochemistry .................................. 12
Sociology ....................................... 12
Pre-International Studies .............. 11
International Studies ..................... 11
Physics .......................................... 10
Computer and Information Science ... 9
English .......................................... 9
Spanish .......................................... 9
Chemistry ...................................... 7
History ......................................... 7
Mathematics ................................... 7
Marine Biology .............................. 6
Cinema Studies ............................. 5
General Social Science .................. 4
Philosophy ..................................... 4
Earth Sciences .............................. 3
Economics .................................... 3
General Science ............................ 3
Chinese ........................................ 2
Geography .................................... 2
Humanities .................................... 2
Japanese ....................................... 2
Linguistics ..................................... 2
Romance Languages ..................... 2
Spatial Data Science and Technology .. 2
Comparative Literature .................. 1
Ethnic Studies .............................. 1
French .......................................... 1
Mathematics and Computer Science ... 1
Asian Studies ............................... 1
German ........................................ 1
Religious Studies ........................... 1
Women's, Gender, and Sexuality Studies .. 1
Folklore and Public Culture .......... 1
Minor Programs ....................... (13)
  Global Health ....................... 14
  Creative Writing ...................  7
  Ethics ................................  4
  Food Studies ........................  3
  Classical Civilization .............  2
  Digital Humanities ................  2
  Disability Studies ..................  2
  Arabic Studies ......................  1
  Comics and Cartoon Studies .......  1
  Computer and Information Technology ....  1
  Middle East–North African Studies .  1
  Native American Studies ..........  1
  Writing, Public Speaking, and Critical Reasoning ..........  1

Minors .............................. (21)
  Chemistry ................................ 32
  Biology ................................... 15
  Spanish ................................... 11
  Mathematics ........................... 10
  Psychology ................................ 6
  Biochemistry ............................ 5
  Anthropology ............................ 4
  Political Science ...................... 4
  Sociology ................................ 4
  English ................................... 3
  Geography ................................ 3
  Women’s Gender, and Sexuality Studies ......  3
  Earth Sciences .......................... 2
  Environmental Studies ...............  2
  French ...................................  2
  Korean ...................................  2
  Philosophy ..............................  2
  Computer and Information Science ......  1
  Ethnic Studies ..........................  1
  International Studies ...............  1
  Theater Arts ............................  1

Robert D. Clark Honors College ... (89)

College of Education ............... (5)
  Communication Disorders and Sciences .  6
  Family and Human Services .............  6
  Educational Foundations ...............  1
  Pre-Education ...........................  4
  Pre-Family and Human Services .......  1

Minor Programs ....................... (2)
  Leadership and Administrative Skills (LEADS) ........  3
  Special Education ........................ 2

College of Design .................... (9)
  Pre-Planning, Public Policy and Management ........  5
  Art .......................................  3
  Art and Technology ....................  2
  Architecture ............................  1
  Art History ................................ 1
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Evonuk Environmental Physiology Lab ........ 1
Institute of Theoretical Science ............. 1
Museum of Natural and Cultural History ... 1
Oregon Center for Electrochemistry .......... 1
Oregon Film Museum .......................... 1
Oregon Institute of Marine Biology ........ 1
Oregon National Primate Research Center . 1
Pine Mountain Observatory .................... 1
Wayne Morse Center ......................... 1

**Sponsored/Funded Research Sources**

Alden Scholar Research Award ............... 1
Barry Goldwater Foundation ................. 2
CURE Conference Travel Award ............. 5
CURE Summer Undergraduate Research Fellowship (SURF) ............ 6
Defense Medical Research and Development Program, Department of Defense ...................... 1
Environmental Humanities Thesis Award ... 1
ESPRIT ..................................... 1
Ford Family Foundation Scholarship ....... 1
Global Oregon Undergraduate Award ....... 1
Humanities Undergraduate Research Fellowship (HURF) ............ 7
Judy Fosdick Oliphant Scholarship in International Studies ............... 1
Kidd Creative Writing Workshops .......... 3
Knight Campus Undergraduate Scholars ... 9
Murdock Grant ................................. 2
National Institutes of Health (NIH) Grant ... 3
National Science Foundation—Research Experiences for Undergraduates ............... 3
P-Chem Undergraduate Fellowship .......... 1
Presidential Undergraduate Research Scholars (PURS) .................. 7
Robert D. Clark Honors College
Extraordinary Expenses Thesis Grant ...... 2
Robert D. Clark Honors College
Schwartzrock Family Thesis Research Grant ............................... 1
Ronald E. McNair Scholars Program ....... 9
Summer Program for Undergraduate Scholars (SPUR) ................. 2
Undergraduate Research Opportunities Program (UROP) ............... 15
UnderGrEBES Research Award ............... 4
UO Department of Anthropology ............. 1
UO School of Journalism and Communication .................................. 2
UO Summit Scholarship ...................... 3
UO Women in Graduate Science .......... 2
UROP Mini-Grant ................................ 2
Vice President for Research and Innovation (VPRI) Undergraduate Fellowship ...................... 14
William and Marjorie Shearon Memorial Scholarship ......................... 1
## Total Presentations, Presenters, and Faculty Mentors

<table>
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<tr>
<th>Year</th>
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Total Presentations by Divisional Area

- **Natural Sciences**
- **Social Sciences**
- **Humanities**
- **Arts**
- **Design**

### Divisional Area Presentations by Year

- **Natural Sciences**
  - 2011: 28
  - 2012: 40
  - 2013: 38
  - 2014: 43
  - 2015: 45
  - 2016: 55
  - 2017: 94
  - 2018: 110
  - 2019: 123
  - 2020: 144

- **Social Sciences**
  - 2011: 0
  - 2012: 2
  - 2013: 8
  - 2014: 14
  - 2015: 19
  - 2016: 14
  - 2017: 7
  - 2018: 4
  - 2019: 9
  - 2020: 10

- **Humanities**
  - 2011: 9
  - 2012: 8
  - 2013: 2
  - 2014: 11
  - 2015: 10
  - 2016: 0
  - 2017: 0
  - 2018: 5
  - 2019: 2
  - 2020: 7

- **Arts**
  - 2011: 6
  - 2012: 11
  - 2013: 2
  - 2014: 9
  - 2015: 10
  - 2016: 4
  - 2017: 5
  - 2018: 7
  - 2019: 2
  - 2020: 3

- **Design**
  - 2011: 5
  - 2012: 0
  - 2013: 2
  - 2014: 15
  - 2015: 8
  - 2016: 36
  - 2017: 37
  - 2018: 43
  - 2019: 38
  - 2020: 25
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Total Presentations by Type
Symposium Presenters

Kate Ackell
Isabel Acker
Alexandra Acosta-Torres
Brendan Adamczyk
Melissa Adler
Chasen Afghani
M. Joelle Ahler
Sawyer Alcazar-Hagen
Claire Amistoso
Stacey Andreeva
Val Arbonias Flores
Jamie Arpan
Maya Auld
Ethan Baher
Katrina Baker
Madelyn Ball
Wizard Baptista
Dylan Bardgett
Jordan Barton
Zachary Basham
Sarah-Anne Bedrosian
Youri Benadjaooud
Lejla Biberic
Nichole Biggs
Mel Birke
Danni Black
Robin Black
Emily Boescheten
Alex Boescheten
Clare Brinkman
Michael Brooks
Hayli Brown
Desirae Brown
Mohini Bryant-Ekstrand
Hannah Buckingham
Alex Bui
Daisy Burge
Jaemie Bynum
Arantxa Calles
Kyley Canion Brewer
Mikala Capage
Tina Chan
Elizabeth Chandler
Anabel Chang
Amy Chen
Sofia Chicote
Casey Clavecilla
Noa Cohen
Jazmin Cole
Faith Collins
Emily Cook
Ryan Cooper
Isabelle Cullen
Hadlie Cyrus
Abigail Daffner
Kayla Davison
Lenora Davis
Shyla Davison
Matthew Dawson
Justin Day
Martha DeCosta
Zack Demars
Dominique Denning
Carissa Diantoro
Grace Diaz
Caryssa Dieni
Gracia Dodds
Ryan Downey
Ashley Easter
Ali Eggling
Makenzie Elliott
Maxwell Ely
Tucker Engle
Aryanna Entezari-Schweiger
Brynn Estrada
## Symposium Presenters

<table>
<thead>
<tr>
<th>Derek Evans</th>
<th>Jeanette Helgerson</th>
<th>Abigail Keep</th>
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<td>Jacob Evarts</td>
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<td>Julia Liu</td>
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</table>
Symposium Presenters

Dan Liu  Natalie North  Katie Quines
Cece Locati  Will Northington  Andrea Quintanilla
Brooklynn Loiselle  Laura Nosler  Jackie Ramirez-Tobon
Nicole Long  Nelly Nouboussi  Megan Rangel-Lynch
Jingjie Lu  William O’Brien  Maurisa Rapp
Garren Lum  Hailey O’Donnell  Garrett Reagan
Brooke Machi  Jake Olsen  Laura Reich
Maya Mackey  Julia Olson  Ava Reisman
Drew Macko  Sydney O’Neil  Freya Rhodes
Celina Maldonado  Tenley Ong  Bryson Tyler Ricamona
Sylvia Mason  Elena Ortega  Rachel Rosé
Danielle Maves  Zoe O’Toole  Marcella Rosen
Tristan McKibben  Natalie Padilla  Nolan Rudolph
Sophia Mick  Spencer Palanuk  Madison Rush
Saad Mirza  Maya Pande  Alina Salagean
Anjali Mishra  Calvin Parker-Durost  Bryan Salazar Rodriguez
Maryam Moghaddami  Connor Paschke  Erin Sandvold
Sam Montagne  Kathryn Paulus  Shelby Saper
Alexandria Montgomery  Dakota Paulus  Arden Saravis
Joseph Moore  Joshua Pearman  Timothy Schatz
Owen Morgan  Jewlyssa Pedregon  Soren Scheu
Parker Morris  Calvin Penkauskas  Hayley Schlueter
Catherine Morse  Khai Perry  Madeline Schmidt
Julia Mueller  Noah Pettinari  Madelyn Scott
Maggie Murphy  Sarah Pishioneri  Meama Scott
Lydia Murtha  Chelsea Pitarresi  Daniel Sellers
Matthew Nardoci  Megan Pollak  Kezia Setyawan
Eloise Navarro  McKenna Porter  Raj Shah
Emily Niebergall  Katia Pramono  Karina Shah
Symposium Presenters

Amy Shannon         Nisha Sridhar         Ian Torrence
Emily Shinn         Pollyanna Stalie    Ellie Townsley
Heather Shirey      Chloe Stevenson     Julia Troxell
Caitlin Shreeve     Nathan Stovall     Dan Tudorica
Samantha Sidline    Eric Strand        Maggie Wallace
Monica Silverman    Joshaniel Tan      Angelique Wallman
Garret Simmer       Eugene Tan         Isaac Wasserman
Kat Sincuir Alvarez Henry Tannler      Allegra Wessman
Marychris Sitton    Yomaira Tarula-Aranda Cian Whalen
Nikos Skoufos       James Taylor        Porter Wheeler
Madeleine Smith     Miriam Thielman     Kaylynn Wohl
Nico Sorensen
Faculty Mentors

Will Alden
Graduate Teaching Fellow, Creative Writing Program

Benjamin Aleman
Assistant professor, Physics

Peter Alilunas
Professor, Cinema Studies

Nina Amstutz
Assistant Professor, History of Art and Architecture

Curtis Austin
Associate Professor, History

Melissa Baese-Berk
David M. and Nancy L. Petrone Faculty Scholar, Linguistics

Dare Baldwin
Professor, Psychology

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Presentation Abstracts

“How’s Allowed In?” Cultural Assets and Advocacy: through identity poems, research, and artistic expression
Co-Presenter(s): Kate Ackell, Katrina Baker, Hadlie Cyrus, Brynn Estrada, Coltin Hill, Kennedy Holcomb, Faith Hsieh, Nisren Levin, Khai Perry, Jackie Ramirez-Tobon, Lulu Rivera, Nellie Sears, Erin Smith, Georgia Wells, Katey Williams
Faculty Mentor(s): Jeanne Hall
Session 4: Who’s Allowed In?
The cultural assets and identities of underrepresented university students are not always valued or understood, especially in predominantly White institutions. Therefore, the purpose of this Runway is to question and explore how social systems have not provided equitable educational access for underrepresented students. In the Fall 2019, the “Who’s Allowed In?” year-long first-year students Runway community focused on supporting and developing each other’s racial and other identities. The Winter 2020 discussions developed and discussed about each other’s scholarly identity within our university, and the Spring 2020 now provides opportunities for each student to advocate for equity. Based on the inspiration of Christensen’s (2015) activist approach to poetry, and with the online research support of the UO libraries, each student will present and advocate for their cultural assets, or advocate for other underrepresented identities, through the presentation of their identity poem, research, and artistic expression.

How Labels Affect Our Self-Confidence
Isabel Acker—Sociology
Co-Presenter(s): Sofia Chicote, McKenna Porter, Spencer Thoene
Faculty Mentor(s): Melissa Baese-Berk
Session 2: Oregon Trails
The goal of our research project is to answer the question of how labels affect people’s lives and their level of self-confidence. More specifically, we are focusing on college-age students at the
University of Oregon for our study. We hope to find data that shows how the labels people choose for themselves, and that others choose for them, have an effect on the level of confidence college-age people have. We want to see if the way that other people perceive individuals has an effect on the self-confidence of the individual. We also hope to determine if there is a difference in the level of confidence people have when they are describing themselves, or when they are describing the labels other people have given them. To accurately conduct this, we’re asking open-ended questions to keep it inclusive. First, we will ask permission to use their answers in our research. We will ask about their name, gender, ethnicity...etc, in an open-ended format. We will ask them to rate their self-confidence in different social groups, and when they are by themselves, and see how those differ. We want to ask questions that are detailed and more towards a response describing someone’s affiliations. We hope to be able to compare the way in which your self-identifications coexist and relate to the stereotypes and affiliations that the world would describe us as. We then would like to find the correlation between the two and directly connect that to our self-confidence.

COVID-19, Climate Change, and Collages—A creative analysis disguised as an educational approach to inform about the connection between climate change and COVID-19.

Alexandra Acosta-Torres—Earth Science

Co-Presenter(s): Jaemie Bynum

Faculty Mentor(s): Sarah Stoeckl, Kathryn Lynch

Session 1: Environmental Leaders ARC

Being quarantined during the COVID-19 pandemic has left people in a state of desperation to fill their time with entertainment and fulfilling activities. The purposes of our project are to teach about the connections between COVID-19 and climate change and provide a video tutorial on how to make a meaningful collage. Collaging is an accessible, environmentally friendly type of upcycling that can fill that time. The research looks at scientific and social connections between climate change and COVID-19. The collage created has a collection of themes regarding nature, the use of nature, loneliness, eco-grief, and the impacts of pollution, with the overall goal of visually symbolizing the impacts of climate change and COVID-19. It is essential for the general public to understand the social and scientific connections between the impacts of climate change and COVID-19 because climate change requires social and scientific awareness in order to be resolved. We teach how to collage and challenge our audience to collage in our YouTube video. Our project aims to create a
friendly activity that can be shared with friends while also generating interest in environmental issues and the current pandemic.

**Effectiveness of International Environmental Agreements: A Review of International Environmental Governance Theory**

Brendan Adamczyk—Environmental Studies  
Faculty Mentor(s): Ronald Mitchell  
Session 4: Preserving Mother Earth

Every country in the world faces a myriad of environmental problems, from air and ocean pollution to the existential threat posed by climate change and many more. In response, many nations create or join international environmental regimes and agreements to affect positive change and influence global environmental policy. This paper examines the theory related to two research questions: how do scholars define the effectiveness of international environmental agreements? And what are the essential metrics by which the structure and effectiveness of a given international environmental agreement can be assessed? I seek to answer these questions by conducting a review of international environmental governance literature from the past three decades using a counterfactual framework—that is, comparing what did occur in the real world with a treaty in effect to what one expected would have happened if that treaty didn’t exist. Ultimately, I conclude that three key elements influence the effectiveness of international environmental agreements: the standards by which one measures effectiveness, the degree to which the language of an agreement utilizes legalization, flexibility, and specificity, and the tools environmental regimes encourage the use of in enforcing agreements. In the face of increasingly urgent environmental challenges, the most promising path for improving effectiveness moving forward is the complete integration of these three essential factors into the treaty writing, ratification, and enforcement processes.

**The Effect of Emotion on Associative Memory: Anger Versus Fear**

Melissa Adler—Human Physiology  
Faculty Mentor(s): Dasa Zeithamova, Caitlin Bowman  
Session: Prerecorded Poster Presentation

Studies show that emotion enhances memory for individual items but weakens memory for associations between items. One explanation for this associative memory impairment is that emotional stimuli capture attention, causing enhanced encoding of the emotional item but reduced
encoding of the surrounding environment. This hypothesis generates the prediction that emotional information always impairs associative memory. Alternatively, it may be that emotion orient attention towards threats in the environment, thus suggesting anger and fear have different effects on memory for associated information. To adjudicate between these hypotheses, subjects studied sets of three images, consisting of two objects and a face with either a neutral, angry, or fearful expression. Subjects were later tested on their memory for the associations between the three items. Supporting our the first hypothesis, memory for both angry and fearful associations was worse than memory for neutral associations. Contrary to our the second hypothesis, there were no differences in memory for angry versus fearful associations. Thus, emotional information itself seems to capture attention, weakening memory for related information. If we understand the mechanisms of how negative emotion influences associative memory, we may discover methods of counteracting the impairment via various memory-improving techniques. This could lead to increased memory accuracy for emotional events and thus increased accuracy and reliability of eyewitness testimonies.

The role of financial rewards in foreign accent perception

Chasen Afghani—Linguistics

Faculty Mentor(s): Melissa Baese-Berk, Glen Waddell

Session 1: Speech and Sound—Can you Hear Me?

Native speakers often have challenges understanding non-native speech. Previous studies have shown that both cognitive and social factors affect perception of non-native speech by native speakers. It has also been demonstrated that native listeners can improve at this task over time. In the current study we ask how financial rewards affect adaptation to non-native speech. Two subject groups were asked to transcribe unfamiliar, non-native accented speech stimuli. The control group was asked to transcribe the speech as accurately as possible. The experimental group was given similar instructions, with an additional note that they will receive monetary compensation corresponding to the accuracy of their transcriptions. Here, we examine accuracy and learning over the course of the experiment. We hypothesize that the experimental group will start the study with a higher level of accuracy, will have a steeper learning curve throughout the study, and will demonstrate greater accuracy at the end of the experiment. This work will add to a growing body of evidence that a variety of factors impact listeners’ ability to understand unfamiliar accented speech, and that these factors also impact adaptation over time.
Disrupting the Cyclical Narrative of Castration in Rape Revenge; distinguishing violence from vengeance

M. Joelle Ahler—Cinema, Womens, Gender & Sexuality Studies/Ethnic Studies Minor

Faculty Mentor(s): Peter Alilunas

Session 3: Beyond a Melody

Rape revenge films have been heralded as feminist iconography since their conception despite many controversial points, as the agency they award their protagonists stands out in film history. This thesis dissects the relation of gendered violence and bodily autonomy presented in traditional rape revenge films to disrupt the narrative of castration as a form of feminized vengeance. Rape revenge films from the male gaze construct female agency and castration as retributive justice, creating cyclical narratives that perpetuate binary understandings of bodily autonomy in relation to gendered power. By dissecting several classic rape revenge films through the lens of hegemonic power and social constructions of gender, this thesis will examine how the rape is represented in the film and how the avenger’s relationship to the victim—self, family member or community member—affects the severity of the revenge. These films utilize binary systems of gender and heteronormativity to dictate sexual violence and reciprocal vengeance as ‘naturalized’ forms of female agency. Conflating the relationship of castration and rape presented in these scenes, the autonomy of the victim and the assaulter are equalized as vengeance is assumedly served. This thesis finds that rape revenge narratives construct castration as a tool for vengeance and reclamation of bodily autonomy to perpetuate binary understandings of sexual violence and patriarchal systems of power within these narratives.

Overcoming The Crux: Adaptive Rock-Climbing Product Development

Sawyer Alcazar-Hagen—Product Design

Faculty Mentor(s): Wilson Smith, James Tuttle

Session 4: Cultural Considerations—the Other

Developments in rock climbing equipment have made the sport accessible and safer for everyone. Increased climbing opportunity and safety standards have led more people to climb, including adaptive athletes. Research revealed that climbing belay and equipment has been designed for two-arm users. These designs pose challenges for safe belaying by one-armed users. Working with a male trans-humeral amputee, I developed devices making belaying easier and safer. Through observational climbing sessions, two problems were identified in belay style, managing dead rope (i.e., slack rope
from the belay device) and lowering his belay partner. These issues stemmed from devices designed for two-armed users. He adapted to product functionality to operate them, and this required unsafe actions (e.g., stepping on rope). I explored design solutions through concept sketching, prototyping and user testing. I discovered two solutions: The Pull-Place-Repeat Climbing Cleat (PPR) and the Grigri Lowering Mod (GLM). The PPR allows for single-handed belay with constant contact with the dead rope, while never having to step on the rope. The GLM allows the belayer to keep his hand below the device giving him better speed control while lowering his partner. Testing revealed the PPR rotated excessively with upward rope movement, a danger to the climber. The device should be stitched into the harness to prevent this rotation. The GLM functioned effectively, requiring a slight modification to the rotating lever arm. I discovered that climbing equipment design overlooks the needs of altered capabilities, but my design can facilitate a more inclusive climbing community.

Metal-Ligand Bond Dynamics in Metal-Organic Frameworks Confirmed by Variable Temperature Vibrational Spectroscopy

Stacey Andreeva—Chemistry
Faculty Mentor(s): Carl Brozek
Session 5: The Bonds that Make Us

Dynamic chemical bonds reversibly break and reform with minimal heat, light, or pressure. This type of bonding is responsible for the basic mechanism of crystallization for many material systems because erroneous bond formation can be corrected through facile reversal until the material settles into the most favorable crystalline phase. A particularly important class of crystalline materials that emerge from this dynamic process are metal-organic frameworks (MOFs). MOF architecture is dependent on two building blocks: the metal ions or metal clusters and the organic ligands that bridge the metals. For the past two decades, MOFs have been viewed as rigid structures, but we propose that even after formation, MOFs contain metal-ligand bonds that remain dynamic such that the crystalline structure contains mixtures of partially bound and unbound arrangements. We hypothesize that metal-carboxylate bonds— which constitute the majority of MOFs—are especially dynamic, with large fraction of these bonds existing in unbound states. To understand this metal-ligand interaction, our research focuses on monitoring the changes in the vibrational frequencies as a function of temperature. Variable temperature vibrational spectroscopy shows a lowering in energy of the stretches associated with these dynamic bonds at increased temperatures, indicative of bond weakening. By understanding this relationship, more general insights can be made regarding important material behavior such as crystallization and self-healing responsiveness. Insight into
their labile nature would provide a predictive model their growth mechanism and inspire important applications such as the use of MOF for self-healing membranes.

**To Whomever Wants to Write this Novel: Towards a Hypertextual Approximation of Museo de la Novela de la Eterna by Macedonio Fernández**

Val Arbonias Flores (University of Puerto Rico, Rio Piedras Campus)—History of the Americas

Faculty Mentor(s): Elidio La Torre Lagares Comparative literature

Session 5.5: McNair Scholars Presentations

“The porteño writer Macedonio Fernández (1874-1952) prefigures in Latin American literature as one of the precursors of the fragmented novel in Argentina. His novel Museo de la Novela de la Eterna is a clear example of this with his 58 prologues, which represent an endless beginning. But in this fragmentation we discover as its readers one of its complications; its “unreadability”. By taking a digital humanities approach, this project focuses on converting selected chapters of the printed text of Museo to a hybrid hypertext (a printed text that also counts with digital elements like QR codes or hyperlinks) in hopes of increasing the readability of it. Through this process I hope to answer the following questions: Does Museo’s unreadability complication lie in its medium? What if by changing the medium we can better understand the aesthetics behind Macedenio’s work? What can this case study teach us about how to properly approach literary works that are deemed by many readers, not just scholars, as unreadable?" 

**What does it mean to be Latinx to you?: An Analysis of Oregon Latinx Students and Their Ethnic Identity**

Maya Auld—Family and Human Services

Faculty Mentor(s): Ellen McWhirter

Session: Prerecorded Poster Presentation

Ethnic and Racial Identity (ERI) refers to a multidimensional psychological construct that represents the beliefs, values, and attitudes that an individual has about their ethnic-racial group and group membership and the process by which these beliefs develop over the lifespan (Umaña-Taylor et al., 2014). ERI is a protective factor for Latinx adolescents that can enable resiliency when confronted with discrimination (Phinney, 2003; Romero & Roberts 2003). ERI is positively related to academic
self-efficacy, social competence, leadership, and social responsibility among Latinx high school students (Umaña-Taylor et al., 2014).

The current political and social environment threatens positive identity as anti-immigration and anti-Latinx sentiments are increasing (Muste, 2013; Rogers et al., 2017). This negative public regard for the Latinx community has fueled several thousand pieces of legislation in regard to immigration in the past decade at the state level, largely involving law enforcement of verification of immigration status (Stupi et al., 2016). Both US and foreign-born Latinx individuals suffer similar levels of psychological distress related to negative public regard of immigrants (Szkupinski et al., 2014).

The setting for the current study is a Pacific Northwest state in which 23% of k-12 students are Latinx (Gill et al., 2019). Data for the present study, collected in spring of 2019, is written responses to the question “What does it mean to you to be Latina/o/x?” Participants were 495 Latinx high school students attending a one-day leadership conference. First, responses were coded using inductive thematic analysis (Braun & Clark, 2006). Themes present in open ended responses include culture, pride, community, family, language, and resistance. Second, we explored relationships between themes, academic achievement, and attendance in school. This part of the analysis is ongoing. We elaborate on findings and highlight the importance of positive regard of ethnic identity for Latinx high school students in the Pacific Northwest.

**Researhing with the Kesey and Le Guin Papers during the 2020 COVID-19 Crisis—Research Posters by Honors College 223 Students**

Lyla Balthazaar—Human Physiology

Co-Presenter(s): Max Braker, Zoey, Cynkin, Jake Heinonen, Rose, McNamee, Carmen Reddick, Garret, Smith, Xitlali Torres, Micah, Woods

Faculty Mentor(s): Stephen Rust

Session: Prerecorded Poster Presentation

Students in Dr. Stephen Rust’s course “Researching Oregon Writers” examined a digitized mini-archive of materials prepared during the COVID-19 crisis by the Knight Library Special Collections with the goal of better understanding how archival materials can shape and reshape our thinking about an author’s life and literary works. Items include personal correspondence between Ken Kesey and friend Ken Babbs composed while Kesey was writing *One Flew Over the Cuckoo’s Nest* (1962), correspondence between Ursula K. Le Guin and literary agent Virginia Kidd while Le Guin was writing *The Left Hand of Darkness* (1969), and manuscript pages from each novel. Their posters will blend of select images.
from the digital mini-archive to and written elements of humanities research posters along with virtual audio presentations. We hope these poster presentations will inspire viewers to appreciate the value of archives for preserving literary and cultural history and open new perspectives into Le Guin and Kesey’s life and work. Xitali Torres, Carmen Reddick Bayley Burke, and Micah Woods are interested in how Kesey’s correspondence with Babbs can shed light on the development of particular characters in *One Flew Over the Cuckoo’s Nest* and Kesey’s relationship with the 1960s counterculture. Rose Kordahal, Elyria Kabasenche, and Jake Heinonen are researching Kesey’s correspondence and journal entries before and after the publication of *Cuckoo’s Nest* to explore his authorial intentions regarding the civil rights of patients in mental hospitals. Ethan Scott, Zoey Cantor, and Garret Simmer how Kesey’s personal view on conformity and freedom inform how those themes develop in his work and are particularly interested in archival materials that might shed light on his use of laughter as a metaphor for rebellion against social norms. Zoey Whittington, Jacob Smith, and Donovan Muniz hope to learn more about the impact of 1960s Sexual Revolution on Le Guin’s writing and her development of a genderless society in *The Left Hand of Darkness*. Lyla Balthazaar, Max Braker, and Eleanor Davis are studying Le Guin’s business correspondence with her agent Virginia Kidd to examine how they sought to position her work in the science fiction marketplace. Elliot Terner, Audra McNamee, and David Cynkin are curious to examine Le Guin’s writings about science and philosophy as well as her engagement with literary scholarship to consider how her personal beliefs and interests shaped the direction of her creative writing.

**Inducing Powerful Negative Hallucinations Using Hypnosis**

**Wizard Baptista—Psychology**

**Session: Prerecorded Presentation**

Who says you have to do drugs to see something that isn’t there? What if you couldn’t see something that is there? This is what happens in the mind of someone experiencing a negative hallucination. Their mind can delete visual stimulus as if it never even existed. This can also be induced into someone with just words alone. There are also different depth levels you can get to with one of the deepest being able to experience negative hallucinations. We explore what hypnosis is and how it can help people. We will be showing how to penetrate to that level and what we can do once we are in it. By the end of the presentation, you will be able to see the power of hypnosis and what brilliant and innovative things it can do to help change people’s lives for the better.
The Reactions Between Iron and Selenium

Dylan Bardgett—Chemistry
Faculty Mentor(s): Dave Johnson, Danielle Hamann
Session 6: Interact & React

In the wake of the recent discovery of high-temperature superconductivity in iron selenide, FeSe, chemists, physicists, and materials scientists from around the globe have tried to develop new FeSe-based materials with higher and higher superconducting critical temperatures. However, none have yet explored the fundamental chemistry of how Fe and Se react. We investigated the interactions between solid Fe and Se in the absence of the diffusion limitations often confronted in solid state chemistry by preparing layered precursors of elemental Fe and Se with layer thicknesses on the order of a few angstroms with a variety of Fe/Se compositions. The initial structures and subsequent reactions were monitored via x-ray diffraction and x-ray fluorescence as the precursors were gently annealed. Structural and compositional analysis of the samples indicates that, unlike other transition metal selenides, the reactions between Fe and Se are not kinetically limited by diffusion processes. Even at temperatures well below standard reaction temperatures, thermodynamic products between Fe and Se appear to dominate the macro-architecture of the precursors. These findings may hold significant consequences for the development of future FeSe-based materials, as the low reaction barriers to form the thermodynamic products may impede efforts to kinetically trap metastable FeSe materials.

Recommendations for Forest and Wildlife Climate Change Adaptation in Hendricks Forest, Eugene, Oregon

Jordan Barton—Biology
Co-Presenter(s): Madeline Schmidt, Alexander Fitzgerald, Mikey Brooks, Bryce Izlar, Henry Tannler
Faculty Mentor(s): Peg Boulay, Alex Renirie
Session 4: Environmental Leaders Program

As the city of Eugene’s oldest park, Hendricks Park’s 60-acre Douglas-Fir forest is a beloved cornerstone of the community. Hendricks Forest has already begun to experience significant ecological impacts, such as drought, severe winter storms, and bark beetle infestations due to climate change. However, the full effects of shifting weather patterns and new climates on some particular species of Hendricks Forest are poorly understood. Without this information, the City of
Eugene cannot formulate an effective management plan. Our research will examine the question: What are the predicted impacts of climate change on the ecosystem and how should Hendricks Forest be managed to maintain a resilient forest? These mitigation recommendations will build upon the 2000 Hendricks Park Forest Management Plan, which is set to be updated in one–two years. This research is critical because the 2000 plan does not yet incorporate challenges posed by climate change. Our climate change-integrated conservation strategies will seek to address the following concerns: forest risks and adaptations; wildlife habitat and rare species; revegetation strategies and constraints; and public involvement and outreach. We will present our preliminary findings in the form of management recommendations ranging from a no-action alternative to drastically altering the composition of the forest. This report intends to combine current scientific recommendations, land management techniques, and public interaction to help the City of Eugene sustain one of its most historically and culturally significant parks.

**Influence of a prion protein on the TOR pathway in Saccharomyces Cerevisiae**

Zack Basham—Biochemistry

Faculty Mentor(s): David Garcia

Session: Prerecorded Poster Presentation

Pseudouridine synthases are critical RNA modifiers in eukaryotes. One member of this family of enzymes, encoded by the Pus4 gene in the budding yeast Saccharomyces cerevisiae, forms a prion protein, named [BIG+]. Rather than resulting in cell death, as for known mammalian prion diseases, [BIG+] promotes increased cell proliferation and cell size. These observations raise the question of how the prion promotes cell growth. The increased cell size and growth rate suggests an alteration to a fundamental eukaryotic growth control pathway, mediated by the TOR complex (“target of rapamycin”). One target of TOR, a protein kinase, is Sch9, an AGC kinase, which is activated via phosphorylation by the TOR complex. Sch9 is involved in multiple processes essential for growth such as ribosome biogenesis, translation control, and cAPK activity. To better understand the relationship between [BIG+] and TOR, we have introduced hyperactive mutants of TOR or Sch9 into [BIG+] and naive cells. By monitoring growth rate in media with varying levels of arginine, we can monitor [BIG+] response to different nutrient conditions. We have also made progress in monitoring the expression of Sch9 in [BIG+] cells compared to cells without the prion. This contributes to our understanding of how the prion and TOR complex are interacting to affect cell growth.
Yerba Mate—Production Analysis and Education of Sustainable Alternatives

Sarah-Anne Bedrosian—Environmental Studies
Co-Presenter(s): Cian Whalen, Garren Lum
Faculty Mentor(s): Sarah Stoeckl, Kathryn Lynch
Session 1: Environmental Leaders ARC

Students at the University of Oregon are highly reliant on prepackaged food and drinks to keep energized throughout the day. Many students consume multiple caffeinated beverages each day, often served in a single use container. Due to its popularity on campus, we are using Guayaki brand Yerba Mate as a case study to exemplify the impact of the high consumption of single use products. We hypothesize when analyzing the environmental harm and pollution created by the production of packaging materials, packaging for loose leaf tea will have an overall lower environmental impact than glass bottles or aluminum cans. Our group will research the production analysis of glass bottles, aluminum cans, and packaging of loose leaf tea looking at the embodied energy, waste materials, and overall environmental impact from production. The research will be presented in a video presentation that will educate the UO population about the production analysis of aluminum cans, glass bottles. We argue consumers should consider purchasing loose leaf Yerba Mate and brewing their own tea instead of creating waste by consumption of the drink in a glass bottle or aluminum can. By exploring the production analysis and the environmental, social, and economic components of the different variations of Guayaki Yerba Mate, we hope to educate the student body on the implications of their consumerism and prompt them to make more sustainable consumer choices.

Convergence of dyadic similarity ratings predicts similarity in neural representations of others within social networks

Youri Benadjaoud—Human Physiology/Psychology
Faculty Mentor(s): Taylor Guthrie, Rob Chavez
Session: Prerecorded Poster Presentation

A history of classic research in social psychology has demonstrated that human social groups are highly homophilous—people tend to associate with others similar to themselves. More recently, researchers showed that the brain shows similar effects of homophily, with close individuals showing greater neural response similarity to naturalistic stimuli than unfamiliar individuals (Parkinson et al., 2018). It is an open question, however, whether a similar degree of neural homophily exists
when close individuals think of other specific members of their social group. The current study investigated this question by recruiting multiple social network groups that consisted of several close-knit individuals. Using a round robin fMRI design, individuals completed a standard self/other trait judgement task in which each participant was both the perceiver and a target. Similarity among dyadic pairs were calculated within multivoxel response patterns to each other member of their group. Using the correlation distance between multivoxel pattern response vectors combined with euclidean distance calculations between perceiver ratings of similarity with the target, we fit a multilevel linear effects model that predicted neural similarity from the convergence of dyadic similarity ratings. Our results indicate that the degree of similarity between multivoxel response patterns while individuals were rating the same target were significantly predicted by the the degree to which the perceivers agreed on how similar they were with the target. These findings suggest that people who agree on how similar a person is to themselves tend to have greater similarity in neural representations of that particular other.

Determining detergent dependence of Cytolysin A oligomeric state through native mass spectrometry
Lejla Biberic—Biochemistry
Faculty Mentor(s): Amber Rolland, James Prell
Session: Prerecorded Poster Presentation
Membrane proteins, including pore-forming toxins (PFTs), play important roles in human health. PFTs are promising for nanopore sequencing and drug delivery, but to maximize success in these applications, it is important to know the size of the pore and thus the oligomeric state (number of identical subunits). The flexibility of alpha-PFT transmembrane helices may allow their oligomeric state to vary in different environments. Elucidating the relationship between oligomeric state and detergent environment is thus important for PFT bionanotechnology applications. Here, we studied how native oligomeric states of Cytolysin A (ClyA), an alpha-PFT found in pathogenic strains of Escherichia coli, varied in different detergent environments using native mass spectrometry (MS). Native MS enables preservation of noncovalent complexes and accurate measurement of the complex mass. Together with a known monomer mass, this allows unambiguous determination of oligomeric state. ClyA was incubated with various detergents and screened for complex formation using Blue Native PAGE. Preliminary native MS results show that ClyA forms various oligomeric complexes ranging from octameric to dodecameric in n-dodecylβ-D-maltoside and octaethylene
glycol monododecyl ether. ClyA forms no identifiable pore complexes in n-octyl-β-D-glucoside, in contrast to previous reports, while n-tetradecylphosphocholine heavily adducts to and stabilizes ClyA monomers only. Combining these experimental results with computational modeling enables further investigation into the relationship between detergent properties and oligomeric state. These findings will not only advance the fields of MS and structural biology but also provide new insight for PFT applications in bionanotechnology through manipulation of desired oligomeric state and pore size.

**Male Personality and Fitness in a Semi-Free Ranging Group of Japanese Macaques (Macaca fuscata)**

Nichole Biggs—Anthropology  
**Faculty Mentor(s):** Kylen Gartland, Frances White  
**Session:** Prerecorded Poster Presentation

It has been recently recognized that non-human primates, just like humans, have different personalities. These personality differences can be measured using a variation of Factor-Five theory commonly used in human personality. The Factor-Five personality model is used to sort individuals into five domains that are made of certain behaviors. The five categories predominantly used in non-human primates include sociability, confidence/aggression, independence, neuroticism, and dominance. Personality studies have been largely biased towards female non-human primates with a particular emphasis on the Macaca genus. This study on male personality was conducted on a group of Japanese macaques (Macaca fuscata) at the Oregon National Primate Research Center. We collected a total of 475 hours of personality-related behavioral data across two summer study periods in 2018 and 2019. We conducted 15-minute focal follows with one-minute instantaneous scans on 17 adult males. Fitness, as measured by the number of offspring each male had, was calculated using available genetic paternity records. We ran a PCA (Principle Component Analysis), which cross-references behaviors and then clusters the individuals with similar behaviors together, identified males with similar personality types. There were two clear personality clusters and a few male outliers. Personality types did not differ in average reproductive fitness (F=0.53, df=2, p=0.6009). These results suggest that while males do have demonstrable variation in personality types, these personality types do not result in different levels of reproductive success. Thus, if personality is an important component of reproductive strategy, it might be likely that males are achieving mating opportunities differently dependent on their personality type.
Beta cell regeneration upon the addition of Beta-Cell Expansion Factor A (BefA)

Robin Black—Biology

Co-Presenter(s): Ian Torrence, Emily Niebergall, Dan Tudorica

Faculty Mentor(s): Karen Guillemin, Michelle Massaquoi

Session 4: Earning your Stripes

All organisms co-exist with a plethora of bacteria, fungi, and viruses living on and within them, collectively known as a microbiota. Previous work has shown that in the absence of the microbiota (after a germ-free derivation), the beta-cells within larval zebrafish fail to develop (Hill et al., 2016). Beta-cells are insulin-producing cells found in the pancreas and are vital for glucose uptake in the body. This experiment has practical applications, as Type I diabetes in humans is an autoimmune disease where the body attacks its own beta-cells. Recently, the Guillemin lab has discovered a novel bacterial-secreted protein, Beta-Cell Expansion Factor A (BefA), that is sufficient to rescue beta-cell proliferation within germ-free zebrafish. Although the study found that BefA is critical for beta cell development, its potential role in beta-cell regeneration is unknown. The goal of this study is to test the role of BefA in pancreatic beta-cell regeneration after induced beta-cell death. Using a transgenic line of zebrafish, we validated that we can significantly and specifically ablate beta cells in larval zebrafish. We next plan to ablate beta-cells of conventionally reared (with microbiota) and germ-free zebrafish treated with and without BefA and quantify the number of beta-cells regenerated. We predict that upon the addition of BefA, there will be a rescue in the number of beta-cells. From this experiment we will learn about the potential therapeutic uses of BefA to recover beta-cells and broadly the important roles that gut microbiota play in host homeostasis.

Demographic Influences on Perception of Singular They/Them Pronouns

Danni Black—Linguistics

Co-Presenter(s): Mel Birke, Lydia Murtha, Sam Montagne

Faculty Mentor(s): Melissa Baese-Berk

Session 1: Speech and Sound—Can you Hear Me?

A society does not just have one characteristic, it has many. Not only that, but those traits often influence and alter one another. While this is known and observable for traditional relations, such as gender and race, it is not as established for concepts that are later introduced into a society rather than initially integrated. Such is the case for the pronouns of they/them in American society. In order
to determine how one’s previous societal roles and beliefs affect their perception and acceptance/rejection of the pronouns of “they/them” and alternative gender identities in general in a linguistic state. To do this, we plan to submit a digital survey to students and staff of as many kinds as we can gain access to at the University of Oregon. In this survey we will include cultural identifiers such as race, gender, socioeconomic status, affiliation with the LGBTQ+ community, and more. Then we will observe that data to determine if there is a statistical significance among our subjects between one of those traits and their perception of “they/them” pronouns. Additionally, there is an option on the survey where subjects can express their desire to participate in an interview to elaborate on their views and the development of those views. This interview will be conducted remotely and respectfully, and will provide us with a more in-depth explanation and conclusion of the research being conducted.

**Death of expectations: understanding grief associated with a disability diagnosis**

Emily Boeschoten—Sociology  
Faculty Mentor(s): Krystale Littlejohn  
Session 3: To Care and How Not to Care, that is the Question...

Nearly one in every five children in the United States have special healthcare conditions (Anon 2017). Upon diagnosis, the reactions of the parents vary greatly depending on a multitude of factors. The reactions of parents to their child’s disability diagnosis are well documented; however, there is little to no research on why these reactions take place. This study sought to answer the question, what shapes parental reactions to a child's disability diagnosis? Twenty parenting blog posts about parents’ reactions to their child's disability diagnosis were collected and analyzed to answer this question. Primary results suggest that reactions differ based on the child’s age of onset and the actions of the medical professionals relaying the information. For some parents, their strongest memories from their child’s diagnosis were not of the diagnosis itself, but the actions of the medical professionals leading up to and following the diagnosis. Many parents who experienced grief discussed how a disability diagnosis resulted in the death of their expectations for their child’s future, which was exacerbated by their doctors’ use of confusing medical terminology. In conclusion, the actions of medical professionals not only impact a parents’ reaction to their child’s diagnosis but also the subsequent care that the child receives. This research is significant because it shows that the meaning attached to a disability diagnosis depends not just on the label itself, but also on how the diagnosis is delivered. This has important implications for medical training on bedside manner.
The Effect of Maternal Borderline Personality Disorder Symptoms on Child Externalizing Problems, as Mediated by Parenting Stress and Maternal Warmth

Alex Boxberger—Psychology
Faculty Mentor(s): Maureen Zalewski, Jackie O’Brien
Session: Prerecorded Poster Presentation

Borderline personality disorder (BPD) is a psychological disorder characterized by impulsivity, negative affect, and emotional and interpersonal dysregulation, both of which can directly impact the experience of being a parent. The purpose of this study was to further understand the pathway through which elevated symptoms of maternal BPD are associated with higher levels of externalizing problems in their children. Specifically, we investigated whether maternal warmth and parenting stress mediated this relationship to transfer risk of mental health difficulties. The participants in this study included 68 mothers and their 3-4 year old children (M= 48, SD= 7.6 months). Maternal BPD symptoms, parenting stress, and child externalizing problems were assessed through maternal report, while maternal warmth was assessed using observational measures during a dyadic stressor task. Results support that elevated maternal BPD symptoms are associated with higher levels of child externalizing problems, as well as with higher levels of parenting stress. However, elevated maternal BPD symptoms were not associated with lower levels of maternal warmth. Additionally, higher levels of parenting stress did not explain the association between maternal BPD symptoms and child externalizing problems. These findings suggest that maternal BPD symptoms confer risk of mental health difficulties in children, and that interventions targeting maternal BPD symptoms may be more effective in mitigating this risk than parenting interventions designed to improve warmth.

Naturalistic Perspective Taking: Themes Found in People’s Naturalistic Accounts

Clare Brinkman—Psychology
Faculty Mentor(s): Sara Hodges
Session 6: Cerebral Matters

The current body of psychology literature on perspective taking is largely made up of studies which instruct participants to take the perspective of another person. In order to better understand the circumstances under which unprompted perspective taking occurs, an online study (n = 238) was conducted to explore naturalistic accounts of everyday perspective taking. In this study, university student research participants were asked to write about a time, preferably in recent days, when
they took the perspective of another person. Narratives were coded using a reliable coding scheme developed to capture the prevalence of and variation in the following elements: whose perspective was taken; what triggered the perspective taking; strategies mentioned (if any) for perspective taking; interpersonal or other outcomes of perspective taking; and use of perspective-taking metaphors (e.g., use of visual or place metaphors). Results will help shed light on when people think they engage in perspective taking, and may address whether these contexts are related to prosocial and interpersonal understanding outcomes associated with perspective taking.

**Black Student Protest at the University of Oregon: Fifty Years in the Making**

Desirae Brown—Sociology  
Faculty Mentor(s): Debra Thompson  
Session 5.5: McNair Scholars Presentations

In 2015, colleges and universities across the United States saw an uprising of student protests followed by student demands. These demands were made primarily by African American and other student of color unions. Students rallied to challenge the history and culture of racism on their campuses, primarily on Predominately White Institutions. They did so by demanding their universities to actively commit to updating, changing and enacting a multitude of diversity initiatives that include but are not limited to, the hiring of more Black faculty, the opening of Black cultural centers, and increasing Black student enrollment and retention. This research will be a comparative analysis of student protest and demands of the University of Oregon; focusing on the 1967-68 and 2015-16 academic years. It will begin by studying the racial histories of Eugene, OR which will provide the framework for the continued and current racial climate in the area that has launched social activism. With this framework, this research will examine the UO Black Student Union’s Demands of 1968, as well as the climate and outcomes after such grievances were issued to the University. The study will move forward, examining the 2015-era of student protest. This research will explore the rise of Black student protest in Eugene, again in 2015; using the UO Black Student Task Force Demands to President Michael Schill, to study the similar grievances placed by Black Students nearly 50 years after the original demands. The research will study the social and institutional outcomes of each era of protest, and efforts made to move forward.
Acoustic Sources of Accent in Second Language Japanese Speech
Hayli Brown—Linguistics, Japanese
Faculty Mentor(s): Kaori Idemaru
Session 1: Speech and Sound—Can you Hear Me?

This study extends previous findings on the perception of pitch accent in Japanese second language speech (L2) and further analyzes its effect on the word level in isolation. Previous research revealed that pitch accent is the strongest acoustic factor that affects how accented a speaker sounds when speaking Japanese as an L2. Analyzing this effect at the word level will inform us on where this accentedness is heaviest in a phrase. Japanese speech samples were collected from 20 American English speakers (10 speakers in both second and third year groups) studying Japanese. The L2 participants provided speech samples of 18 words both with and without a native speaker model. Pitch patterns 0 (LHH), 1 (HLL), and 3 (LHL) were examined in words that had three morae—units of time, which are given separate pitch accents to create a tonal pattern in Japanese. Native Japanese listeners (10 participants) rated the samples with regard to degrees of foreign accent. Words with Type 0 and Type 2 pitch accents were rated the highest for having a perceived foreign accent. Perceived foreign accentedness was also rated higher for the second year group of Japanese learners. Further research should be conducted to ascertain the exact acoustic or phonological motivations for these results, but the difference between English and Japanese intonation patterns is considered as one motivation in this study. With more research, the findings of this study may provide useful tools for better pronunciation teaching methods with the goal of achieving native-like fluency.

Cardiopulmonary Differences in Apnea Divers Breathing Isocapnic Normobaric Hypoxia
Mohini Bryant-Ekstrand—Human Physiology
Faculty Mentor(s): Andrew Lovering, Tyler Kelly
Session: Prerecorded Poster Presentation

Hypoxia (low oxygen), induces a reversible form of pulmonary hypertension which can be studied to elucidate the etiology of pulmonary hypertension and right heart dysfunction. Breath hold divers (BHD) routinely place themselves into extremely hypoxemic (low blood oxygen) conditions and therefore may repeatedly expose themselves to acute bouts of pulmonary hypertension and increased right heart work. A patent foramen ovale is a tunnel between the top chambers (atria) of the heart present in 35% of the populations that may exacerbate hypoxemia thereby worsening
pulmonary hypertension. The purpose of this study was to 1) determine if pulmonary arterial pressure and right heart dysfunction in hypoxia was greater in BHD compared to controls, 2) determine if the presence of a PFO contributed to the responses measured and 3) determine the role of a pulmonary vasodilator in ameliorating the increased pulmonary pressure in response to hypoxia. Subjects (n=26, 13 BHD, 13 Control) completed two 30-minute hypoxic breathing challenges, after receiving either 50mg sildenafil or placebo, with a 48-hour minimum washout period between visits. Saline contrast echocardiography was used to detect PFO. Pulmonary pressure and right heart function measures were made using Doppler ultrasound. Compared to placebo, sildenafil produced vasodilation before hypoxia in BHD and after 30 minutes of hypoxia in controls. PFO had no effect. Our preliminary data suggests elite breath hold divers may have a chronic pulmonary vasoconstriction in room air that is prevented with administration of sildenafil, and these findings are independent of having a PFO.

Accessibility and Trails Marketing in Lane County

Hannah Buckingham—Environmental Studies

Co-Presenter(s): Nikos Skoufos, Tenley Ong, Ethan Baher, Spencer Palanuk, Alli Gerhardt, Grace Diaz

Faculty Mentor(s): Kathryn Lynch, Alexa Foor

Session 4: Environmental Leaders Program

Eugene's reputation of highly accessible spaces has begun to attract users in need of unique accommodations and design considerations, and our tourism industries have begun to focus on identifying and marketing accessible trails. Eugene, Cascades, and Coast is one tourism marketing nonprofit focused on connecting visitors with usable and accurate trail information, and our purpose is to research their website and determine what accessibility information and trail information they are missing. By comparing Eugene, Cascades, and Coasts' data against the USFS trail websites, we will contribute valuable suggestions, blog posts, and updates to the Eugene, Cascades, and Coast trail information websites. Our suggestions and updates will focus on accessibility needs, like bathrooms, parking, trail surface, and slope. The structure of our current project has changed given current events resulting from the outbreak of COVID-19, and while our previous task was to measure and record accessibility data ourselves, we will now focus on finding and communicating what data already exists. Through our work we hope to strengthen and deepen the degree of detail on our partner’s website, which will in turn help people searching for accessible trails find outdoor spaces in which they can recreate. Ultimately, our goal is to increase the justice, equity, diversity, and inclusion of our outdoor spaces.
Cluster C Personality Disorder: A Hermeneutic Phenomenological Approach
Alex Bui—Psychology

Session: Prerecorded Poster Presentation

The challenge of treating individuals with personality disorder is a phenomenon that troubles clinical researchers and therapists alike. While novel attempts to understand personality disorder have led to innovative approaches to treatment, no contemporary psychotherapies have outperformed established therapies in regards to psychotherapeutic efficacy. In an attempt to identify potential factors contributing to psychotherapeutic inefficacy, this study follows an individual exhibiting severe Cluster C personality disorder symptomatology and utilizes Interpretative Phenomenological Analysis (IPA) to identify potential themes responsible for impeding psychotherapeutic efficacy. The following research incorporates the participant’s developmental history with modern theories of personality disorder to elaborate these themes. The conclusions reached in this research demonstrate the utility of adopting hermeneutic phenomenology into clinical practice and outline potential mechanisms which may potentially play a role in impeding psychotherapeutic efficacy for Cluster C personality disorder patients.

Demonstrating the Importance of Implementing Reusing, Recycling, and Sustainable Practices in Creative and Accessible Ways
Garrett Bunkers—Computer Science

Co-Presenter(s): Michael Chung, Isabella Flynn, Anna Jatsura, Hannah Weaver

Faculty Mentor(s): Sarah Stoeckl

Session 1: Environmental Leaders ARC

Sustainable and zero-waste lifestyle practices are stereotypically portrayed as expensive, inaccessible, and difficult to maintain. Our project demonstrates that this is not necessarily true—we plan on making a video to teach people how to use discarded, recyclable, household materials as a base in creating personal planters. We will use local recyclable, or unwanted materials of variable sizes and show our own personal decorations. We will include preferred type of soil and a lesson on how to find fertile dirt in your backyard. We will be working in tandem with both the Sustainability Center and the UO Zero Waste program. In collaborating with the Sustainability Center we will have the opportunity to effectively teach the students and families about at-home sustainability and recycling with easily accessible and safe materials such as used containers of varying material types.
The UO Zero Waste program can inform us where the recycled materials are transported after they are recycled and provide insight on what material would be best for a planter. We plan to inform friends, families, and classmates about the video we will post. Our goal is to educate people on recycling, repurposing from a creative perspective, and inspiring them to do similar projects at their homes. We believe that people should frequently be reminded about sustainability, and, through environmental consciousness, challenge their creativity. When people are taught to be sustainable while also igniting their imaginations, they can continue to grow into excellent environmental leaders in their household.

**The Incomplete Male: Sex, Control, and Womanhood in Classical-Era Greek Medical and Philosophical Texts**

*Daisy Burge—History*

**Faculty Mentor(s): Linni Mazurek**

**Session 1: Oh, the Humanities!**

This project explores how Classical Greek philosophers and medical writers explained the female body and how their ideas affected perceptions of femaleness, gender, and sexual difference in classical antiquity. In several Classical Greek academic and artistic works, women are portrayed as “incomplete” versions of men, naturally servile and unable to exercise free will. Supposedly scientific understandings of female anatomy within antiquity justified and reified these ideas, creating justification for male exertions of control over women and rigid patriarchal mores in several regions through the Classical Mediterranean.

This project provides a critical gendered analysis of key medical and philosophical texts from Classical Greece which define sexual and gendered difference by casting women as inherently incomplete. This work primarily focuses on the treatment of the female body within the medical works of the Hippocratic Corpus and the biological works of Aristotle on regeneration, while incorporating political and philosophical passages of Plato, Aristotle, and Xenophon which discuss womanhood and femaleness. Examining the works of these Classical authors, this work seeks to understand how Classical Greek scholarship influenced and established gender norms throughout Mediterranean. In addition, this work seeks to incorporate the ideas and analysis feminist scholars on ancient philosophy and medicine, in particular focusing on the work of Hippocratic gynecological scholar Helen King and the theories of classicist feminist theorist Page DuBois in understanding how female identity was constructed and reinforced through ideas of biological determinism.
“It Was A Miracle:” How Salt of the Earth’s Production Model Threatened The Hollywood Blacklist, Existing Power Dynamics in Film Production & Labor Relations

Arantxa Calles—Cinema Studies
Faculty Mentor(s): Priscilla Ovalle
Session: Prerecorded Poster Presentation

The Hollywood Blacklist was an effort by major film studios to ban filmmakers with leftist politics who were negatively implicated in relation to the trials conducted by the House of Un-American Activities Committee during the 1950s. The “Independent Productions Corporation” was formed around the basis of organizing that blacklisted talent to tell stories of other oppressed peoples through filmmaking. Although there were plans for many such projects, due to the brutal, often violent, repression of their inaugural project, Salt of the Earth (1954), only the one was able to be made. Even after its unlikely completion, the film was prohibited from being shown in cinemas, instead finding a life in underground circuits. Some academic study has been done on the Hollywood Blacklist but much more needs to be dedicated to the ways filmmakers organized against this censorship in order to fill that gap in the fields of filmmaking and labor history. The use of first hand accounts of the production and other published writing that aimed to detail this process were the main sources used. This research revealed how this production model served as a strong challenge to the censorship of diverse political ideas of the time and as an alternative for individuals who wanted to make independent films far before the popular Independent film movement of the US was even established. Only by shining a light on the censure, repression, and scapegoating of the past can we avoid similar conditions in the American media production of the future.

Points in Play: Reacting, Student Engagement and the Evolving College Classroom

Kyley Canion Brewer—History
Faculty Mentor(s): Kevin Hatfield
Session 3: The Way We Were

Reacting to the Past, known colloquially as ‘Reacting’ is a role-playing pedagogy used in higher education that flips the classroom and encourages students to take a more active role in their education. At present some twenty historical role-playing games are currently in print and available
to educators’ world over. However, rather than acting as a conclusion, the success of this new pedagogy provides us with a platform to further improve the experience of these games. This project takes an existing Reacting game: “Red Clay, 1835: Cherokee removal and the meaning of sovereignty” and seeks to adapt and make it more accessible to the college classroom. This project is conducted as a case study with particular amendments being applied to a specific game in an attempt to further develop the reacting pedagogy. The existing systems of ‘points’ used within Red Clay act as an infrastructure through which the contextual aims of each student’s role are framed. By changing and streamlining the points system the aim is to allow more students to better understand, and thus further engage with not only their roles on an individual level but also the historical premise of the game as a whole.

**Hunting for prions: Using inheritance patterns in yeast cells to attribute epigenetic states to prion proteins**

Mikala Capage—Biology

Faculty Mentor(s): David Garcia

Session 2: Cells R Us

The Garcia Lab studies the effects of prion proteins on key biological processes using the budding yeast, Saccharomyces cerevisiae. Prions can influence a cell’s phenotype but are based on a heritable protein confirmation and not sequence differences in the nucleic genome. Prions are inherited through the cytoplasm in a pattern of “non-Mendelian” inheritance in which all the cell’s offspring inherit the phenotype caused by the prion. To order to continue to research the broader impacts of prion proteins on biology, it is necessary to identify new examples of them. Our lab recently identified five new candidate prions—of proteins that chemically modify RNA—in yeast that exhibited heritable growth traits after exposure to chemical stressors. To test if the previously observed growth traits inherit in a pattern consistent with a prion, this project uses central methods in yeast genetics including tetrad dissections, cytoductions, and growth assays. This project has the potential to significantly add to the list of known yeast prions, particularly those involved in RNA biology. A broader understanding of how prions function in yeast will eventually help us transition to understanding the roles they may have in human cells. This is an ongoing project; presented here will be a description of the methods, preliminary and expected results, background information for each putative prion, and other aspects of this experiment.
Characterizing the Conformational Fluctuations of DNA Under Physiological and Salt-Stabilized Conditions

Anabel Chang—Biochemistry
Co-Presenter(s): Maya Pande
Faculty Mentor(s): Andrew Marcus
Session: Prerecorded Poster Presentation

The Marcus Group conducts studies on the dynamics of macromolecules in biological environments. In our experiments, we used a variety of techniques to analyze the structure of DNA with the overall goal of better understanding the conformations it can take. Our studies were focused in two areas: (1) understanding the mechanisms of DNA breathing, and (2) conducting experiments on the stabilizing and destabilizing properties of salt solutions on DNA. Techniques included circular and linear dichroism, UV-Vis spectroscopy, and Förster Resonance Energy Transfer (FRET). Determining the structure of DNA is crucial to understanding biochemical and molecular events essential for gene expression and DNA replication. For these processes to occur, various proteins must access single-stranded DNA coding templates which are otherwise inaccessible due to complementary base pairing in double-stranded DNA. Proteins rely on thermal fluctuations in the DNA double-stranded region at physiological temperatures known as DNA ‘breathing.’ Studies are ongoing, but thus far have led us to a better understanding of the energetic favorability of various conformations of DNA.

Individual differences in memory self-efficacy and learning ability

Amy Chen—Psychology
Faculty Mentor(s): Ashley Miller, Nash Unsworth
Session: Prerecorded Poster Presentation

Memory self-efficacy (MSE) is one’s evaluation of their memory abilities, which can be broken down into concurrent and global estimates. Concurrent MSE refers to perceived, current memory ability for a specific task, whereas global MSE refers to one’s perceived memory ability more generally, across various memory domains. The present study sought to extend prior work by examining how variation in MSE relates to learning ability on a delayed free recall (DFR) task. In three experiments, participants completed a DFR task, measures of working memory capacity (WMC), long-term memory (LTM) ability, and motivation. Experiment 1 measured global MSE (Lineweaver & Hertzog, 2010) upon completion of the DFR task. Experiment 2 measured concurrent MSE by asking participants to predict
how many words they could remember for each list on the DFR task. Experiment 3 used a similar method as Experiment 2 but also administered a more standard concurrent MSE questionnaire (Berry, 1999). Encoding strategy use on the DFR task was also measured. Results revealed global MSE was unrelated to learning ability. Concurrent MSE, however, was consistently associated with learning ability. Those who believed they were capable of remembering more items displayed better DFR accuracy. These individuals also had higher WMC, higher LTM ability, increased motivation, and used more effective encoding strategies. Critically, concurrent MSE continued to explain unique variance in DFR accuracy even when accounting for WMC, LTM, motivation, and effective strategy use. Collectively, these results suggest that one’s evaluation of their specific memory abilities is a critical component of successful learning.

**Association between a non-invasive assessment of frailty and vascular dysfunction in old mice**

**Jazmin Cole—Human Physiology, Biology**

**Faculty Mentor(s): Ashley Walker**

**Session 6: Interact & React**

Advancing age is characterized by not only an increased risk for cardiovascular diseases (CVDs), but also a decline in functional reserve and impaired adaptive capacity across multiple physiologic systems, also known as frailty. Impaired vascular function is a known contributor to CVDs and potentially has a role in increased frailty. In patients with overt disease, measures of frailty are related to vascular endothelial cell dysfunction. However, the relation between vascular endothelial function and frailty in a non-disease population is unknown.

To examine the relation between vascular function and frailty in the context of similar genetics and environment, we studied wildtype C57BL/6 mice. In young (9 mo, n=7) and old (23-30 mo, n=27) male and female mice, we assessed endothelial-dependent dilation (EDD) ex vivo in isolated, pressurized mesentery arteries and middle cerebral arteries (MCA). Mouse frailty was assessed using a previously established non-invasive 31-item frailty index based on clinical signs of deterioration. The severity of each deficit was assessed by two independent observers and assigned a value between 0-1, with a higher score indicating more severe frailty.

Frailty index was ~6 fold greater in old compared with young mice (p<0.001). Among the old mice, frailty index was correlated with mesentery artery maximal EDD (r=-0.53 p=0.002), and remained significant after controlling for age (partial correlation: r=-0.38, p=0.03).
This study demonstrates that frailty, independent of age, is associated with mesentery artery endothelial dysfunction in wildtype, non-diseased mice. However, it remains unknown whether the mesentery artery dysfunction is a cause or consequence of the greater frailty. Interestingly, we found a lack of association between frailty and cerebral artery endothelial function. Future research is needed to determine the mechanisms linking frailty and mesentery artery dysfunction.

Valence modulates self/other neural recapitulation during interpersonal perception.

Faith Collins—Psychology

Faculty Mentor(s): Robert Chavez, Taylor Guthrie

Session 5.5: McNair Scholars Presentations

Previous research has demonstrated that neural responses during self-referential thought are recapitulated in the brains of close friends thinking about the self. However, we also know that these processes are influenced by the affective valence of the stimuli and these processes recruit similar areas of the medial prefrontal cortex (MPFC). Does positive or negative valence drive the coherence between these representations? We sought to test this question by recruiting small groups of close-knit individuals in a round-robin fMRI design. Subjects reflected on positive and negative traits about both themselves and their group members to estimate neural responses to self and every other person in the group. Next, we used a multi-level linear mixed effects model to compare the correlation distance between self-congruent and self-incongruent patterns striated by positive and negative affect. We found that valence, especially negative valence, modulates the strength of self/other recapitulation effects in the MPFC. These results suggest that affective information influences the neural bases of interpersonal perception and contributes to our understanding of the mechanisms by which valence influences how our sense of self is represented in the minds of others.

Questioning Stability: Nonbinary Bodies in Contemporary Horror Film

Ryan Cooper—English

Faculty Mentor(s): Priscilla Peña Ovalle

Session 1: Oh, the Humanities!

As a film genre, horror is infamously known for its complicated construction of gendered bodies on the screen, from its culturally informed grotesque depictions of the monstrous to the often-fearful
reactions and movement of its protagonists from frame to frame. Feminist film critics like Carol Clover (author of *Men, Women, and Chainsaws*, 1992) and Barbara Creed (author of *The Monstrous Feminine*, 1993) have previously worked to name the phenomena that underlie these depictions of gender in horror films, yet they do so primarily through a heteronormative, binary feminist lens. By focusing on bodies in this way, they fail to consider what depictions of gender outside the binary might look like, refusing to address the varied manifestations of bodies on the screen. Through a nonbinary feminist lens, this project will investigate how gender is constructed and received in contemporary horror films such as Neil Marshall's *The Descent* (2005) and Jordan Peele's *Us* (2019) in order to understand the mechanics of nonbinary expression in the genre. Along with close reading and analyzing these films, I will take up a dialogue with scholars like Clover and Creed as well as queer studies works like Riki Wilchins' *GenderQueer* (2002) and Cáel M. Keegan's *Cinematic/Trans*/Bodies Now* (2018) in order to consider the social attitudes and cultural significance of these constructions. Ultimately, this project argues that the ways we view, express, and construct bodies in horror films are varied and complicated, but that as readers and critics, we have a social responsibility to consider the texts we read and watch both in and outside the gender binary. By conducting this research, it is my goal to address these social implications in order to urge my readers to pursue textual analyses of films that challenge traditional theory within the horror genre.

**Altered Motor Response to Aversive and Attractive Odors as Potential Biomarker for Autism Spectrum Disorders**

Isabelle Cullen—Biology

Faculty Mentor(s): Matt Smear, David McCormick

Session 2: Cells R Us

Active sensing in olfaction is the modulation in sampling behavior (inhalation patterns, or sniffing) to modulate sensory input. Previous studies in humans and mice observed pleasant odors are sampled at a higher inhalation magnitude, while aversive odors are sampled at lower magnitudes when compared to the clean air control. However, this sniffing modulation is not present in those with autism. Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social behaviors, communication skills, narrowed interests, and repetitive behaviors. Rozenkrantz et al. (2015) showed that children with ASD did not modulate sniffing behavior to aversive or attractive odors despite correctly identifying odors as pleasant or unpleasant, suggesting an innate altered motor response rather than perceptual differences. While studying the basis of
this behavior in humans is limited, we can access the neural mechanism that underlies this behavior through transgenic mouse lines. With the support of the Smear lab, we will repeat Rozenkratz’s (2015) paradigm using Fragile X-Knockout mice to investigate the neurological mechanisms driving this phenomenon along with orofacial movements during olfaction. Due to COVID-19, data collection is limited, however, we have developed a small raspberry pi based system combined with a camera to track orofacial movements through the experiment. We then use Deep Lab Cut, an AI network, to extract facial patterns and movements of the nose during olfaction. This work will establish a behavioral paradigm for studying autism-related symptoms in mice, and will thus lay the groundwork for understanding the neural mechanisms underlying this disorder, which may serve as a potential biomarker to aid in earlier detection.

Imaging Glomerular Signaling of Unrestrained Olfactory Search in Mice

Isabelle Cullen—Biology

Faculty Mentor(s): Matt Smear, David McCormick

Session: Prerecorded Poster Presentation

Olfaction is vital for many crucial animal behaviors such as social interaction, avoiding predators, and locating food. Our goal is to understand how an animal navigates toward the source of an odor. However, little is known about how odors are coded to inform olfactory search behavior. Air turbulence can cause odor distributions to be highly variable and unpredictable. Although we have previously characterized specific behavioral patterns in turbulent odor plumes, little is known about how odors are translated into movements. Our goal is to capture and understand the sensory input that informs these previously observed behaviors. We do this by injecting iGluSnFR, a fluorescent glutamate reporter, into the mitral cell layer of the olfactory bulb. This reporter tells us how glutamate released from olfactory sensory neuron terminals influences activity of mitral cells. iGluSnFR’s fast kinetics allows us to observe and measure glutamate levels as the mouse performs olfactory navigation. By revealing activity in olfactory sensory neurons during olfactory navigation, this technique can tell us how odor informs the mouse’s brain during active sampling. Following the development of this technique, we will image from iGluSnFR mice performing our olfactory search task to determine the neural computation that connects movement and sensation. Understanding how mice translate odor into behavior will inform our understanding of active sensory sampling behaviors in humans.
Post-stroke Dysphagia’s Impact on Survivors and Spousal Caregivers: The Importance of Perceptual Congruence

Kayla Davis—Communication Disorders and Sciences
Faculty Mentor(s): Samantha Shune
Session 1: Human Behavior—I am Who I Am

Previous studies have shown a link between survivors’ stroke severity and family caregiver burden, however other factors may contribute to this burden. Burden specific to post-stroke dysphagia and the consequences of incongruence between care recipient and care partner in their perception of the impacts of the care recipient’s dysphagia are potential variables that are unexplored. The present study aimed to determine the role of partner congruence of the perceived mealtime impacts of post-stroke dysphagia on caregiver burden. Twenty-seven spousal dyads consisting of a stroke survivor experiencing post-stroke dysphagia and their spousal caregiver were surveyed concerning their perceptions of the logistical and social impacts of dysphagia on mealtimes and stroke and dysphagia severity. Dyadic congruence in perceptions of mealtime logistical impacts, but not mealtime social impacts, was associated with increased caregiver burden. Additionally, increased survivor dysphagia severity and caregivers’ perceived mealtime logistical impacts were also associated with increased caregiver burden. These results can guide speech-language pathologists and other health professionals in their interventions for clients with dysphagia and their families.

Fostering the Next Generation of Climate Leaders: Environmental Education in the Virtual World

Lenora Davis—Environmental Science
Co-Presenter(s): Lenora Davis, Daisy Jones, Drew Macko, Tenley Ong, Connor Paschke, Madison Rush, Marychris Sitton, Kaylynn Wohl,
Faculty Mentor(s): Kathryn Lynch, Michael Madden
Session 4: Environmental Leaders Program

Through the University of Oregon Environmental Leadership Program, eight undergraduate students—the Majestic Trees team—designed and implemented a virtual environmental education program for local middle school students during the COVID-19 school closures. Students interacted in online lessons and completed activities, explored and learned about local ecology, and analyzed the impacts of climate change on their local environment. Students engaged with these themes through the
art of inquiry and interpretation, integrating the sciences, arts, and humanities into a cohesive unit. Utilizing multi-dimensional experiential education, the students communicated, collaborated, observed, and thought critically about key environmental systems and issues. These skills are integral to enabling young people to become engaged global citizens. The goal of Majestic Trees is to instill empathy and awareness in local students, inspiring them to take action to create a better world.

New specimen of Monosaulax typicus (Mammalia, Castoridae) from the Mascall Formation of Twin Buttes in the Crooked River Basin, Oregon

Shyla Davison—Earth Science

Faculty Mentor(s): Samantha Hopkins

Session 6: The Earth, Sky & Everything In Between

The Mascall formation of Central Oregon is a rock unit that was formed during the middle Miocene (~15 million years ago). The Mascall formation was first described from North Central Oregon, but also outcrops to the south in the Crooked River Basin, where it is much older. While these southern outcrops of the Mascall Formation have been known for some time, recent research shows that they are about a million years older than the outcrops of the same formation in the John Day Basin. This particular formation is known for producing many Barstovian-age mammals. Recent collections by University of Oregon field crews have yielded new material from the Crooked River region. I have diagnosed two new specimens recovered from the Mascall formation from Twin Buttes near Paulina, OR, as Monosaulax typicus from the family Castoridae. One specimen is a fragment of a lower right jaw that contains the p4-m2, while the other is a left jaw fragment. These are the most complete remains of M. typicus from the Mascall formation; other known specimens are isolated teeth. The teeth have all the diagnostic characteristic of other previously identified specimens of M. typicus that were found in Southeast Oregon rocks of similar age (Shotwell, 1968). The information of this new specimen will add to the limited knowledge of this species and the environment of the Crooked River Basin.
Identifying Neurons Necessary for Social Behavior
Matthew Dawson—Biology and Psychology
Faculty Mentor(s): Philip Washbourne
Session 5.5: McNair Scholars Presentations
Humans have a long history of working in social groups with a plethora of research supporting the benefits of positive human interaction. While these behaviors may seem intuitive, they can be argued as the most intricate behaviors displayed by animals. To generate a situationally relevant response to social others, an animal must be able to track dynamic systems. Given the inherent complexity of social behaviors, it is expected that this system can be perturbed by a multitude of neurological disorders. Using animal models, we can begin to construct the neuronal circuitry necessary for social behaviors. This circuitry can be used to understand social behavior deficits and may reveal possible interventions for disorders. Zebrafish, Danio rerio, perform stereotyped social behaviors, such as shoaling, which can be used to explore neuronal changes associated with deficits in performing the behavior. Through chemo-genetic ablations, we were able to cause cell death to select neurons due to variations in gene expression. Chemically treated fish were put into a virtual social assay that untreated zebrafish respond to. Zebrafish exhibiting decreased social response would indicate that the ablated neurons are necessary for social behavior. Our results indicate a population of neurons in the forebrain that are necessary for correct social behavior. This insight will help us construct the circuitry underlying social interactions.

Cell Specific Ablation: An Examination of Zebrafish Social Circuitry
Matthew Dawson—Biology/Psychology
Faculty Mentor(s): Philip Washbourne
Session 5.5: McNair Scholars Presentations
The zebrafish has been long used in research to examine the effects of manipulating genes using tools such as the CRISPR/Cas9 system. Nitroreductase is an enzyme, native to E. coli, commonly used in biology for cell specific ablation. By inserting the gene for producing nitroreductase, as well as Gal4/UAS system, one can achieve temporal and spatial selectivity for ablation. After cell ablation, fish were placed into a virtual social behavior assay to look for differences in social interactions. Fish were then terminally sampled and stained using immunohistochemistry and imaged using the Spinning Disk Confocal microscope. Using these images, an average brain was constructed allowing
for mapping of the neurons necessary for social behavior. This study aims to begin characterizing the neural circuitry for social behavior in zebrafish.

**Arbuscular Mycorrhizal Fungi Colonization Decreases Under High Precipitation and Compost Treatment in Semi-Arid Rangelands**

Justin Day—Biology  
Faculty Mentor(s): Ashley Shaw, Lauren Hallett  
Session 6: The Earth, Sky & Everything In Between

In California, the application of compost has been proposed as a management strategy to increase forage production and soil carbon sequestration in semi-arid rangelands. However, given this ecosystem's highly variable climate, having a holistic knowledge of the impacts of composting practices is imperative for sustainable management. Arbuscular mycorrhizal fungi (AMF) are known to confer many benefits to their vascular plants symbiotes—namely through nutrient acquisition—and have been proposed to be important to manage in agricultural systems. The body of knowledge surrounding the influence of compost and rainfall variability on AMF, however, is very limited. The purpose of this study is to explore the AMF-plant relationship with the application of fertilizer or compost across a precipitation gradient. Our results show that AMF colonization under compost treatment alone was not affected, but in combination with high precipitation, AMF colonization was significantly depressed when compared to the ambient precipitation. Additionally, AMF colonization negatively correlates with plant root biomass under the same conditions, suggesting that plant hosts reduce C delivery to AMF under low stress and high resource conditions.

**The Harp-Weaver and Other Poems: A Haunting Maternal Presence in Edna St. Vincent Millay’s Poetry**

Martha DeCosta—English (major) and Creative Writing (minor)  
Faculty Mentor(s): Corbett Upton  
Session 3: Beyond a Melody

The image of the ideal mother as a self-sacrificial caretaker for her children echoes in Edna St. Vincent Millay’s Pulitzer Prize winning poem “The Ballad of the Harp-Weaver”: “She sang as she worked, / And the harp-strings spoke; Her voice never faltered, / And the thread never broke.” Although deserving of its high praise and reception, this sentimental ballad’s appearance in *The
The Harp-Weaver and Other Poems collection seems somewhat incongruous, given the nature with which Millay’s other poems explore the roles of motherhood. She depicts speakers who regard children, or the absence of children, with detachment and pity for their unsettled lives, reinforcing underlying anxiety or association with death and suffering. This volume deals with darker themes such as domestic violence, neglect, and imagined realities, embodying various forms of motherhood and not a traditional depiction of gentleness and love. Much of the excitement and the controversy surrounding Millay focuses on her bisexuality and compelling voice for the early twentieth century’s New Woman. However, critical lenses historically discuss her poetic themes in connection with her biographical background. They leave unexplored gaps in their research by minimalizing or overlooking her poetic representations of alternate women’s roles. To enhance and expand the larger and perhaps limited literary discourse about motherhood in The Harp-Weaver and Other Poems, I analyze Millay’s portrayal of a haunting maternal presence throughout this unique volume.

From 1960 to Now: Beginning a Pen Pal Program Between Oregon and Russia
Zack Demars—Journalism, Political Science
Faculty Mentor(s): Peter Laufer
Session 3: Pens & Clicks are Mightier than the Sword

As the capstone of nearly a year of reporting by myself and 13 peers, I wrote two chapters of a forthcoming journalistic book on the ground in Rostov-on-Don and Moscow, Russia. In the majority of the book, my colleagues and I posed questions about human political and social nature as they related to an abortive pen pal project attempted between Roseburg, Oregon and then-Soviet Russia in 1960. In the final two chapters I authored, I sought to answer those questions by posing a new potential pen pal relationship to fourth-grade students and teachers. The youngsters offered a simple answer: that kids will be kids, in search of new friends. On a broader level, however, the teachers of today and students of the past tell us that, in the words of a sculpture found in a park on the Moskva River, children are the victims of adult vices. What we are left with is a narrative that traverses continents, transcends languages, and collapses decades. It leaves us to ask what the real differences are between seemingly disparate societies in terms of politics, propaganda and human relationships.
Comparison of Stop-Signal and Continuous Movement Reaction Stop Times to Measure Inhibitory Control

Dominique Denning—Human Physiology
Faculty Mentor(s): Nicole Swann, Kelsey Schultz
Session: Prerecorded Poster Presentation

For the past few decades, a major tool used to study inhibitory control has been the Stop-Signal Task (SST). This task gives an estimate of how well individuals can inhibit initiated movements. The speed of stopping can be estimated as the stop-signal reaction time, or SSRT. This task has proven useful, but there are limitations. For example, SSRT can only be estimated overall and not at the individual trial level. Additionally, the standard stop task involves stopping a planned movement, rather than stopping a movement which is already ongoing. To address these limitations, we have developed a new continuous movement stop task (CMST). This task directly measures the termination of an ongoing movement, allowing measurement of stopping speed at the individual trial level. It is currently unknown how stopping measures with this new task relates to SSRT measured with the conventional stop signal task. Our research addresses this question. Thirty participants will complete both the standard stopping task and our new continuous movement stopping task. We will compare stopping speed derived from our novel task to conventional SSRTs estimated by the standard stop task. The results of our study will help us better understand the relationship between the two tasks and also help establish the generalizability of inhibitory control.

Investigating the Effect of Second Language Learning on the Acquisition of a Third Language Rhythm Pattern

Carissa Diantoro—Linguistics
Faculty Mentor(s): Melissa Redford
Session: Prerecorded Poster Presentation

Language rhythm arises from the language-specific timing of syllables, dictated by the language-specific stress patterns. Previous studies show that speaking a language with a similar rhythm pattern to a target second language (L2) could aid in rhythm acquisition of that language. The question addressed in this study is whether training in an L2 could help the acquisition of a third language (L3). We hypothesize that compared to a monolingual speaker, an L2 learner will better acquire the rhythm patterns of an L3 if the L2 rhythm pattern is similar to that of the L3. We tested this hypothesis by asking whether English-speaking learners of French more quickly learn
an L3 language with a French-like rhythm pattern (i.e., Indonesian) than English speakers with no such L2 experience. The French learners and English-only speakers were recorded while repeating Indonesian sentences as well as French sentences. Their repetitions were acoustically segmented into consonant and vowel intervals, and several interval-based rhythm metrics were calculated. Preliminary findings, based on 5 second-year English learners of French and 5 monolingual English speakers, show little meaningful differences between the two groups in their production of Indonesian. Segmentation and analysis of the French sentences is on-going to ensure that there are at least difference between the groups in their production of French. Also, more study participants are being recruited to increase the sample sizes. Overall, the goal of the study is to better understand adult language acquisition, including the benefits of L2 learning.

Health Sciences ARC College Health Infographic Challenge
Adriana Diaz—Marine Biology
Co-Presenter(s): Brian Le, Kelly Marzolf, Mia Niccol
Faculty Mentor(s): Hannah Bishop
Session: Prerecorded Poster Presentation
The Health Sciences Academic Residence Community (HS ARC) is composed of students who are interested in exploring careers related to health and biomedical sciences. As part of the HS ARC seminar students learn about the current issues facing healthcare professionals through interviews and presentations from healthcare workers, UO researchers and public health officials. In Winter 2020, the UO Executive Prevention Team, composed of public health advocates from the UO Student Health Center, the Counseling Center, the PE and Rec Center as well as the Student Sustainability Center, shared with the students several real challenges they are currently facing concerning UO student health. To address these challenges, the HS ARC students researched each topic and created infographics with the goal of educating the university community and raising awareness about these issues. Presented here are three of these projects that had the following goals: (1) to increase student skills, awareness, and comfort in talking about mental health issues with peers, (2) to increase student awareness and use of “Protection Connection” safer sex supplies offered through the Student Health Center, and (3) to increase the number of first-year students enrolled in a PE class in Fall term 2020 by 20%. 
She’s Straight but She’s a Dyke: Sexuality Discourse on the Lesbian Lands
Gracia Dodds—Sociology, Womens’, Gender & Sexuality Studies
Faculty Mentor(s): Judith Raiskin
Session 1: Oh, the Humanities!

The 1970s and 80s held tremendous significance in the history of women’s intentional living communities. In Southern Oregon, lesbian lands popped up along the rural portions of the I-5 corridor, running from Eugene to Northern California. These lands served as women’s-only communities that were largely self-sufficient and created an entire subculture of a lesbian network that spanned across the United States. The mid-late 1970s were a period of revolution due to the uptick in second-wave feminism and the gay liberation movement, and these lands served as an intersection right in the middle of these two issues. Lesbian separatism was a radical and controversial political strategy that deserves more thought than it’s been given in the academic sphere.

In this research project, I focus on understanding how women on these lands talked about and understood sexuality and the identification markers of women who loved women. The queer community as we know it is ever-evolving in its understanding of acceptable linguistic terminology, and it is worth understanding where that language began. The Southern Oregon lesbian lands gives insight into one of the first geographic spaces where same-gender attraction could be freely and candidly discussed. I aim to understand and better categorize how sexuality was understood and what linguistic terms meant in the context of their era. In my initial research, I have found that the term ‘lesbian’ is better understood as a catch-all word for all of women’s same-gender attraction—meaning that includes multi-gender attracted women. This research will give better insight into how umbrella terms, like lesbian, affect who is included (and excluded) in both the 1970s and 80s, and in current times. This linguistic evolution will give important context to why certain terms are used and what the implications of those uses are.

Cost May Be a Barrier to Healthy Eating Depending on Education and Income for Rural Oregon Residents
Ashley Easter—Family and Human Services
Faculty Mentor(s): Elizabeth Budd
Session 5.5: McNair Scholars Presentations

Fruit and vegetable (F/V) intake reduces the risk for chronic diseases. Research indicates rural communities have limited access to F/V. Unknown is how perceived availability of F/V and cost as
barriers to healthy eating vary among rural residents. This study examined perceived availability of F/V and cost as barriers to healthy eating and how each varies by educational attainment and income among residents of a rural Oregon town. A total of 151 residents of a rural Oregon town completed an in-person survey (53.1±16.34 years; 63% female; 94% non-Hispanic white). Respondents indicated the extent to which they agreed that F/V were available in their town and whether cost made healthy eating hard for them. Four Chi-Squared Tests were conducted to determine whether these responses were associated with educational attainment or annual household income. There was no association between educational attainment or income and respondents’ perceived availability of F/V within their town. Cost as a barrier to healthy eating varied significantly by respondents’ educational attainment (X² (2, 150)= 7.90, Cramer’s = 0.23, p < 0.05) and income (X² (2, 147)= 25.85, Cramer’s V= 0.420, p < 0.05); such that those with less education and lower incomes were more likely to report that cost was a barrier to healthy eating. Study findings highlight sub-groups (low-income, low-education) among rural Oregon residents who may be at higher risk for experiencing cost barriers to healthy eating, informing future chronic disease prevention interventions.

A Study of Parathyroid Hormone Secretion Patterns on Bone Density in Hibernating Black Bears (Ursus americanus)
Ali Eggling—Biology and Environmental Science
Co-Presenter(s): Sera Kaplow
Session: Prerecorded Poster Presentation

Black Bears (Ursus americanus) have the unique ability to preserve bone structure and strength over the course of hibernation. In other hibernating mammals, decreased load on the skeleton causes a loss of bone density. Parathyroid hormone (PTH) is a regulatory hormone secreted by the parathyroid gland. PTH has been identified as an important regulator in bone metabolism, controlling the coupling of osteoblast and osteoclast production while also regulating blood calcium levels. Abnormal secretion of this hormone is linked to osteoporosis and Paget’s disease, both of which cause a weakening in bone density. Theoretical modeling of PTH secretion cycling suggests that this hormone allows bears to maintain bone strength during hibernation. Our objective is to identify PTH secretion cycles and analyze their correlation with predicted optimal interval release. We predict that Ursus americanus optimize PTH release cycles by closely adhering to a theorized six hour secretion cycle during hibernation. Additionally, we believe that their PTH secretion cycle during hibernation differs from non-hibernating months of the year. We intend to test this by collecting blood samples
from hibernating and non-hibernating populations of American black bears and measuring their serum PTH levels over both a daily period and throughout hibernation. This research is closely linked to medical research surrounding disuse osteoporosis, as well as environmental research concerned with identifying a baseline for the biological function of these bears moving into climate driven environmental pressures.

**The Role of Star Lore in Hunter-Gatherer Subsistence**

Caryssa Dieni—Anthropology (Archaeology)

Faculty Mentor(s): Michelle Scalise Sugiyama

Session: Prerecorded Poster Presentation

Ethnoastronomical research indicates that early agricultural societies used regular changes in the positions of asterisms to predict seasonal change and determine when to plant crops, and that this knowledge was encoded, in part, in myth. Our project investigates whether hunting-and-gathering peoples used the stars to predict seasonal availability of wild resources and, if so, whether narrative was used to transmit this knowledge. If so, we would expect star narratives to identify key stars/asterisms, associate them with seasonal change, and reference important seasonal resources (or environmental cues associated with their availability). To test this, we surveyed a cross-cultural sample of forager story collections for etiological star narratives: we found story collections for 74 different forager culture regions, 44 (59.5%) of which contained star narratives. These narratives were then coded for the presence of the predicted information. Results indicate that star narratives consistently (1) provide information that facilitates identification of targeted asterisms, and (2) associate these asterisms with seasonal change and key resources. However, the information that asterisms can be used to predict seasonal change and/or resource availability tends to be implicit; thus, for each region we checked the ethnographic record to ascertain whether asterisms were indeed used for these purposes. These complementary lines of evidence strongly suggest that star myths performed an ecological function in hunter-gatherer societies.
The Experience of Hyperobjects: From Percy Shelley to the 21st Century

Instagram User

Tucker Engle—English

Faculty Mentor(s): Forest Pyle

Session 1: Oh, the Humanities!

My project performs a comparative and analytical study of the romantic poetry of the 19th century, in particular that of Percy Bysshe Shelley, with contemporary literature and digital texts of today. Examples of contemporary texts my project will examine are the 2018 film Eighth Grade (dir. Bo Burnham), the 2017 poetry book Nature Poem by Tommy Pico, and Douglas Rushkoff’s 2013 work Present Shock: When Everything Happens Now, among others. I bring the cultural and literary criticism of the 20th century in as an intermediary between these two distinct literary eras and traditions. The project focuses on the work of the critical work of theorists such as Theodor Adorno, Walter Benjamin, Giles Deleuze, and Fredric Jameson to accomplish this end. Each of these moving parts is strung together by Timothy Morton’s concept of Hyperobjects and ecological thinking. My work shows how the internet and technologies which produce culture today have created manifested as Hyperobjects which greatly occupy the artistic bandwidth of the modern subject. The relationship with self and culture experienced by poets in the romantic period has erupted to exist everywhere in the Internet age. Through building on the work of the 20th century cultural theorists and Shelley’s poetry, I will begin to piece together what this all means for the 21st century reader and critic.

Stem Cell Research

Aryanna Entezari-Schweiger—Human Physiology

Session 5: The Bonds that Make Us

Imagine having the ability to transplant organs without rejection, create medications without requiring human trials and extend a humans life. Stem cells give researchers exactly that! These cells have proven their ability to cure the incurable, learn about the effects of drugs, and understand the developmental process of humans. Stem cells have already cured people with seemingly “incurable” medical conditions such as Alzeihmers, spinal cord injuries and diabetes so investment into stem cell research should be a research priority. Embryonic stem cells are harvested from undifferentiated embryos early in development and inserted into damaged tissues to differentiate into healthy, functioning cells. However, with the moral implications about embryonic stem cells, scientists have turned to reprogramming adult stem cells to further their research. Adult stem cells
can be harvested and reprogrammed into pluripotent stem cells and used for therapeutic purposes or medical research. With over 50 years of stem cell research, society should be seeing greater medical advancements. Unfortunately, stem cell research is not commonly funded by wealthy private institutions but rather from limited federal funds. Stem cell research is one of the youngest fields of research that has great promise of treatment and cure for the most common diseases in the world. Through continued intensive research, findings become more and more conclusive and have proved to have a widespread use. Stem cell research should be a front runner in medical laboratories in hopes of enhancing medical treatment.

**Neoliberalism Was Born and Will Die in Chile**

Derek Evans—Sociology and Psychology
Co-Presenter(s): Soren Scheu Porter Wheeler
Faculty Mentor(s): Matthias Vogel
Session 5: It’s a Small World After All

The research being presented will explore the effects, both adverse and beneficial, of the implementation of neoliberal policy and administration, by referring to and drawing from the progression of neoliberalism paired with the regression of socioeconomic equity in contemporary Chile. By delving into the subjects of sociology, cultural anthropology, and political science, we have developed a collection of information that supports and challenges our argument, that neoliberalism is damaging to the people of Chile. In analyzing the resources drawn from all of the subjects listed above, we will be focusing on the development of neoliberal policy, the sustaining of the neoliberal cycle, and the forms of exploitation paired with their damaging effects within society. Our core research focus, and argument, is that Chile and its people would benefit greatly from abandoning its current political regime and opting for a more socialized form of governance. In summary, neoliberal policy and administration have set Chile’s people behind in the world and is only serving to cement their position in the global south.
Propagating Putative Prion States in RNA Modifying Proteins

Jacob Evarts—Computer and Information Science
Faculty Mentor(s): David Garcia
Session: Prerecorded Poster Presentation

Prions have been closely associated with fatal neurodegenerative diseases such as mad cow disease. However, recent evidence suggests that prions provide an additional class of epigenetic mechanism that works at a rapid pace. From an evolutionary standpoint, the ability to change phenotypes without waiting for genetic variance would be hugely beneficial in a high stress environment. Using two known techniques for increasing de novo prion formation, protein overexpression and environmental stressor, we performed a large-scale screen across many RNA modifying enzymes in budding yeast. The growth dynamics presented here suggest that putative prion-state induction could be a widespread epigenetic mechanism across yeast.

A Qualitative Study of Accessibility, Quality, and Affordability of Healthy Foods Within a Rural Oregon Town

Emma Fallon—Family and Human Services
Faculty Mentor(s): Elizabeth Budd
Session: Prerecorded Poster Presentation


Introduction: Rural communities have limited access to healthy foods, which hinders healthy eating and increases risk for chronic diseases. The objectives of this study were to qualitatively assess: 1) access to local, healthy foods, and 2) experiences while participating in a produce buying club among residents of a rural Oregon town.

Method: Nine interviews and two focus groups were conducted, one focus group including members of the local produce buying club and one including non-members. All study participants were asked about prices of food within their town; accessibility and availability of fresh, healthy foods; eating and buying habits; and other food related questions. Buying club participants were asked questions about their experiences with the program and the food they receive. Interviews were transcribed and content analysis was conducted by two trained research assistants.

Results: Prominent themes in both of the focus groups included a lack of food options, high quality produce, and affordable food prices. Residents expressed a desire to eat healthier foods, but
cited access as a barrier. Buying club participants appreciated the service, but noted significant organizational challenges (e.g., non-user-friendly technology, lack of paid employees, not allowing SNAP benefits) that made broader participation more difficult.

Conclusion: Study findings show there is a need for interventions that improve access to healthy foods in rural communities, especially among low income residents. These data can inform recommendations on how to improve and expand the produce buying club in rural communities.

**Ecopoetry and Us**

Adeline Fecker—Biology  
Co-Presenter(s): Nolan Kriska, Hailey O'Donnell  
Faculty Mentor(s): Barbara Mossberg

Session 3: An Unprecedented Creative Work

“Ecopoetics” comes from the two Greek roots: oikos, meaning family, property and house; and poiesis, meaning to make. Together, we understand ecopoetry as home making; a process of creation and compassion and belonging. In this time of quarantine, home making means even more as our physical and mental ecosystem changes. Last year, our team presented environmental awareness poetry with help from Oregon’s poet laureate Kim Stafford. We worked hard to immerse our audience and instil memorable value. We did this through maximizing the use of space, language, visuals and physical objects. This year we seek to inspire others to express themselves so that their long term emotional growth continues through the tragedy of a pandemic. Through poetry, we truly harness mindfulness and we interrogate the meaning of what it means to be healthy. We hope you join us on this poetic journey and construction project for an ecosystem of healing.

**Visual Input Principally Drives Zebrafish Social Behavior**

Adeline Fecker—Biology  
Faculty Mentor(s): Phil Washbourne

Session 6: Interact & React

Disruption in social behavior is characteristic of Autism Spectrum Disorder, a neurodevelopmental disorder that appears in early childhood. Previous experiments in zebrafish showed lesioning of the ventral forebrain reduced social engagement. Results also suggested subjects must be able to see each other to socialize (Stednitz, 2018). Subsequent experiments demonstrated that zebrafish can
interact without vision, perhaps using their other senses like the water-pressure mechanosensory and olfactory system. Our study investigates how sensory modalities contribute to social behavior. Measuring behavior in an open field allows for quantification of complex social behaviors like orienting, following, and dispersing. We manipulated sensory modalities by recording behavior in the dark and lateral line ablated conditions. Our results show the loss of the visual input causes a 20% reduction in orienting behaviors but no reduction in following behavior. When we ablate visual input and mechanosensation, we do not observe a reduction in orienting or following behaviors. Another outstanding question is which brain regions are activated during social behavior by the contributing senses. We use whole brain immunolabeling with neuronal activity markers as an unbiased approach to identifying and quantifying active brain regions in social and alone conditions. We found the anterior dorsal pallium of the forebrain is significantly more active in social than alone conditions. Further analysis will reveal regions of activity due to manipulated sensory modalities. Our study of behavior and corresponding brain activity sheds light on the importance of sensory modalities and the anterior dorsal pallium in social behavior of zebrafish.

**Development of a new live imaging technique to uncover the mechanisms of heat-induced male infertility**

Cailan Feingold—Biology

Faculty Mentor(s): Diana Libuda, Cori Cahoon

Session 3: The Substance of Us

Male infertility affects approximately one-third of couples who are unable to conceive. Exposing mammalian spermatogenesis to elevated temperatures causes 40% of primary male infertility cases; however, the mechanisms behind this heat-induced male-specific infertility are largely unknown. Similar to mammals, Caenorhabditis elegans also display heat-induced sperm-specific infertility. Following heat-stress, C. elegans spermatocytes have increases in DNA damage that correlate with a premature loss of chromosome structures essential for meiotic chromosome segregation. Using live imaging, I will examine the dynamic relationship between this heat-induced DNA-damage and disassembly of meiotic chromosome structures in spermatocytes. To circumvent immobilization issues with existing current live imaging techniques, I am developing and implementing a new conditional, immobilization method for live imaging fluorescently tagged proteins in both sexes of intact worms. This novel method utilizes the auxin-inducible degron system, which targets degradation of degron tagged proteins in the presence of auxin, and thus can be used to specifically
degrade genes that cause severe paralysis. Based on the gene location and predicted function, I selected three genes to degron tag (unc-104, unc-52, unc-18). Using fertility assays, I confirmed that loss of these three gene products does not interfere with meiosis or fertility. Overall, this novel live imaging system will allow for conditional paralysis of living worms during live imaging experiments, enabling us to examine the dynamics of the heat-induced defects during spermatogenesis.

Population Dynamics in Endemic Serpentine Grassland Plant Communities Amid Anthropogenic Environmental Change

Michaela Fishback—Environmental Science
Faculty Mentor(s): Eliza Hernández, Lauren Hallett
Session 6: The Earth, Sky & Everything In Between

Rising rates of nitrogen deposition are threatening the stability of the serpentine grassland ecosystem around the California Bay Area by changing the soil to be a more accessible habitat for invasive nonnative species. The recent increase in nitrogen is largely attributed to air pollution from automotive traffic throughout the region. This area hosts 10% of California’s endemic species in only 1% of the state’s land, making it a critical area for ecological conservation efforts. The plant species native to this area have persisted by inhabiting the characteristically low-resource soil of the serpentine grasslands, giving them competitive advantage over invasive species that require higher resource levels. To study the variation in reproductive success of these plants under different environmental constraints typical of polluted serpentine grasslands, I worked on a greenhouse experiment using a nitrogen-water resource gradient in serpentine-amended soil. Plantago erecta, a native, resource-conservative herb, was sown in competition with Bromus hordeaceus, a nonnative, resource-acquisitive grass. My preliminary findings show that Plantago produces the most seeds when there is no competition from Bromus, low availability of water, and high levels of nitrogen. With low Bromus competition, water availability had less impact on Plantago, while increased nitrogen continued to increase Plantago seed production, suggesting that Plantago may not inhabit a low-nitrogen niche, but potentially a low-water niche. However, with high Bromus competition, Plantago seed production was consistently low regardless of nitrogen and water treatments, suggesting that Bromus competition was too great for the availability of resources to support the population of Plantago.
The Relationship Between Cholinergic and Noradrenergic Activity and Behavioral State

John Francis—Biology

Faculty Mentor(s): Lindsay Collins, David McCormick

Session 5: The Wonders of the Brain

Observable changes in behavior result from complex network activity within the brain. Precise excitation and inhibition of neurons is partially regulated via neuromodulatory systems which regulate the behavior of other neurons, thereby producing observable changes in behavior. I plan to investigate the relationship between activity of two neuromodulatory cell types, cholinergic and noradrenergic neurons, and observable behavior in mice. Acetylcholine (ACh) and noradrenaline (NA) are produced and released by cholinergic and noradrenergic neurons, respectively, and have broad functions throughout the central nervous system. For instance, both ACh and NA neurons are more likely to fire during high arousal state, a physiological measure of alertness and attentiveness which is related to external metrics of brain state, like pupil diameter. My project will investigate the relationship between activity of ACh and NA neurons and arousal-linked behavior in three ways: 1) we will confirm the relationship between ACh and NA activity and arousal previously demonstrated in our lab and expand on this literature by including other behavioral measures such as whisker pad motion and tail motion in our analyses, 2) determine whether changes in ACh and NA activity precede or follow the onset of behavioral events, 3) determine the extent to which ACh or NA provides synchronous signals across the brain during arousal state fluctuations. Using systems neuroscience techniques such as intracranial viral injections, immunohistochemistry, and 2-photon microscopy, this project will further our current understanding of the relationship between ACh and NA activity and observable patterns of behavior in mice.
Protocols for Pollinator Management and “Pollinator Friendly” Certification on an Organic Blueberry Farm.

Lauren Frantz—Environmental Science

Co-Presenter(s): Dan Liu, Gianni La Carrubba, Danielle Maves, Will Northington, Rachel Rosé, Joshaniel Tan

Faculty Mentor(s): Holly Moulton, Peg Boulay

Session 4: Environmental Leaders Program

Pollinators play a vital role in natural systems, but are also a fundamental necessity in agriculture across the world. Native pollinators, specifically, are important for maintaining a balanced ecosystem and sustaining genetic diversity in plants. Whitewater Ranch, an organic blueberry farm located in Leaburg, Oregon, depends on pollinators to increase production and health of the blueberry plants. We aim to develop a pollinator revitalization plan that bolsters native pollinators through the planting of native shrubs and forbs and the establishment of forage and habitat; additionally, we will recommend a pollinator certification that benefits flora and fauna as well as the ranch’s status as “pollinator friendly.” Through all of this, we must be mindful not to provide habitat to the invasive spotted-wing drosophila (Drosophila suzukii). We will adapt previous monitoring plans from past Riparian Restoration teams to focus on native pollinator conservation by analyzing nectar and pollen habitat and collecting data on native plant species, spotted-wing drosophila populations, and ground coverage of Whitewater Ranch using Google Earth. We will explore potential pollinator rehabilitation procedures through intensive literature review and revision of past Environmental Leadership Program (ELP) team’s monitoring regimes. Through a balanced approach of pest management and native plantings, we hope to see a stronger pollinator community. Establishing a protocol for native pollinator management at Whitewater Ranch will not only increase their blueberry yields, but will be widely applicable to other organic farms in the Pacific Northwest.

The Evolution of Camelids in the Pacific Northwest in Response to the Grassland Expansion

Eleanor Froehlich—Earth Sciences

Faculty Mentor(s): Samantha Hopkins, Dana Reuter

Session 6: The Earth, Sky & Everything In Between

Camelids, the artiodactyl group including camels, llamas, and alpacas, evolved in North America during the Eocene. The first camelids were smaller than a goat; however, some extinct genera were
giraffe sized. Most studies of North American camelids focus on fossils found in the Great Plains and as a result little is known about how camelid diversity responded to climate and vegetation changes in the Pacific Northwest.

Horses are a well-studied example of ungulate responses to climactic changes and grassland expansion. They show a general increase in body size that is concurrent with their switch from browsing to mixed feeding and eventually to the grazing we see in modern examples. I suspect that as the environment in the Pacific Northwest dried out, camelids also increased in size due to the grassland expansion. I also believe that camelids incorporated more grasses into their diet. I tested this by documenting camelid diversity in the Pacific Northwest, specifically the states of Idaho, Oregon, and Washington, using the published fossil occurrences on the Paleobiology Database. Body size data was estimated using tooth measurements collected on the Fossilworks database. Camelid species were categorized according to two ecological parameters, body size and diet. I used these to track camelid evolution through time. I found that although body mass does increase there were still small browsing lineages late into the Miocene. This study provides a broader biogeographical picture of how grassland expansion influenced camelid evolution and ecology.

**Silent Slaves: Reconstructing slave perspectives on the Grave Stele of Hegeso**

Alexis Garcia—Art History and Cultural Anthropology

Session 4: Cultural Considerations–The Other

The Grave Stele of Hegeso (400 BCE) depicts a 'mistress and maid' scene and preserves a valuable insight into elite iconography and exploring the experience of wealthy Athenian women in their social roles and domestic spaces. The slave attendant, if discussed at length, primarily functions for academia as a method of contrast and comparison to her elite master. While this is a valuable interpretation for studies of gender and class in fifth century Athens, more can be done in regard to examining the slave attendant on the stele, and as a byproduct, examining slave figures in all Greek art. Slaves made up a sizeable portion of fifth century Athenian society, and were present in both elite and poor households. However, due to a lack of material and literary evidence, the field of classics has not engaged with exploring the concept of Greek slavery to its full extent. In addition, what little does remain to modern scholars was commissioned or written by elite voices, who were biased against slaves. This paper explores potential reconstructions for slave perspectives and narratives on the Grave Stele of Hegeso by drawing upon the trope of the Good Slave and Bad Slave in Athenian
theater and Homeric epic. This paper also discusses the relationships between masters and slaves, household slave dynamics, and what constitutes the idealized Athenian slave.

**Interactive Effects of Social Support and Self-Complexity on Depressive Symptoms in Adolescent Girls**

Theemeshni Govender—Psychology

Faculty Mentor(s): Jennifer Pfeifer, Marjolein Barendse

Session: Prerecorded Poster Presentation

The prevalence of depressive episodes has been steadily increasing over the past few years, with adolescent girls being twice as likely to report depressive symptoms or present a clinical diagnosis of depression in comparison to adolescent boys. This study uses data from an ongoing longitudinal project, TAG (Transitions in Adolescent Girls) to examine the effects of social support (i.e. friends versus family) and self-complexity on depressive symptoms in a sample of adolescent girls (N = 174) aged 10 to 13. We believe that a larger decrease in family support (and to a lesser extent friend support) and a large change in self-complexity between waves 1 and 2 will predict a greater increase in depressive symptoms, while controlling for depressive symptoms at wave 1. There will also be a significant interaction, such that decreasing social support (both friends and family) and a large change in self-complexity will predict increased risk for depressive symptoms. However, we predict that there will be a larger effect size when looking at the interaction with family support in comparison to friend support. Exploratory analyses will be used to examine whether positive and negative self-complexity have differential effects on depressive symptoms and the effect ethnicity/race as well as socioeconomic status may have on these interactions. Looking at the intersection of these combined frameworks can provide a better understanding of risk and protective factors for specifically adolescent girls in relation to the development of depressive symptoms and contribute to better serving them.
Differences in respiratory-swallowing patterns across eating conditions among healthy older adults

Eric Graboyes—Communication science and disorders
Co-Presenter(s): Carissa Hartmann, Natalie Hanson
Faculty Mentor(s): Samantha Shune
Session: Prerecorded Poster Presentation

Safe and efficient eating relies on the precise coordination of the respiratory and swallowing systems. It is necessary for the airway to be briefly closed during the swallow itself in order to prevent food/liquid from entering the lungs (aspiration). Previous research has suggested that an exhale before and after the swallow is the most protective pattern. Yet, little is known about the effects of aging and sensory environment on these patterns. The purpose of the current study was to characterize the pre- and post-swallow respiratory patterns in older adults across different eating environments. A total of 18 older adults participated (age range 65-90; 11 females). Participants consumed water (via straw) and applesauce (via spoon) under three different conditions: typical self-feeding, assisted feeding (being fed by someone else), and sensory loss assisted feeding (being fed by someone else while blindfolded). Across all three conditions, exhalations prior to the swallow were commonly observed; 58-61% of swallows were preceded by an exhale across the three conditions. Inhales were most commonly observed after the swallow, with a trend for increasing percentages given increased sensory loss (59% self-feeding, 64%, assisted feeding, 71% blindfolded assisted feeding). Future analyses will continue to explore the differences across conditions within the individual participants and differences across the consistency types (i.e., water—drink and applesauce—eat). These findings preliminarily support that various factors can influence respiratory-swallow coordination, potentially increasing risk during eating for older adults.
Redefining Menstruation: Awareness through an event that creates a tangible reusable menstrual pad while facilitating conversation around stigma, menstruation, and the life cycle of period products.

Abigail Gravatt—Environmental Science

Co-Presenter(s): Olivia Holah, Payton Lagomarsino, Abigail Daffner

Faculty Mentor(s): Taylor McHolm

Session 1: Environmental Leaders ARC

This project explores and redefines what it means to be a person who menstruates in a society believing that only women menstruate; aligned with a focus on non-reusable menstrual products advertised to women. Through a virtual workshop we will demonstrate that to break down stigma revolving around those who menstruate and single use products there needs to be education and active engagement with the creation of reusable products. Those who menstruate cannot ignore their periods making a zero waste lifestyle challenging. How do we shift from a dependence on single use products to recognizing reusable products? First, education is necessary to deconstruct both the stigma around menstruation, and the cleanliness of reusable products. Second is a tangible reusable menstrual product that will serve as a tool to get people closer to our goal of destigmatizing the uncleanliness associated with menstruation. To achieve these goals, we will create a virtual workshop. We will advertise this through our website and Instagram; increasing our target audience. Putting our video online for the public to view will allow us to reach hundreds of individuals. Out of this digital event we will record information and data on participation, feedback via comments and outreach from viewers, and tangible products created. Ultimately, our virtual workshop will serve as a platform for discussion and inclusivity around reusable menstrual products.

Understanding microbial modulation of neuronal morphology in zebrafish

Max Grice—Computer Science

Faculty Mentor(s): Judith Eisen, Joseph Bruckner

Session 4: Earning your Stripes

Increasing evidence supports a role for the intestinal microbiota in modulating host neurodevelopment and behavior, including complex social behaviors. Recent research has also linked the microbiota to neurological disorders including autism spectrum disorder (ASD), depression, Alzheimer’s Disease, and Parkinson’s Disease. However, the mechanisms of these interactions
between the host-associated microbiota and neurodevelopment remain unclear. Using zebrafish raised in the absence of the microbiota, or germ-free (GF), our group has found that the microbiota modulates zebrafish social behavior. Normal social behavior requires neurons in a region of the brain called the ventral telencephalon (vTel). Therefore, we hypothesized that the microbiota may modulate social behavior by altering development of vTel neurons, resulting in changes in vTel neuron morphology. To measure morphology of vTel neurons, we combined sparse mosaic labelling and high-resolution confocal microscopy to image individual vTel neurons. We used Imaris software to segment individual neurons and extract morphological measurements and adapted several software packages to warp and register individual neurons to an average reference brain in each condition. We found that vTel neurons from GF fish are significantly more complex than vTel neurons from their conventionally raised siblings. Together, this work suggests that the microbiota may modulate social behavior by restraining complexity of ventral forebrain neurons. Understanding the specific mechanism through which the microbiota normally modulates social behavior will allow us to better understand microbial modulation of neurodevelopment and therefore construct more effective treatments for neurological disorders that may result from dysbiosis of the host-associated microbiota.

Time-SPIDER: Characterizing the Electric Field of Pulsed LASERs

Jeremy Guenza-Marcus—Physics and Math
Faculty Mentor(s): Brian Smith
Session 1: It’s a Science Thing

Quantifying precise measurements is critical in any field. Our research focuses on advancing quantum optical methods in the study of metrology. SPIDER is an interferometric approach to characterizing (mathematically describing) ultrashort laser pulses in the frequency domain. Our research aims to develop a sister method to the accepted SPIDER approach, dubbed Time-SPIDER. Its purpose is to use the same approach as SPIDER, but rather in the temporal domain. The procedure is to first develop the theoretical framework, and then set up the experiment. At the moment, our work approaches the issue from a purely theoretical perspective. We find that the Time-SPIDER method is useful as a direct measurement technique for non-ultrashort pulses. Many industry-standard interferometers require an iterative approach to pulse characterization, which may not be well-calibrated if the pulse is not ultrashort. Time-SPIDER solves both of these issues. If we are able to move past the theory and create a working Time-SPIDER, it would be possible to continue with other projects in the lab that may require such set-up. In the grand scheme, Time-SPIDER is a step towards continuing the study of metrology, along with quantum optics itself.
Biomagnification and Bioaccumulation of Pollutants and How They Disproportionately Impact the People of “Cancer Alley”

Abigail Gyetvai—Environmental Studies, Political Science
Faculty Mentor(s): Peter Walker

Session 4: Preserving Mother Earth

This honors thesis examines the environmental, sociopolitical, and socio-economical aspects of Cancer Alley, Louisiana, United States of America. Cancer Alley is a name dubbed to an eighty-five-mile-long corridor in Louisiana that is dotted with petrochemical plants that continuously poison its residents. The people living in this area are primarily lower-income, people of color who disproportionately face the full force of environmental ills that the petrochemical factories bring. The case of Cancer Alley is layered and delves into not only environmental issues—such as pollution and how various chemicals can move throughout the body, but it also deals with human rights issues and how the disempowered and disenfranchised residents in the area are being exploited due to their powerlessness. Various chemical pollutants have been emitted into the Cancer Alley air, land, and water, contributing to the worsening conditions of the area. The primary findings from this research have been that the more marginalized the group living within Cancer Alley, the more likely they are to be at risk for cancer and various other diseases. This honors thesis concludes with the application of my proposed solutions to alleviating environmental justice legislative issues surrounding Cancer Alley.

Rajneeshpuram and Media Outcomes

Alexander Har—Journalism and Political Science
Faculty Mentor(s): Dean Mundy

Session 3: Pens & Clicks are Mightier than a Sword...

Rajneeshpuram was a commune in central Oregon that was supported by the followers of Bhagwan Shree Rajneesh, an Indian guru practicing experimental therapy and a quasi-religion. The commune quickly came into conflict with the nearby retirement town, Antelope, and later the greater Oregon community of Wasco County, state courts, federal courts, and opposition organizations. The Rajneesh movement dominated the news, and the constant updates and statements put out by the Rajneesh press office, newspapers, and spokespersons meant the Rajneesh were covered constantly in the news. There is evidence that suggests that the commune acted purposefully to attract news for strategic gains. My central research question is: how did Rajneeshpuram use strategic
communication to garner free publicity and what was the role of sensationalism in attracting free news coverage?

Using UO’s Special Collections Rajneesh Archive, I plan to analyze news stories in the form of newspaper clippings, magazines, notes from reporters covering Rajneeshpuram, Rajneesh ephemera, manuals, brochures, and any current Rajneeshee literature. I plan to look specifically for new stories that were sensationalist in coverage by analyzing headlines, bylines, leads of articles, and the language surrounding the commune. I also plan to analyze new stories that were made sensationalist by the members of the Rajneesh movement through sensationalist tactics by analyzing the language and content used by the Rajneesh channels. I expect to conclude that the commune Rajneeshpuram wanted as much coverage as possible and learn more about the tactics used at Rajneeshpuram to gain free publicity.

The Role of Women in a Migrant Farmer-Worker Lifestyle

Kylie Harchut—Political Science

Session: Prerecorded Poster Presentation

Women that live a migrant farm-worker lifestyle are expected to have numerous responsibilities. Moreover, in this culture, women get held to higher expectations and duties than men. The woman on the poster is supposed to symbolize a mother that lives this type of life. On the outside, the woman looks put together, picking grapes. However, deep down, the woman is struggling with having to carry the weight of having a physically strenuous job and keeping her house in order. On the side of the woman, there are cleaning and cooking supplies. The supplies symbolize that even when a woman is out in the fields working, she still is expected to continue to work when she comes home through cooking, cleaning, and taking care of the family. In the United States, eight percent of farmworkers are men under thirty-one. However, twenty percent of women that work in the fields contain the same responsibility as men. But with this job, women also have the responsibility to maintain the well-being of their families.
Colorado’s Government and Public Health Response to COVID-19
Amelia Hardeman—Human Physiology
Co-Presenter(s): Myriah Kunipo-Aguirre, Hannah Heskin, Angelique Wallman
Faculty Mentor(s): Kristin Yarris
Session 2: US Outbreak Breakout—COVID-19 Research
I am currently enrolled in the course titled Field Experience: Global Crisis with Dr. Kristin Yarris. This research project aims to track the response of the State of Colorado through the state’s government and local Public Health perspective. I will track and analyze the government’s response through Gov. Jared Polis’ policies and the Colorado Department of Public Health and Environment’s data and recommendations, perspectives from frontline health care workers, and the public’s response to these policies and recommendations ultimately leading to the amount of cases and deaths. I will have direct conversations with front line health care workers discussing their perspectives on the state’s response as well as the public's response. All data and interviews will be compiled into a Podcast to share the information and perspectives on Colorado's response to COVID-19 as a whole.

Characterization of the Cohesin Complex in the Model Organism Neurospora crassa
Chaney Hart—Biology
Faculty Mentor(s): Eric Selker, Ken-ichi Noma
Session: Prerecorded Poster Presentation
The cohesin complex is a conserved protein complex that plays an important role in multiple aspects of genomic function. Of particular interest is cohesin’s demonstrated role in influencing 3D genomic structure. While previous work has identified basic elements of 3D genomic structure in the model organism Neurospora crassa, the undermining factors that contribute to these structures are unclear. We hypothesize that the cohesin complex may interact with heterochromatin to shape genomic architecture in N. crassa. Features of the cohesin complex such as where it is recruited, its contributions to gene regulation and its presence at topologically associated domains are widely divergent amongst model organisms in which it has been studied, making it important to establish basic features of this complex in N. crassa. In this study I took the first steps towards characterizing the cohesin complex in N. crassa by showing that cohesin shares features with well characterized yeast species such as enrichment over 3’ untranslated regions and intergenic regions of convergent genes across the genome. I also developed a strain of N. crassa that has a mutation in cohesin
component RAD21 which leads to temperature-sensitive lethality. My findings and the strains I generated will be useful for further characterization of the cohesin complex in *N. crassa* and for exploration of the role this complex plays in genomic structure and function.

**Differences in Old and Young Patient-Derived Myotubes Response to Amino Acid Stimulation**

Jeanette Helgerson—Human Physiology

Faculty Mentor(s): Hans Dreyer, Doug Foote

Session 3: The Substance of Us

Human muscle cell growth is regulated through the protein complex mTOR, the mammalian target of rapamycin, which is activated by nutrients such as amino acids and growth factors such as insulin. We wanted to know if there were differences in how old and young patient derived muscle cells responded to amino acids, particularly how the mTOR cascade was affected. The mTOR response to amino acids has been studied in many types of cells, but this study’s approach using patient derived human skeletal muscle cells to analyze mTOR response has yet to be explored. Using purified samples of these patient derived cells, a mixture of amino acids (LRK) that are known to activate mTOR were given, and the cellular signaling of certain proteins were quantified to measure mTOR activation. Both young and old patient derived cells were given these conditions and the averages of the groups were compared. This research is currently ongoing, so not all of the data is available yet. Knowing the differences in how young and old patient derived cells respond to amino acids is important because it could help alleviate muscle loss. Muscle loss shortens lifespans and diminishes the quality of life for many people, so understanding the underlying mechanisms of how to gain muscle back after the aging process, injury, or surgery, is imperative.

**Novel Coronavirus Outbreak and State Level Response, a Case Study of Oregon**

Hannah Heskin—Human Physiology

Co-Presenter(s): Myriah Kunipo-Aguirre, Amelia Hardeman, Angelique Wallmann

Faculty Mentor(s): Kristin Yarris

Session 2: US Outbreak Breakout—COVID-19 Research

As a student in INTL410: Global Health Crisis, I want to present a case study of Oregon during the COVID-19 pandemic. I will be investigating, what is the epidemiological profile of the novel
coronavirus outbreak in Oregon and what has been the state-level response to the COVID-19 pandemic? Epidemiological data displaying the prevalence and location of COVID-19 cases in Oregon will be compiled from several public health resources. Additionally, a timeline of the governor’s response to the coronavirus pandemic will be constructed with information from public records and published news sources. Specifically, policies regarding social distancing measures, collaboration with public health authorities, obtainment and distribution of resources, economic relief legislation, and future plans to lift social distancing restrictions will be investigated. An Instagram account (@covid19_in_oregon) will be used to track the research from this project and present it to a wider audience. This analysis of governor driven response to the novel coronavirus outbreak in Oregon is significant because it outlines policy successes and failures that could be considered for the next public health crisis.

Age-related and culturally specific causes of depression underdiagnosis among older adults: Results from the Study on global AGEing and adult health

Joan Hicks—Psychology
Faculty Mentor(s): Josh Snodgrass

Session 5.5: McNair Scholars Presentations

Cultural competency should be prioritized when dealing with any issue surrounding mental health. Older adult populations are growing rapidly in lower and middle-income countries (LMICs) and depression is a neglected form of disability that is especially pronounced in older adults. The current study analyzes data among older adults collected in Wave 1 of the World Health Organization’s Study on global AGEing and adult health (SAGE) in order to examine the underlying factors related to underdiagnosis of depression in Ghana, Mexico, India, China, South Africa, and Russia. These countries were compared to observe the societal and individual influences that lead to patterns of depression diagnosis. We test two hypotheses: 1) lower rates of underdiagnosis of depression being associated with easily accessed and utilized healthcare facilities; and 2) the underdiagnosis of depression being associated with higher levels of stigma. Functional quality of life was a consistent predictor of the underdiagnosis of depression in all countries tested (B’s = 0.02 to 0.04, p’s < 0.001). Other predictors of underdiagnosis varied greatly by country but include age (p’s < 0.05 in China and Russia), gender (p’s< 0.05 in China and India), income (p’s < 0.05 in China and India), memory status (p’s < 0.05 in China and India), healthcare quality (p’s < 0.05 in India and Ghana), social cohesion (p’s< 0.05 in Mexico, India, and Ghana), and stigma (p’s < 0.05 in India and Ghana). Both age-related
stresses and cultural differences should be taken into account when addressing the underdiagnosis and, therefore, treatment of depression.

**Linking mycorrhizal fungal diversity with pathogen abundances in a vineyard agroecosystem.**

Emily Hill—Biology  
Faculty Mentor(s): Krista McGuire

Soil microbes are becoming increasingly recognized as significant contributors to agroecosystem processes due to their functions as decomposers, mutualists and pathogens. Monoculture cropping systems are known to harbor high abundances of microbial pathogens specific to the species of plants or animals in cultivation; for this reason, pesticides and fungicides are widely applied across all farming systems, including those that practice sustainable management techniques. However, application of fungicides also negatively affects mutualists such as arbuscular mycorrhizal (AM) fungi, which provide beneficial ecosystem services such as soil stability, nutrient cycling and amelioration of biotic and abiotic stressors. Despite the ecological and economic stress caused by the widespread application of pesticides and fungicides, the effects of these agricultural management practices on soil microbial communities remain largely uncharacterized. Here, we aim to understand how various ecological and environmental factors influence shifts in soil microbial community composition and pathogen abundance in vineyard agroecosystems across Oregon. Viticulture is a perennial crop system in which Vitis vinifera is cultivated for wine production. In Oregon, there is a long history of different viticultural practices implemented across distinct growing regions delineated by climate, soils and topography. Vitis plants are highly reliant on AM fungi, which provide both nutritional and nonnutritional benefits to their hosts including uptake and transfer of limiting nutrients and increased resistance to pathogens. Ecological patterns are thus expected to emerge between AM fungal composition and diversity, and the abundances of soilborne pathogens specific to Vitis plants. This project will elucidate these ecological relationships across growing regions and management practices by comparing the AM fungal composition with the abundances of microbial pathogens.
Reinforcing Dignity: Clinic Organizers at the Fred Hampton Memorial People’s Health Clinic in Portland

Daniel Hinckley—History
Faculty Mentor(s): Curtis Austin, Ocean Howell
Session: Prerecorded Poster Presentation

In the 1960s, healthcare for minorities in the US was characterized by mistreatment and restricted access. Patients were not being treated with dignity. In a neighborhood Portland, the Albina district, the Portland Black Panther Party (BPP) looked to solve the problems related to mistreatment and lack of access to healthcare that residents faced. To address these health disparities, the Portland BPP founded the Fred Hampton Memorial Peoples Health Clinic, named after Fred Hampton, a 21-year-old leader of the Illinois BPP who had been killed by police. My research aim to uncover the goals of the clinic organizers. Using historical research methods, my paper relies heavily on primary source archival materials from local newspapers and interviews with clinic organizers. I consulted scholarly articles, JSTOR, American Medical Association archives, a Portland newspaper database, and census data. I argue that the clinic organizers’ goal was to reinforce a sense of dignity for the people in Albina through its social health approach that included creating a positive environment, treatment of patients, engaging the community, and promotion of community education. This body of information offers a valuable insight into the unique impact and goals of the Portland BPP clinic organizers in Albina. Shedding light on effective strategies that worked to address complex racial disparities in health.

Using Unity to obtain Eye-tracking data from the VIVE Pro Eye headset

Zachary Hoffman—Human Physiology
Faculty Mentor(s): Kate Spitzley
Session: Prerecorded Poster Presentation

Recent developments in Virtual Reality (VR) technology have created new opportunities for the usage of VR in biomechanics research. Current VR devices allow for the tracking of head and limb movements through sensors on the head mounted display (HMD) and handheld or attachable controllers. VR headsets with built in eye-tracking cameras are a relatively new technology, and little research has been conducted on manipulating a virtual environment to analyze a subject’s gaze. The aims of this project were to create a virtual test environment with a moving object, and to have an eye-tracking code that would compare the gaze of the subject to the position of the moving object.
at each frame. An HTC VIVE Pro Eye headset was used, and a virtual environment consisting of a gray room with a ball moving along one wall was created through Unity. At each frame, a text file (readable in Excel) was updated with the time since program initiation, the gaze direction of the subject, the position of the ball, and the difference between the position of the ball and the gaze position. The aims of this project were successfully completed. The virtual environment was successfully created and we were able to export data comparing subject gaze position and ball position. This work provides evidence that this technology can be used for future research in VR eye-tracking.

**Longitudinal Analysis of Major Video Streaming Services in the US**

Donna Hooshmand—Computer Science, Mathematics

Faculty Mentor(s): Reza Rejaie

Session: Prerecorded Poster Presentation

This study relies on several years of NETFLOW data for exchanged traffic between the University of Oregon network (UOnet) and the Internet to perform a longitudinal analysis on the characteristics of popular Internet Applications. We develop techniques to identify connections related to video streams from their NETFLOW records. We then investigate how the fraction of UOnet traffic associated with (i.e. popularity of) major video streaming applications (e.g. YouTube, Netflix, Amazon Prime), the basic characteristics of their video (e.g. bandwidth and duration) and their delivery mechanism have evolved over the past few years. Our empirical findings will offer valuable insights into important practical aspects of video streams services and their evolution over time.

**Health disparities faced by female caregivers when caring for older adults and children in middle-income countries**

Janae Houston—General Science

Faculty Mentor(s): Josh Snodgrass

Session: Prerecorded Poster Presentation

Within the middle-income countries the older adult demographic increasing. Addressing the health of this population is a public health priority, given that older adults in middle income nations represent a significant portion of the world’s population. There is a large burden on caregivers in middle-income countries, so there needs to be further exploration of the relationship between caregiving and poor health. We evaluated female caregivers between the age of 18 and 114 (N = 15,975) responsible for
children or older adults in Ghana, South Africa, Mexico, Russia, and India. We tested the following hypotheses: 1) Caregiving will be associated with overall poorer health in all five countries; 2) difficulties associated with caregiving will be affiliated with overall worse self-reported health due to less sustainable income, living in rural areas, and not being married. We found that between 4.0 and 14.3 percent of the people in each country are caregivers. In most countries caregiving was associated with poor health, except Mexico (where caregiving was not associated with health) and Russia (where caregiving was positively associated with health; t’s = -1.74 to 1.90, p’s = .03 to .26). Reported difficulties associated with caregiving were associated with poor health in caregivers in Ghana, India, and Russia (Î²’s = .09 to .27, p’s = < .001 to .45). It was shown that having less wealth was a significant factor associated with poor health in caregivers across all nations except Ghana (Î²’s = -0.26 to -0.06, p’s = .01 to .03). Understanding the relationship between caregiver difficulties and health across nations can improve the outcomes for this population globally.

The under-diagnosis of diabetes and its associated risk factors in older adults from Mexico, China, and South Africa

Mimi Hudson—Human Physiology

Faculty Mentor(s): Josh Snodgrass, Alicia DeLouize

Session: Prerecorded Poster Presentation

Underdiagnosis of diabetes and impaired glucose tolerance is a problem in many parts of the world, despite the well-documented negative effects on health. The longer that diabetes goes undiagnosed, the worse these effects are and the more difficult they become to treat. Previous studies have shown that the increasing rates of type 2 diabetes globally are closely related to changes in lifestyle and socioeconomic status. It is those in poorer countries, along with the minority and disadvantaged groups in wealthy countries, that face the biggest risk. Although there is much information available on the increasing prevalence of diabetes, many studies fail to report the underdiagnosis rate (the rate of self-reported diabetes compared to the actual rate of diabetes, as measured by blood measures such as glucose or glycated hemoglobin [HbA1c]) of diabetes. Biomarker and survey data on older adults (age ≥ 50) living in Mexico from Wave 1 of the World Health Organization’s Study on global AGEing and adult health (SAGE; N = 12,945) were used to compare self-report diagnosed diabetes to measured HbA1c level available from dried blood spot samples. Results indicate that 7%, 10%, and 77% of participants had diabetes (HbA1c ≥ 6.5%) yet had not been previously clinically diagnosed in China, Mexico, and South Africa respectively. Yet, 94% to 98% of people that had diabetes without a diagnosis reported receiving healthcare the last time they needed it. In all three countries, people...
that had diabetes without a diagnosis were more likely to rate their health as better than people with diabetes and a diagnosis (b’s = 0.45 to 0.80, p’s < .05). In China and South Africa, people with smaller amounts of wealth (b’s = -1.18 to -0.96, p’s < .001) and people living in rural areas (b’s = 0.57 to 0.78, p’s < .001) were more likely to lack a diagnosis for diabetes. Other predictors include being male in South Africa (b = 0.34, p = .02) and being younger in China (b = -.04, p < .001)

Electrophysiological Patterns of Skilled Motor Movements
Vanessa Hufnagel—Biology
Faculty Mentor(s): Nicole Swann, Alexander Rockhill
Session 5: The Wonders of the Brain
Skill implies a certain level of expertise when performing a voluntary movement. Research has identified that skilled movement is characterized by decreased cortical activation in the motor cortex and decreased coherence between neuronal populations. In a subset of the population, over-training can lead to the degradation of motor pathways of a specific skilled movement. Focal task specific dystonia, a movement disorder characterized by abnormal muscle contractions, can develop in people who are highly skilled at certain movements (musicians, athletes). Dystonic symptoms emerge when these patients are performing their well-learned movements. Previous EEG work has identified certain EEG signatures which are abnormal in dystonia. In this study, we investigated if similar beta frequency signatures and response patterns may be present in healthy people while performing familiar (‘skilled’) movements. We found that there is a significantly weaker beta power driven by post-movement beta rebound in ‘skilled’ trials compared to ‘unskilled’ trials, but no difference in pre-movement beta desynchronization or beta power during movement. Additionally, there is greater variability in response times during ‘unskilled’ trials, but no significant difference in incorrect responses. Our findings contribute to the field of skill-related research by examining ‘skilled’ conditions performed in healthy people as over-trained movements with the potential connection to FTSD. Thus, our study suggests the need for further investigation in this relationship between skill-related and FTSD research.
Attacker Behavior Modeling and Learning in Security Using Deep Neural Networks

Alyssa Huque—Mathematics & Computer Science, Political Science
Faculty Mentor(s): Thanh Nguyen
Session: Prerecorded Poster Presentation

A common dilemma many security agencies face is how to effectively allocate limited resources to protect assets. This predicament is known as the Stackelberg Security Games. In order to optimize defense tactics, security agencies need to be able to anticipate adversarial behavior. Currently, there are computer modeling techniques that simulate the Stackelberg Security Games. However, these implementations are not completely optimized for human adversaries. The quantal response model (QR) operates under the assumption that humans act with perfect rationality, a flawed assumption that was improved upon in the SUQR model. The SUQR integrated a subjective utility function (SU) that could take learned parameters, but only from limited data (Nguyen, et. al 2013). Deep neural networks have the potential to improve further than the SUQR by providing a better prediction of the attacker’s behavior. Deep neural networks can allow for a more robust set of input features that would be able to account for more nuances of human behavior. A model that could accurately predict adversarial actions has the potential to improve resource allocation and enhance the security of valuable assets.

Effects of Repeated Exposure to Negative Stimuli on Associative Memory

Takako Iwashita—Psychology
Faculty Mentor(s): Dasa Zeithamova, Caitlin Bowman
Session: Prerecorded Poster Presentation

The ability to remember associations (e.g., a person’s face with his/her name) is an important aspect of healthy memory function. Emotional arousal (particularly negative emotion such as fear or anger) is known to disrupt associative memory more than other types of memory. It is an open question if and how these adverse effects on associative memory can be reduced. In the present study, we hypothesized that repeated exposure to negative images (desensitization) would reduce their negative effects on associative memory. To test this idea, we randomly assigned subjects to either a condition where we evoked negative emotion (negative condition) or did not evoke emotion (neutral condition) during learning of object pairs. To do so, we showed subjects a negative or neutral distractor image followed by paired objects, asking them to only remember the pair of objects for a later test. We administered four study-test blocks to examine changes in memory with repeated
exposure. Results revealed that subjects in the negative condition had significantly worse memory accuracy throughout the experiment compared to those in the neutral condition. Further, we found that those in the negative condition were initially numerically slower in making their responses, suggesting difficulty processing even when making a correct response. However, the difference in reaction time between conditions diminished over time. Although our evidence was mixed, these results imply that desensitization to negative stimuli could reduce some effects of negative emotions on associative memory. This suggests a possible role of desensitization in alleviating memory disruption caused by trauma.

Augemnted Reality Effects on Mood, Stress & Cognition
Ray Jackson—Psychology
Faculty Mentor(s): Dasa Zeithamova-Demircan, Lea Frank
Session 6: Cerebral Matters
Research with Virtual Reality has shown that a brief meditation experience is effective in reducing feelings of stress and anxiety (Keller, Bunnell, Kim & Rothbaum 2017). When combined with interactive biometric feedback (for example: one’s heart rate) these same interventions have a stronger effect on both subjective feeling states as well as physiological changes associated with a relaxation response (Jester, Rozek, & McKelley 2019). While it has been previously shown that reductions in stress can facilitate improved performance on cognitive tasks (Wu & Yan 2019), no research to date has specifically examined the ability of a brief Augmented Reality based meditation experience to boost cognitive performance. Our aim was to investigate if an AR-based meditation experience can stimulate a temporary boost in cognition by way of lowering stress, and to examine any additional effects of an addition of biometric feedback.

The Media and Social Action Academic Residential Community
Devyn Jacobson—Psychology, Family and Human Services
Co-Presenter(s): Maxwell Ely, Nick Lamora, Makenzie Elliott, Alan Torres, Isabel Kristensen
Faculty Mentor(s): Charlie Butler, Emily Henkelman
Session 2: Media and Social Action ARC Panel
In the fall of 2019, 29 first-year students from across the nation with different backgrounds but, with the same passion for journalism had met for the first time as The Media and Social Action ARC. Eager
to get to work, these students very quickly understood that their power was not in numbers but in being passionate young adults in America. This role in society is one that allows us to work towards meaningful changes and know that we can achieve this by elevating voices and spreading awareness.

This group has worked throughout the year to learn more about journalism, communication, and social justice. For example, by joining clubs like UOJPEG, writing stories for the Daily Emerald and Ethos Magazine, they had classes based on learning about journalism from UO faculty from the SOJC, and had off-campus opportunities such as volunteering for Food for Lane County.

The students of this ARC used their learning throughout the year to create a platform in which they could truly elevate their voices and spread awareness. This platform is now known as Amplify, their online publication. The focus of Amplify this year is sustainability in the city of Eugene and on The University of Oregon campus. Thus far, the ARC has produced five stories on this topic and are currently working in stories about COVID-19 and its affects in communities nationwide. Moving forward this group of students will continuing to spread awareness about social justice and motivate others to do the same.

Note to the judges: Attached below is a link to our 2019–20 online publication, Amplify.
https://maxwelle7.wixsite.com/amplify

Procedural Barriers to Health Care: Applying for Coverage through the Oregon Health Plan

Harrison Jensen—Planning, Public Policy and Management

Faculty Mentor(s): Nicole Ngo, José Meléndez

Session 3: To Care and How Not to Care, that is the Question...

For low-income and disabled Americans, Medicaid, a joint federal-state program that provides health insurance coverage at low-or-no cost, is a lifeline. And yet, even as the benefits that Medicaid provides are in greater and greater need, nearly 6 million Medicaid-eligible adults aren’t covered. Studies on Medicaid participation rates frequently cite the complexity of the application process as being one of the main reasons why so many don’t enroll. However, relatively little research has been done on how applicants for Medicaid actually navigate through the application process. This study aims to address this gap in the existing body of research by asking individuals who applied for the Oregon Health Plan, Oregon’s state Medicaid program, about their experience applying. Preliminary interview data shows that applying for Medicaid can, in fact, be burdensome for applicants that are working and/or don’t receive any outside help during the application process.
How Western Hair Markets Prey on Vulnerable South and Southeast Asian Women

Jennifer Jensen—International Studies

Session: Prerecorded Poster Presentation

The global trade in human hair in 2016 had a consumer net value of approximately $1.35 billion, with Myanmar, India, and Tunisia as the largest countries exporting and dealing in human hair. This research project examines the unethical practices and standards of acquiring human hair for trade in an industry rooted in a system of corruption and exploitation of poor working women across the world. My project mainly considers the conditions of the hair trade in Southern and Southeastern Asia, specifically focusing upon India, China, Vietnam, Myanmar, and Bangladesh. With a limited supply of high quality human hair, common techniques for finding hair include employing thousands of workers to painstakingly untangle dead hair clumps in China and Bangladesh, buying from “hair thieves” who have been known to assault women on the streets for their hair in India and Myanmar, and paying women from rural communities as little as $1 for their locks in Vietnam. I will examine news media and case studies as well as data published in governmental reports to trace the hair trade and contribute to the education of consumers in the US by giving them access to otherwise dispersed information and allowing them to determine their favorite hair suppliers engage in ethical business practices. Ultimately, this research will contribute to the attempt to curb the exploitation of women in Southern and Southeastern Asia.

‘All Surface and No Soul’: John Singer Sargent’s Portraits of Modern Mannequins

Katelyn Jones—Art History

Faculty Mentor(s): Nina Amstutz

Session 1: Oh, the Humanities!

This research analyzes the popular late nineteenth century society portraitist, John Singer Sargent, and his portraits of women, primarily those of which critics have noted a unique postural tension in the sitters. This nervous tension has been up to this point considered by art historians to be a visual tactic deployed by the artist to create a dynamic and attractive composition. I argue that this tension goes beyond just clever compositional structure and rather can be contextualized through an understanding of changes in the contemporary fashion industry. From the memoirs of sitters to critical reviews, Sargent’s women are often compared to inanimate objects. One object in particular
that is repeated often is that of the mannequin, whose commercial use emerges alongside the need of department stores at the end of the nineteenth century. Through formal analysis of key portraits in Sargent’s oeuvre and contemporary document analysis, I draw connections between the visual presentation of female sitters and their dummy counterparts, as well as how the two worked similarly within their respective sales environments; the gallery and the store. Ultimately, this research seeks to understand the shifting role of art in the beginnings of mass international consumerism, providing a background to how viewers of the 21st century understand the industries of commercial design, art, and fashion.

A review of Normative Male Alexithymia literature

Katherine Jones—Anthropology

Faculty Mentor(s): Alexana Hickmott, Frances White

Session: Prerecorded Poster Presentation

Recently, male roles within the nuclear family structure have begun to shift, and there has been increased interest in Normative Male Alexithymia (NMA). NMA refers to the inability of men to put emotions into words. It has been found to result from the pressure to restrict emotional expression from a young age to align with traditional masculine gender roles in Western countries. Emotions which signal vulnerability and fragility are suppressed, namely fear and sadness, as well as attachment emotions such as affection and fondness. Men who have NMA often have significant difficulty describing their emotions even when they are in severe distress, lack immediate bodily experience of emotion, or respond to their feelings of vulnerability with aggression. A review of available literature investigating the social consequences of NMA reveals that there is a negative relationship between NMA and relationship satisfaction and communication quality. There is also a positive relationship between NMA and fear of intimacy. There may also be significant correlations between NMA and low relationship satisfaction in platonic as well as romantic relationships, emotional empathy, or a lack of willingness to utilize mental health and medical services. Most studies of NMA acknowledge that NMA is a recent societal phenomenon and have only just begun to examine and understand its importance. As the modern family shifts and men are expected to take on increasingly nurturing roles, they need the ability to recognize, effectively communicate, and process their emotions.
Suicidal thoughts and attempts in the Study of global AGEing and adult health (SAGE)

Tyra Judge—International Studies
Faculty Mentor(s): Alicia DeLouize, J. Josh Snodgrass
Session: Prerecorded Poster Presentation

Suicide is estimated to account for around 800,000 deaths per year, worldwide. While 79% of global suicides occur in low- and middle-income countries (LMICs), most studies on suicide have been done in high-income countries. With the lack of research where the highest rates of suicide are presented, as well as in older and aging populations, it is necessary to form a body of research around this. Here we will present that the percentage of suicidal thoughts and attempts have great variance in LMICs, which can be attributed to multiple different factors. Suicidality was high in LMICs, with different countries having 25% to 53% of people who were depressed having suicidal thoughts and 4% to 26% of people who were depressed having attempted suicide. Predictors of suicidal thoughts and attempts varied widely by country and gender, with poor health being the most common predictor (B's = 0.10 to 2.20, p's < .01 in China, Russia, India, and Ghana), followed by wealth (B's = -2.71 to 1.03, p's < .05 in China and Ghana), age (B's = -0.14 to 0.03, p's < .05 in Mexico and Ghana), memory (B's = -0.78 to 0.53, p < .05 in South Africa), marriage (B's = -1.85 to 1.77, p < .05 in India), and social cohesion (B's = -0.16 to 0.11, p < .05 in South Africa. Our results demonstrate that while these predictors vary widely, they are often affected by socioeconomic status and culture in some way. In our research, we hope it allows for a broader look into where these differences in the predictors come from, specifically when looking at culture, socioeconomic status, health, and gender relations.

Simulation of Bacterial Motion in Sterically Complex Environments

Matthew Kafker—Physics, Mathematics
Faculty Mentor(s): Tristan Ursell
Session: Prerecorded Poster Presentation

Many species of bacteria navigate complex and heterogeneous environments to search for metabolic resources and avoid toxins. Common among such complexities is steric structure—solid objects whose surface curvature alters bacterial trajectories upon impact. In previous experiments, we characterized scattering of bacteria from vertical pillars of different radii, which provides the basis for understanding how impact with a solid, curved object alters bacterial motion. However, it remains poorly understood how multiple interactions affect bacterial trajectories and whether distinct object
curvatures or length-scales of separation between steric objects have qualitatively distinct effects on bacterial motion. We address this question using agent-based computer simulations of cells moving within 2D environments. Each environment presents simulated cells with steric objects (i.e. circular pillars) of radius $8.3\mu m$ and a controlled separation between pillars of $L\mu m$, where $L$ is a parameter of the simulation. Cells then diffuse through this environment, scattering with pillars they encounter. By measuring the mean squared displacement (MSD) of the ensemble of trajectories in time for different values of $L$, we are able to quantify precisely how the length-scales of separation between steric structures affect bacterial trajectories. These MSD measurements will also allow us to compare our results with future experimental work. Ultimately, we hope that our results may contribute to a more realistic model of the behavior of motile cells in natural environments such as soils or a mammalian gut.

The influence of prenatal inflammation on postnatal maternal and infant behavior

Nora Kearns—Biology

Faculty Mentor(s): Elinor Sullivan

Session 2: Cells R Us

A growing body of research suggests that prenatal nutrition and adiposity influence postnatal mental health outcomes for both mother and child. Inflammation, heavily influenced by maternal adiposity, has been identified as a potential biomarker for maternal depression and child behavioral dysfunction. The objective of this study was to test the hypothesis that maternal gestational inflammatory state predicts postnatal maternal and infant behavior, an effect moderated by pro-inflammatory cytokines and both pro and anti-inflammatory fatty acids. Maternal BMI was obtained from medical records, and maternal inflammatory state was assessed using plasma fatty acid and cytokine levels from 2nd and 3rd trimester blood draws. Maternal and infant behavior at 6 months postpartum was observed in a ten-minute videotaped free play interaction, which was evaluated using a well-validated coding scheme. Maternal BMI was positively correlated with a number of pro-inflammatory cytokines, and negatively correlated with anti-inflammatory omega-3 (n-3) fatty acids. Although no significant correlations were found between pro-inflammatory cytokines and negative maternal behaviors, Interleuken-10, an inflammation-regulating cytokine, was negatively associated with maternal sensitivity and positively associated with infant negative mood. Significant positive correlations were found between n-3 fatty acids and positive maternal behaviors such as sensitivity, positive regard for child, and animation. The beneficial effects of n-3 fatty acids did not
translate to modifications in child behavior during free-play, although one inflammatory n-6 fatty acid was negatively correlated with child activity, as was the pro-inflammatory cytokine TNF-a, which was elevated in mothers with higher BMIs and mothers with ADHD. These results suggest that n-3 fatty acid consumption during pregnancy may attenuate the potential effects of inflammation and contribute to more optimal maternal mental health.

“Peace Canal?”: Conflict, Cooperation, and the Red Sea-Dead Sea Conveyance
Abigail Keep–International Studies, History
Faculty Mentor(s): Yvonne Braun
Session: Prerecorded Poster Presentation
Jordan, Israel, and the Palestinian territories are among the most water poor nations on earth. In coming years, climate change, population increases, economic development, and the ongoing Syrian refugee crisis will exacerbate water scarcity—and tension—in the region. The Red Sea-Dead Sea Water Conveyance, a proposed pipeline that would run from the Red Sea to the Dead Sea, intends to solve this problem by providing all three nations with potable water. Additionally, the reject brine created during the desalination process will be deposited into the Dead Sea, stabilizing its water level. The project is also intended to generate electricity. Ultimately, the project holds the potential to transform a situation of potential conflict into one of cooperation.

A Lost Whisper: Recovering Vanessa Howard
Lorelei Kelsey–English, Creative Writing
Session 4: Cultural Considerations—The Other
During my Spring term in 2019 at the University of Oregon I was assigned an archival assignment, I was to uncover a little known author of color. I elected to find a copy of a collection of poetry edited by June Jordan and Terri Bush, The Voice of the Children (1972). I had heard that the kids who were included in the collection were from the intercity in Brooklyn, and that they were a part of a poetry workshop led by Jordan and Bush. I wasn’t aware how moving the work would end up being. After receiving the book I decided to highlight one of the students, Vanessa Howard. In this presentation I will be highlighting my journey through researching this book and reading some poetry. In doing so I hope to highlight the importance of poetry and freedom of expression.
Distinct representations of perceived and remembered information in parietal and ventral temporal cortices

Rennie Kendrick—Biology

Faculty Mentor(s): Dasa Zeithamova, Lea Frank

Session: Prerecorded Poster Presentation

Both the parietal and ventral temporal cortices (VTC) have been implicated in representing externally perceived information and information retrieved from memory. However, while the VTC represents visual features of stimuli, it is believed the parietal cortex represents conceptual features. In this study, a pattern classifier was trained on participants' neural data from VTC or parietal cortex across two tasks (encoding and recall), and we assessed the classifier's ability to decode category membership of objects and scenes perceived (encoding) or remembered (recall). We predicted that the unique roles of VTC and parietal cortex would translate to differences in which task resulted in highest classification accuracy: we predicted that classification accuracy during perception will be higher in VTC, while recall will be higher in parietal cortex. Our results partially confirmed this hypothesis: although the classifier had higher accuracy when considering perception relative to recall data in both parietal cortex and VTC, the difference in accuracy between perception and recall data was significantly larger when considering VTC neural data. The classification accuracy results suggest that losing perceived information of stimuli from perception to recall has a smaller effect on the classifier's ability to decode category membership in parietal cortex than in VTC. Thus, neural representations in parietal cortex at encoding may reflect non-visual features (e.g. conceptual information) that are later retrieved.

The Impact of Tuition Increases on the Enrollment of Low-income Students

Neila Kerkebane—Economics

Faculty Mentor(s): Jonathan Davis

Session 5.5: McNair Scholars Presentations

The United States has experienced an increase in inequality, especially since the 1980s. One question that has been asked repeatedly by researchers and policy makers is how can we promote equality of opportunity? In this thesis, I study the impact of increases in college and university tuition on the enrollment of low-income students. Since higher education has been identified by the literature as a main path for intergenerational socioeconomic mobility, it is important to encourage low-income
students to attend colleges and universities. Yet their participation at the moment is lower than their counterparts in higher income classes. We need to identify what is influencing low participation of low-income students in higher education in order to provide solutions to make higher education more accessible for this segment of the population. This study estimates the elasticity of college enrollment to posted tuition rates using administrative data on 2,462 colleges and universities. The aim of the paper is to understand whether a lack of information about posted and actual tuition rates is a barrier to the enrollment of low-income students. For this analysis, I am using a fixed effect model to control for all time-invariant characteristics about the college and specific characteristics.

**Lebanon, the European Neighborhood Policy, and the Syrian Refugee Crisis: A Lebanese equation for EU national security?**

Raimy Khalife-Hamdan—International Relations, Romance Languages

**Session 1: Global Views—We vs. Them**

Formerly considered the Paris of the Middle East, Beirut once displayed her millennium-old ties to Europe through architectural glory, refined cuisine, and French schools, which were commodified proof of the 1923–46 French Mandate’s influence on Lebanese society. Now, Europe reclaims its leverage over Lebanon through EU institutions, particularly the European Neighborhood Policy (ENP). Evident in European Commission documents and social scientists’ research, the EU-Lebanese relationship is asymmetric, especially as Lebanon struggles to absorb over one-and-a-half million Syrian refugees in a population of six million Lebanese. While glamorizing the ENP as a development-inducing instrument that provides aid to the Lebanese community in exchange for economic liberalization and state democratization, the EU utilizes the ENP as a facade of benevolence in order to promote reforms that nurture Europe’s own regional security agenda.

Furthermore, just as the implementation of the ENP is politically-serving, the EU treats the ongoing Syrian refugee crisis as an opportunity to advance its own interests in Lebanon by enforcing refugee containment mechanisms to avoid Europe’s destabilization. As the Syrian refugee crisis worsens, Lebanese debt accrues, and Lebanese civilians are frantic over increasing unemployment, Lebanon has become dangerously reliant upon the ENP. The more Lebanon relies on EU aid, the more likely it will be to submit to reform and lose its political autonomy. Unfortunately, Lebanon seems to lack any other choice.
Uneven Citizenship: Post-September 11th Immigration Enforcement and Separation of Arab, Middle Eastern, and Muslim Families

Raimy Khalife-Hamdan—International Relations, Romance Languages

Faculty Mentor(s): Tobin Hansen

Session 1: Global Views—We vs. Them

The shocking September 11th terrorist attacks prompted an immediate and drastic response from the US government. More than 1,200 Middle Eastern, Arab, or Muslim noncitizen adults were immediately detained and deported within two months. What were the social effects on their US citizen children? And what do these impacts reveal about the unevenness of US citizenship? Drawing from anthropological research on Latinx family separation in the US, this research examines the harmful impacts on children's physiological, developmental, and psychological health associated with family disruption and speculates about the fallout of family separation immediately following 9/11. These US citizen children, now adults, were active agents within their transforming family structures while also being subject to the racialization and criminalization inherent in the violent mechanisms of immigration enforcement. Since citizen children of mixed status families are implicated and indirectly punished for their families' precarious legal statuses, citizenship is not a determinative assurance of protection, but one mediator of experience along with other social factors and identities. Most importantly, the harmful impacts of family separation on both citizen and non-citizen children alike suggest the need for the US government to adopt more humane immigration enforcement practices and valorize family units as well as all children's health, development, and wellbeing.

Histamine and Cardiovascular Adaptation to Endurance Exercise

Sydney Kobak—Human Physiology

Faculty Mentor(s): Dylan Sieck

Session: Prerecorded Poster Presentation

This study aims to gain a deeper mechanistic understanding of how the body adapts to chronic endurance exercise stress. It is known that repeated exercise stress leads to multiple adaptations that decrease all cause mortality and development of cardiovascular disease, while increasing the ability to preform further work. This experiment examined how these variables changed during 6-week exercise training regimen with and without antihistamines, which caused the sustained post-exercise vasodilated state to be inhibited. There were two groups that went through the training
Phase One Of A Free Curriculum For Treating Anxiety And Increasing Productivity With Evidence Based Methods

Nolan Kriska—Business and Psychology

Faculty Mentor(s): Dare Baldwin

Session 3: To Care and How Not to Care, that is the Question...

If people avoid their anxiety now, they put themselves at serious risk for mental and financial damage. A 2013 meta analysis deduced the effects of anxiety on cognitive function from over 200 studies that involved thousands of participants. They found anxiety decreased productivity and quality of life, “The impacts of anxiety on cognition [are as follows]. Both threat of shock—a translational anxiety induction—and pathological anxiety disorders promote the detection of potentially harmful stimuli at multiple levels of cognition from perception to attention to memory and executive function” (Robinson 7). One proven method that helps people control their anxiety is Cognitive Behavioral Therapy (CBT), a psychotherapy that creates new paths of thought in order to challenge unwanted behaviors and mood disorders. Using CBT now rather than later gives people a chance to continue to contribute to society and maintain a quality of life. I plan to teach CBT and its affiliated counterparts (habituation, inhibitory learning model, yuck diagram, dialectics and some existential thought) via youtube, published research, and the use of a live secure network. Thank you for your time and consideration.

The Effects of Abstinence-only Sexual Education on Teen Health and Behavioral Outcomes in the United States

Kara Krnacik—Economics
Faculty Mentor(s): Melissa Graboyes, Ed Rubin
Session: Prerecorded Poster Presentation

The federal government began providing funding for abstinence-only sexual education in the 1980s to decrease teen pregnancy and poverty in the United States. In the last two decades a significant body of research has found that comprehensive sexual education is a better mechanism to obtain lower teen pregnancy rates and improve teen physical and mental health. This paper investigates the effects of states rejecting federal funding from the Title V Abstinence-Only Until Marriage Program on teen health and behavioral outcomes, with the assumption that these outcomes will improve upon the rejection of Title V funding. This research utilizes a quasi-experimental difference-in-difference econometric model to estimate the effects of the rejection of Title V funding on contraceptive use and sexually transmitted disease (STD) rates in teens of high school age in the United States. The data that this research utilizes comes from the Centers for Disease Control and the Sexuality Information and Education Council of the United States. The preliminary results find that rejection of Title V funding caused small statistically significant increases in contraceptive use rates and decreases in STD transmission rates. The results of this study indicate that comprehensive sexual education is better for teen health and behavioral outcomes than abstinence-only education. This study also highlights the complexity of federal funding for sexual education and the need for evidence-based policy when determining sexual education curriculum. This research adds to the few studies that have investigated the effects of state-level sexual education policy on teen health and behavioral outcomes.

Restoring Connections: An Online Environmental Education Curriculum

Katy Kuechle—Environmental Studies
Co-Presenter(s): Zoe O’Toole, Garrett Reagan, Ellie Townsley,
Faculty Mentor(s): Kathryn Lynch, Sasha White
Session 4: Environmental Leaders Program

The Environmental Leadership Program (ELP) is a collaborative, interdisciplinary service-learning program rooted in the University of Oregon Environmental Studies Program. ELP works with Mount Pisgah Arboretum and a cohort of kindergarten through fifth-grade students from Adams Elementary
School. Our team mission was to develop an environmental education program for fifth-grade students that cultivated an understanding of the connections between people and their environment, specifically the Kalapuya’s relationship with oak savanna habitats and fire regimes, delivered through online lessons. The Confederated Tribes of the Grande Ronde provided feedback to our curriculum to accurately portray the history of the Kalapuya. Our curriculum was adapted into an online format to provide students with real-time lessons that deepened a sense of appreciation of the natural world within the local Willamette Valley through interactive activity sheets, journaling, and storytelling.

Given the current pandemic and the lack of traditional classroom education, environmental education is more important than ever. Our curriculum helped create a sense of structure by establishing core routines and encouraging them to continue to interact with their environments in a safe and personally relevant way.

The Contributions of Polycomb Repressive Complex 2 and H3K27me3 in Gene Repression
Anna Kulawiec—Biology
Faculty Mentor(s): Eric Selker, William Storck
Session: Prerecorded Poster Presentation

Though DNA contains our genes, the expression of genes varies during development and across different cellular conditions. Gene expression can be regulated by the post-translational protein modification of chromatin, such as the trimethylation of lysine 27 of histone 3 (H3K27me3). This mark, catalytically deposited by the protein complex Polycomb Repressive Complex 2 (PRC2), represses associated genes. Such repression is crucial for establishing gene expression patterns for proper development, and aberrant activity of PRC2 can cause disease, such as cancer. Here I present Neurospora crassa as a model organism for studying the repressive effects of PRC2, independent of its catalytic mark, H3K27me3. I generated a catalytically inactive SET-7, the catalytic component of PRC2 in N. crassa, demonstrating that elimination of H3K27me3 is sufficient to depress genes it normally marks despite the physical presence of PRC2. I further show that, in contrast to SET-7 knockout, catalytic inactivation of SET-7 does not alter the stability of PRC2. Moreover, catalytic inactivation of SET-7 enriches a higher molecular weight form of the core PRC2 member SUZ12. Overall, these results indicate that the physical form of PRC2 in itself does not act repressively and suggests that studies focusing on its repressive effects should consider that methods of H3K27me3 elimination, either knockout or catalytic inactivation, differentially affect PRC2 complex stability.
This work provides valuable insights into the appropriate methodologies for studying developmental processes and disease related to PRC2 and H3K27me3.

Los Angeles County Response to COVID-19
Myriah Kunipo-Aguirre–Human Physiology
Co-Presenter(s): Hannah Heskin, Amelia Hardeman, Angelique Wallman
Faculty Mentor(s): Kristin Yarris
Session 2: US Outbreak Breakout—COVID-19 Research

I am currently in Dr. Yarris’s global health field experience class this Spring and our focus is the current global pandemic and public health crisis. For my project, I focus on California’s response to COVID-19, with a focus on Los Angeles County. I have chosen Los Angeles because my hometown is in the county and where I am currently at during this time. Also, the population of about 10 million makes it the third-largest metropolitan economy in the US. In a flash our world went digital, online, remote, and technology is at the forefront of our lives more than ever. I decided to incorporate technology and turned to the classic social media platform. I have started a twitter page where I am curating together information/resources regarding COVID-19 in Los Angeles County, using data from the county department of public health and the mayor’s office, as well as other official government sites. The twitter page allows me to quickly link articles or videos and short blurbs on information and I add my own analysis of current news using curated threads and tweets. The main topics I focus my project on are overall state, county, and city response (policies, mandates), community resources (food banks, financial assistance), and impact on industry and economy (sports, tourism). While COVID related news can seem overwhelming, my project aims to create an accessible, organized reference for others in my community or people in my personal network to follow.
Impacts of Environment on Degree of Despotism in Semi-Free Ranging Japanese Macaques (Macaca Fuscata)

Lisa Kwan—Anthropology, French
Co-Presenter(s): Noa Cohen
Faculty Mentor(s): Kylen Gartland, Frances White
Session 6: Interact & React

Primate societies have evolved social hierarchies when higher ranking individuals can gain access to differential benefits such as food resources and mating opportunities. In order to maintain high rank, individuals must uphold the social hierarchy and defend their position against lower-ranking primates. Different primate groups have varying degrees of hierarchical flexibility in which a population is despotic or tolerant depending on which confers individual benefit. This is often dependent on the particular environment. Tolerant hierarchies are typically seen in environments where group cohesion and cooperation are important for individual success, and are characterized by low rates of severe wounding, sharing of limited food resources, and frequent reconciliation following aggressive interactions. In contrast, despotic hierarchies are found where individuals can gain benefits by competing amongst each other for access to resources. They are distinguished by frequent aggression and wounding between individuals, restricted access to resources, and infrequent reconciliation. Japanese macaques (Macaca fuscata) are primarily characterized as having despotic hierarchies. Our research examines potential differences in hierarchies of Japanese macaques in wild and captive settings due to differences in abundance and distribution of resources between the two environments. Through an examination of published studies, we will compare and contrast the environmental factors associated with despotic versus tolerant hierarchies in Japanese macaques. We will collect data on the Japanese macaque group at the Oregon National Primate Research Center (ONPRC). This research may provide insight into how different captive and wild environments affect primate behavior.
Enhancing Education through Improved Communication: Case Study of Senegal

Dylan Land—International Studies, Political Science
Faculty Mentor(s): Dennis Galvan
Session 1: Global Views—We vs. Them

Education is understood as a cornerstone of any development endeavor. Improved education has empirically proven to ameliorate health outcomes, bolster social and economic mobility, amplify civic participation and lay the foundation for other positive societal developments. The education system in Senegal has continued to improve through various initiatives, sponsored by the national government and the donor community. Despite the success of various reform programs, there is still much to be done in order for Senegal to meet desired benchmarks established by national, regional and global education expectations. At the core of Senegal's educational shortcomings lies ineffective communication. There is a lack of consistent empirical data about the achievements of education initiatives. There are holes in reporting and monitoring mechanisms, and the complexity of results-based frameworks often produces inefficiency within the system, all of which, I contend, could be solved through improved communication. Grounded in expansive literature review and analysis of primary source documents, this paper will explore possible avenues for enhancing education in Senegal. Through the formation of robust communication channels, coherent systems of accountability, and transparent mechanisms for administering, reporting and monitoring, educational deficiencies could be remedied. However, considering the significant absence of reliable and consistent data, further research is required to determine the exact measures that must be taken by relevant stakeholders. Understanding the possibilities of improving the Senegalese education system may teach us important lessons about how to further enhance education internationally and prepare students in all nations for meaningful participation in the modern world.

Genomic ancestry is explained by both geography and ecology in Mimulus aurantiacus

Connor Lane—Biology
Faculty Mentor(s): Matt Streisfeld
Session 4: Preserving Mother Earth

One of the main goals of evolutionary biology and ecology is to understand the mechanisms by which the vast diversity in life on Earth is created. Integral to this process is speciation, where one species
diverges into two. Recent work has shown that speciation can occur even if populations are not completely isolated with each other, which is known as speciation with gene flow. To understand this phenomenon, we perform a survey characterizing genetic admixture and genomic ancestry in Mimulus aurantiacus ssp. puniceus. From here, we test whether or not certain genome features thought to be indicative of local adaptation covary with geographic space and environmental differences. We hypothesize that due to local adaptation being well-characterized within ssp. puniceus, we will observe substantial genetic subdivision in our survey and find that important genome statistics covary with environment due to adaptation leading to genetic isolation. From our survey, we found both an extraordinary amount of genetic subdivision in ssp. puniceus, indicating that what we consider to be one subspecies has many distinct groups. In addition to this, we find that the most differentiated groups within puniceus have indistinguishable floral trait distributions, hinting at a deeper history of isolation rather than these groups being separated due to natural selection. Population genomic data reveals that variation in genome features signaling divergence is explained by variation in both geography and environment, implying that both neutral processes based on geographic isolation and positive selection due to local ecology are important for shaping the genome.

**Robo4 Project**

**Byron Lee—Human Physiology**

**Faculty Mentor(s): Ashley Walker**

**Session 6: Interact & React**

Aging is associated with the impairment of the neurovascular unit, and this potentially leads to increased Alzheimer’s disease pathology and cognitive impairment. A specific axon guidance receptor, Robo4, is important in maintaining the structure and restrictive barrier of the blood-brain barrier (BBB). We predicted that the knockout of Robo4, and the subsequent increase in BBB permeability, will result in cognitive dysfunction. Therefore, Robo4 signaling pathways may potentially be a valuable target for therapeutic treatments of AD. In the present study, we studied Robo4 knockout (Robo4 -/-) and wild type (Robo4 +/+ ) mice crossed with mice containing mutations in amyloid precursor protein (APP), leading to greater aberrant amyloid-beta production. To examine the effect of aging, we studied young and old wildtype C57BL6 mice. We assessed cognitive function by conducting Nest Building tests and Morris Water Maze. We found that old C57BL6 mice had impaired cognitive function compared to young C57BL6 mice. However, when Robo4 x APP groups were compared, we found no
differences in cognitive function. These preliminary results suggest that aging has a stronger effect on cognitive function than Robo4 knockout. Additional studies are needed to determine the effect of Robo4 knockout on blood-brain barrier permeability and amyloid-beta accumulation.

**Learning during a Pandemic: The First-Year University Student Experience**

*Co-Presenter(s): David Lee, Emily Shinn, Chloe Stevenson*

*Faculty Mentor(s): Anne Laskaya*

**Session 1: Learning during a Pandemic: The First-Year University Student Experience**

This research investigates the learning experiences of first-year University of Oregon students who are participating in the sudden shift to remote-based education during the global Covid-19 pandemic. We document and assess the challenges, difficulties, and benefits first-year students encounter as they suddenly move from the Fall and Winter Terms of shared, live campus classroom-based learning to the physically-isolated conditions of Spring Term’s online learning.

Using a carefully-designed survey and individual learning-narratives, we assess first-year students’ perceptions of their own learning effectiveness, productivity, content retention, and analytical depth in this historical moment. We also investigate students’ perceptions of their own well-being and their satisfaction with higher education during the sudden shift to remote learning required by the pandemic. A survey coupled with short student narratives constitute our methods of inquiry. The survey asks students to rank their experiences, allowing gradations of response rather than simple yes/no answers. Two open-ended questions will solicit narrative (or short answer) responses. The questionnaire, using Google Surveys, will be distributed shortly to all first-year students whose email addresses are in the UO Directory.

Our presentation will inform the UO community, and potentially other interested academic communities, about the various impacts of Covid-19 on first-year students and provide documentation of that impact. This will also help the university community plan on how best to support their first-year students (as well as more advanced students) during a time of crisis and experimental remote-based learning.
Determining the role of the pulvinar in visual attentional control
Emmalyn Leonard—Biochemistry
Faculty Mentor(s): Cristopher Niell, Philip Parker
Session 5: The Wonders of the Brain
Visual attentional control is a behavior that is critical for survival; despite its importance, the specific neural mechanisms underlying the process remain unclear. Upon perception, visual information is routed from the retina through the thalamus, which relays signals to the cortex for further processing. The pulvinar, a nucleus of the thalamus, has strong connections to both visual cortex (V1) and areas involved with attentional control, such as the superior colliculus and prefrontal cortex. The pulvinar has been implicated in attentional control from studies of human patients, as pulvinar lesions are correlated with an inability to ignore distracting visual information during performance of a behavioral task. Studies have also shown that mice are capable of learning similar tasks; given that their visual system is highly analogous to that of humans, mice serve as an optimal model for important behaviors such as visual attentional control. We targeted mouse pulvinar neurons with a GCaMP-expressing virus to allow measurement of brain activity through a cranial window. Utilizing both widefield and two-photon microscopic imaging, we found that axons projecting from the pulvinar to V1 are visually responsive and appear to be organized in a retinotopic manner. Future work on this project will include introduction of a visually guided behavioral task alongside silencing of pulvinar neurons using a DREADDs-expressing virus. We expect to find that, when mouse pulvinar neurons are silenced, important signals for visual attention sent from the thalamus to V1 will be interrupted, resulting in poor performance of a task requiring visual attentional control.

The Effect of Nonprofit Mission Trips to Latin American countries and the Promotion of the White Savior Complex
Katie Leonard—Family & Human Services
Co-Presenter(s): Emily Harris
Faculty Mentor(s): Matthias Vogel
Session: Prerecorded Poster Presentation
Many a well-intentioned mission trip to Mexico and Middle or South America can have unintended effects. They can lead to a sort of institutionalized dehumanization and to human rights violations,
especially considering many NGOs seem to have ulterior motives when aiding Latin American countries. Our research illuminates the intricate interplay between a genuine desire to help and the self-serving reality of a “White Savior Complex” which mission trips can feed, even if it is often unintentional. We examine the media portrayal of mission trips, the public advertising for mission trips by religious organizations and institutions, and include case studies of actual mission trips to illuminate concepts such as Impure Altruism and mission drift particularly as pertaining to nonprofit organizations. There are several ways in which Americans are conditioned to the ways of the white savior complex, which include: volunteering abroad, the ways in which government covers foreign policy, the teaching of world history in classroom settings, and the way in which Hollywood portrays Latin countries. A contested topic resulting in a serious divide between races, some white people claim that those who bring light to the topic of the white savior complex, particularly people of color, are committing reverse racism. Our project aims to contribute to the larger discussion and to bring to light the mechanisms of dehumanization in order to further better empathy and true understanding.

**Electrical brain waves modulate with movement speed and uncertainty**

*Ryan Leriche—Biology*

*Faculty Mentor(s): Ryan Leriche*

*Session 6: Interact & React*

We investigated how brain electrical activity changes with movement speed and movement uncertainty. Understanding the electrophysiological profile of movement speed could have applications for Parkinson’s Disease while movement uncertainty may be an ignored confound across many experiments.

We used a computerized task to manipulate participants to move more slowly or more quickly. In addition to these “slow” and “fast” blocks, our task manipulated the certainty of an upcoming movement. When participants knew when they were going to move this was known as a “certain” block. Conversely, during “uncertain” blocks, participants were not sure when they were going to move. Movement speed (slow or fast) and movement uncertainty (certain or uncertain) blocks were paired together creating four possible blocks: fast-certain, fast-uncertain, slow-certain, and slow-uncertain. Scalp-electro-encephalography (EEG) was recorded from 12 participants during this task to examine their brain activity. We looked at the electrical activity in the beta (13-30 Hz) frequency range over the sensorimotor cortex. Our findings suggest that beta-band activity is elevated in during slower movements. The slow-uncertain block had increased beta power compared to the fast-uncertain block during movement preparation. Our other results are less conclusive.
Learning to learn: Making sense of electrophysiology data

Ryan Leriche—Biology
Faculty Mentor(s): Nicole Swann
Session: Prerecorded Poster Presentation

With no previous signal processing background, I began studying how electrical brain waves vary with movement speed and uncertainty. When applying all that I read, I learned when to flesh the details or just see the big picture.

My lab uses scalp-electroencephalography (EEG) to record brain activity. EEG data can be noisy, but there are methods to see through this noise. After some pre-processing, I ran an independent component analysis to decompose a complex signal into its sub-signals. I removed the eye movement sub-signals as I just was interested in brain activity. With kurtosis values—the sharpness of a signal—I could remove artifactual trials.

I was uncomfortable using ICA and kurtosis measures without knowing exactly how they worked. Learning every nuance would have halted my analysis progression. So, with a conceptual understanding, I used these tools from the EEGLAB Toolbox for MATLAB to generate a cleaner EEG signal.

With a clean signal, I began my time-frequency analysis. This would describe how well a sine wave at a given frequency represents my signal. I could not get a conceptual hold on this topic. After pausing my analysis and taking an online course—at my PI’s suggestion—my progress accelerated.

I now could examine how electrical brain activity changes with movement uncertainty and speed. My analysis suggests that brain activity increases with slower movements; however, now I need to learn how to statistically verify this result.

Looks like I need to continue reading methodology papers and MATLAB/EEGLAB documentation.

A Preliminary Analysis of Cambodian Spindle Whorls

Marie LeRoux—Anthropology
Faculty Mentor(s): Alison Carter
Session: Prerecorded Poster Presentation

A collection of 362 ceramic spindle whorls purchased in Cambodia has been donated to University of Oregon’s Anthropology Department. These artifacts likely date to between 500 BCE and 500 CE and are thought to have been looted from Angkor Borei, although it is possible that other neighboring
sites are represented as well. Few studies have been conducted on spindle whorls from Southeast Asia. As such, this project focused on conducting a preliminary analysis of this collection by categorizing, weighing, and measuring them. In this poster, I present my findings and a preliminary typology including four distinct types. Two of these types have each had multiple subtypes identified.

The effect of seasonal changes on reproductive status of Clytia gregaria along the Pacific Northwest

Ya Li—Environmental Science

Faculty Mentor(s): Marco Corrales-Ugalde, Kelly Sutherland

Session: Prerecorded Poster Presentation

Cnidarian jellyfish are ubiquitous predators of pelagic communities, however, very little is known about their phenology and how food availability affects their reproductive cycles. However, research shows that starved jellyfish tend to decrease somatic growth and allocate more resources to gonad development. Thus, a ratio of body size to gonad size might work as a proxy to the nutritional state of jellyfish. We hypothesize that when food is scarce, C. gregaria will have larger gonads relative to their body size. The jellyfish observed were collected both in a period of low primary productivity where food was scarce (winter) and a period of high primary productivity (summer) along two longitudinal transects in the North California Current System. ImageJ was used to analyze photos taken of the preserved specimens to obtain bell diameter and gonad area to then create a gonadal index (gonad area/bell area). The data shows a slightly higher gonad area to bell area ratio in the winter C. gregaria than those from summer indicating an increased effort towards reproduction when resources are depleted. Due to the preservation method causing a loss in biomass of the collected specimens, it makes it difficult to relate morphological measurements on preserved specimens to the morphology of live organisms. In the future, we will make a correction factor to convert between the measurements of live and preserved organisms. Understanding the links between oceanographic conditions and population dynamics of gelatinous predators will allow us to better predict their effects on zooplankton community dynamics.
Quantifying Diabetes Disparities Related to American Indian and Alaskan Native Residency on Reservations

Julia Liu—Sociology
Faculty Mentor(s): Clare Evans

Session 1: Time for Your Check-Up—Decolonizing Global Health

American Indians and Alaskan Natives (AI/AN) have the highest rate of diabetes of any racial group in the United States. This disparity does not show up evenly amongst AI/AN, suggesting that environmental effects for various AI/AN can lead to health disparities. AI/AN have unique historical circumstances because many of them reside in reservations, which the government uses to segregate them from other racial groups. Due to the traumatic history of the reservation system, there are likely enduring conditions that exacerbate health disparities, including diabetes. This thesis looks at the correlation between living in a Census-designated American Indian Area (AIA) and having a diabetes diagnosis. It compares diabetes rates between American Indians and Alaskan Natives (AI/AN) living in AIAs and those living outside of these areas using data from the National Survey on Drug Use and Health. Logistic regression models determined if any subsets have a disproportionately higher rate of diabetes diagnosis. These models control for demographic factors such as age, income, gender, and education and show that AI/AN living in AIAs are anywhere between 1.595–1.764 times more likely to have diabetes than AI/AN outside of AIAs. This demonstrates that living in reservation-like areas is correlated with conditions that likely contribute to diabetes disparities. Potential explanations for inequalities include lack of nutritious food sources, environmental stress, and other conditions. This serves as a starting point for further qualitative research to explore social processes that create environmental inequalities and worsen health disparities.

How the 2019 IAAF World Outdoor Track and Field Championships impacted both the image of host country Qatar and its leadership’s plan to use sport for increased international visibility

Brooklynn Loiselle—Journalism
Faculty Mentor(s): Lori Shontz, Henry Wear

Session: Prerecorded Poster Presentation

The 2019 IAAF World Outdoor Track and Field Championships served as an opportunity for its host nation, Qatar, to showcase not only what it can do for sport but what sport can do for its country.
Over the past decade, Qatar has used international sport as a way to define itself as a nation worthy of respect. The world championships were the largest sporting event to ever take place in the Middle East, but media coverage from the championships resulted in both positive and negative storylines that could impact how the world views Qatar. This qualitative content analysis of British and American written news coverage of the world championships examines how the news media framed Qatar and how it evaluated its performance as a host nation. This research is developing; all coding has yet to be completed. However, preliminary findings indicate that Qatar was far more likely to be framed negatively than positively, with themes of “poor event management” and being an “undesirable location” appearing the most frequently. This research raises questions about whether Qatar’s reasons for wanting to host the event was valid. Furthermore, this research contributes to the broader question of whether spending significant sums of money to host international sporting events is worth it if the events do not result in an economic gain or a better world image.

**Environmental Leadership Program Oregon Oaks Phase II Management Plan and Grant Proposal for Thurston Hills Natural Area**

Nicole Long—Environmental Studies and General Music  
Co-Presenter(s): Ryan Downey, Julia Olson, Julia Troxell, Casey Clavecilla, Emily Cook  
Faculty Mentor(s): Peg Boulay, Sara Worl  
Session 4: Environmental Leaders Program

Located within the Willamette Valley ecoregion, Thurston Hills Natural Area (THNA) contains remnant Oregon white oak (Quercus garryana) savanna habitat that has undergone dramatic conifer encroachment. Currently, oak ecosystems in the Willamette Valley have diminished to < 10% of their original range, making this ecosystem one of the most endangered ecological communities within the region. Oak savannas and woodlands support the persistence of over 200 native plant and animal species who are reliant on these open ecosystems. Using data collected by the Environmental Leadership Program’s (ELP) 2019 Oregon Oaks Team we are designing an oak restoration plan for a 25-acre subunit of THNA. We will apply for a restoration grant through the Oregon Watershed Enhancement Board to implement the oak restoration project at THNA in partnership with Willamalane and the Middle Fork Willamette Watershed Council. Our plan will utilize adaptive management techniques to carry out restoration focusing on conifer thinning in savanna and prairie ecosystems, controlling invasive species, and planting native species. Monitoring of the site will be maintained by future ELP students to assess the effectiveness of this restoration plan. Considering
THNA’s establishment of 14.5 miles of recreation trails, our plan will enhance local experiences with engagement and educational opportunities by focusing on public visibility.

**Dams in the McKenzie Watershed**  
Nicole Long—Environmental Science and General Music  
Faculty Mentor(s): Kathryn Lynch, Sasha White  
Session: Prerecorded Poster Presentation

The McKenzie River is a river at work, and the primary tools for harnessing its power have been dams. The US Army Corps of Engineers (USACE) owns two of the dam systems on the McKenzie, including the Cougar Dam, the tallest dam in Oregon. The Eugene Water and Electricity Board (EWEB) owns the other two dam systems. I conducted my research through observational site visits to all four dam systems as well as other areas, including a salmon spawning channel maintained by EWEB. I also conducted two semi-structured interviews with a McKenzie River Guide and a staff member of the McKenzie Watershed Council. I supplemented my observations and interviews with literature research. I found that the dams on the McKenzie have cut salmonids off from over 20 miles of their ancestral spawning habitat. In addition to being fish passage barriers, the dams have reduced the McKenzie’s riparian zones due to the cessation of nutrient and debris flows. The large size of Cougar Dam’s reservoir decreases the river’s temperature, which disrupts salmon migration and spawning. Native plant and animal species such as cottonwood, alder, caddis fly, and roughskin newts are affected by the simplification of the river and its floodplain due to the dams. Human communities in the McKenzie Watershed are protected from floods by the dams, and they are a necessary reality. However, there is an ethical way to use the dams, such as renovating their infrastructure, and ways to mitigate their effects, such as restoring habitat downstream.

**Parental Stress Correlate Children’s Cognitive Ability**  
Jingjie Lu—Psychology  
Faculty Mentor(s): Leticia Hayes, Tyson Barker  
Session 6: Cerebral Matters

Early childhood is a critical time period for cognitive development, and children exposed to adverse familial stress may impair child cognitive development. Therefore, my hypothesis is parents with a greater stress index will be correlated to higher levels of oxidative stress biomarker-F2 Isoprostane,
and lower levels of executive function and language development in their biological children. The tests administered to assess children’s cognitive ability mainly focus on the domains of executive function and language development. We also collected parent-child urine samples to assess parent-child oxidative stress biomarker (F2 Isoprostane) levels, and administered psychological stress questionnaires to the parent. For this research, parent stress will be analyzed from responses on the Parent Stress Index-IV questionnaire. All scores will be compared between the child participants aged three to six on executive function and language measures (N=103).

**Migrant Farmworkers’ Exposure to Pesticides and What Is Being Done Legally**

Brooke Machi—Sociology

Session 2: Common Reading

This project is inspired by the common reading book Under the Feet of Jesus by Helena Maria Viramontes. I explore the effects of pesticide exposure on migrant farmworkers in California and the legal actions being taken. Pesticide exposure has caused a variety of health problems for those working on farms that use them and legal actions are important in order to protect the lives of these individuals and their families. The purpose of my research is to dig deeper into this issue and discover what is currently being done to protect these individuals and inform them of the risks. I am gathering my information through a culmination of article reviews and legal investigation. From this research, I will find out if there is any successful legal action being taken to protect migrant farmworkers from harmful exposure to pesticides. I hope to learn more about this issue and bring more attention to the importance of this situation and the rights of this group of people.

**Ethnolinguistic Vitality of Eugene**

Maya Mackey—International Studies, Spanish

Faculty Mentor(s): Devin Grammon

Session 2: Oregon Trails

Linguistic landscapes are necessary for ethnolinguistic communities to be comfortable in their place of residence. Linguistic landscape is the study of representations of languages that are displayed in public spaces such as signs, billboards, graffiti, and moving objects. This study examines the Spanish linguistic landscape of Downtown Eugene as it relates to the Spanish-speaking community’s ethnolinguistic vitality. The absence of multilingual signage around Downtown Eugene deprives the
Spanish-speaking community of obtaining full access to communal activities and resources. There are many elements that serve a purpose in improving ethnolinguistic landscapes that directly relate to an individual’s comfortableness within a community. Qualitative and quantitative analysis of signs in Spanish, the coding of images, interviews with bilingual members of the Eugene community, and ethnographic data collection was used to determine the ethnolinguistic vitality and perceptions of Downtown Eugene. The analysis shows that there is a lack of signs of various languages in Downtown Eugene. The implementation of multilingual signs is necessary to create a more welcoming community for both residents and visitors of all backgrounds. Although this research is in a current state of development, this proposal shows how to increase the ethnolinguistic vitality for the Spanish-speaking community and will be published and presented to the City of Eugene. Linguistic landscape is necessary for not only the security and accessibility of all residents but for the economy of Eugene as well. When a city shows its willingness to create a safe space for all residents and visitors, people are more likely to be actively involved with the community thus stimulating economic growth.

**Memory specificity and generalization: Competing or complementary memory processes?**

Celina Maldonado—Psychology and Linguistics

Faculty Mentor(s): Lea Frank, Dasa Zeithamova

Session: Prerecorded Poster Presentation

Memory serves two important functions: we must remember individual experiences (memory specificity) and we must be able to link across these experiences to form general concepts (generalization). It is unclear, however, whether generalization and memory specificity are competing or complementary processes. One possibility is that individual memories are stored in detail and then generalized during retrieval. In this case, successful generalization relies on intact memory for the individual memories. Another possibility is that memories are linked to previous experiences during encoding, leading to some of the information of individual experiences being lost to support generalization. In this experiment, two tasks were used to study memory specificity and generalization. To investigate memory specificity, participants studied a series of colored objects. The test phase required participants to select the color of each object from a continuous color wheel, allowing us to measure how precisely they could remember the color-object pair. To measure generalization, participants studied face-scene pairings in which two faces were paired with a given scene (F1-S1, F2-S1), and one of the faces was also paired with a second scene (F2-S2). Generalization
was measured by how often participants linked the second face with the second scene (F2-S2) at test given the faces’ shared preference for the first scene. To understand the relationship between memory specificity and generalization, we correlated performance on the two independent tasks. If generalization relies on intact memory for individual experiences, then I predict performance on generalization and memory specificity will be positively correlated.

**Visualizing Topocluster Algorithms for the Global Trigger**

*Sylvia Mason—Physics*

*Faculty Mentor(s): Stephanie Majewski*

*Session 5: To the Moon and Back—Relativity Matters*

There is a Standard Model of particles and forces that explain the fundamental components of matter. However, this model is incomplete, seeing as we currently understand only about 5% of our universe. The Large Hadron Collider (LHC) is a particle accelerator that collides protons in the hopes of discovering new particles or forces, so that we can learn more about the other 95% of the universe. The LHC will undergo an upgrade in 2026 that will increase its luminosity, meaning there will be an increased number of collisions per second (up to 200 collisions every 25 nanoseconds). After this upgrade, the ATLAS trigger system will need to reduce the data by a factor of 40 within 10 microseconds, so we will need to sort out the interesting events very fast. Our group is designing an algorithm for implementation in firmware in the “Global Trigger” system for ATLAS to help select these interesting events. My research focuses on creating accurate 3-D visualizations of potential algorithms that cluster energies from particle showers in the ATLAS Calorimeters, and investigation splitting criteria for these clusters. These visualizations will help us understand the details of the performance of these algorithms, which can significantly help us reject background.

**Investigating the Viability of a Carbon Nanotube Surface as a Gastric Cancer Screening Tool**

*Bri McAllister—Biology*

*Faculty Mentor(s): Bree Mohr, Benjamín Alemán*

*Session: Prerecorded Poster Presentation*

Gastric cancer affects the stomach, esophagus, and duodenum. Its presence is often asymptomatic until reaching advanced stages of the disease. By the time they were officially diagnosed, around 50% of patients’ cancer had progressed beyond the locoregional area and only 50% could have a
curative resection. Current diagnostic techniques for gastric cancer include endoscopy and a barium swallow study, both with their own faults. Endoscopy is a highly invasive and costly procedure and a barium study tends to be inaccurate. This study aims to evaluate the effectiveness in gastric cancer cell entrapment with a carbon nanotube (CNT) substrate. We patterned a silicon substrate with a checkerboard carbon nanotube surface and seeded on two gastric cell lines in decreasing densities and counted the overall capture rate on both materials. Overall, the results indicate that there may be preferential entrapment at a specific range for fully adherent gastric cancer cells.

The Evolution of Coronaviruses: Cross-Species Transfers and Mechanisms of Infections
Tristan McKibben—Biochemistry
Faculty Mentor(s): J. Josh Snodgrass
Session 5.5: McNair Scholars Presentations
The emergence of the SARS-CoV-2 virus and its accompanying disease, COVID-19, in late 2019 has had a global impact that will likely be felt for decades to come. As the number of infections and deaths around the world keep rising, there is a pressing need to better understand the virus and its origin. This research reviews the evolution of coronaviruses as well as mechanisms of cross-species transfers and infection. Researchers have identified that SARS-CoV-2 uses the same receptor for cell entry as SARS-CoV (the virus responsible for the SARS epidemic of 2002-2004), which may aid in combating SARS-CoV-2. In comparing the mechanisms by which SARS-CoV entered the human population and proceeded to infect human hosts to what is currently known about SARS-CoV-2, it is possible to identify areas of research that potentially provide the most utility in the search for a vaccine. The present paper systematically reviews published literature on coronaviruses with the goal of identifying promising avenues for future research.

Suspending Disbelief in the Unreal: The Craft of Magical Realism
Sophia Mick—Humanities
Faculty Mentor(s): Will Alden
Session 4: Let’s KIDD Around: KIDD Creative Writing Program
How do you get a reader to happily believe that your character’s husband has turned into an ape? Or that your narrator has developed a concerning but largely unimportant ability to fly? Why? Magical realism is often distinguished from other literary genres with a definition, however malleable, along
these lines: a realistic narrative with surreal elements. These surreal elements are what fascinate me. This essay explores, on the micro scale, how understatement and detail help craft the suspension of disbelief necessary in the creation of magical realism, and on a macro scale, what magical realism means, both the term itself and the implications it has for author and reader. My research is composed of a close analysis of the micro techniques in works by authors Aimee Bender, Joseph O’Neill and Karen Russell, analysis of craft essays by Russell and Alice Munro, and a brief look at some of my own writing through the lens of Bret Anthony Johnston’s “Don’t Write What You Know.” As a lover of the magically real, I intend to examine and explain the literary craft of convincing magical realism and hopefully, to grasp at some understanding of why anyone would, or should, write it at all.

Behavior of C. elegans and C. inopinatus

Saad Mirza—General Science
Co-Presenter(s): Elena Ortega
Faculty Mentor(s): Nadia Singh
Session: Prerecorded Poster Presentation

Behavioral change frequently accompanies ecological divergence. This study observed C. elegans and C. inopinatus behavior. It is already common knowledge that C. elegans are found in rotting plants all over the world whereas the C. inopinata are only found in Japan. The basis of this experiment was to observe what kind of bacteria each nematode prefers. This was done by taking the two different nematodes, placing them in the middle of a petri dish separately. Two different types of bacteria would be placed on the left and right side which then allowed for observation of the behavior. Raw data was collected by counting the amount of nematodes on both left and right sides. Results showed that although bacteria was preferred over no bacteria, the two nematode species did not show any differences in their preferences even though C. elegans N2 is lab adapted and C. inopinata is not. This work sets the stage for future studies aimed at understanding the genetic basis of interspecific interactions and behavioral divergence.
The Influence of Russia in the Former Soviet Republics and Beyond.
Maryam Moghaddami—Cinema Studies, Psychology
Faculty Mentor(s): Matthias Vogel
Session: Prerecorded Poster Presentation
Historically an international and regional power, Russia once more dominates the headlines with Russian influence seen from Ukraine to the United Kingdom and even Bolivia. Russia’s rise to prominence and the concurrent conservative wave that has swept many countries in Europe and beyond serves as a chilling echo of the Soviet Union.
In this research project, I will examine the recent history of Russia in relation to its neighbors and the current tactics used to exert political, economic, and cultural influence over the former Republics in order to better understand how Russia’s increasing global authority is a reflection of its dominance within its sphere of influence. Additionally, I will explore the parallels in these recent issues to those of the Soviet Union and consider what may be said about Russia’s future given the USSR’s past. In my research I investigate and analyze news publications, scholarly journals and magazines, and data published by non-governmental as well as governmental organizations. For many years now Russia has been striving to exert control over the former Soviet Republics that crowd the eastern Russian border. My research demonstrates how Russia also utilizes its significant soft power in Eastern Europe and Central Asia to further Russian influence over the countries in these regions and their peoples.

Anaerobic digestion of wastewater sludge in the atmospheric gases of Mars
Alexandria Montgomery—Biology
Faculty Mentor(s): Tyler Radniecki, Ashley Berninghaus
Session 5: The Bonds that Make Us
Proposed future missions to send humans to Mars for long term exploration require the development of improved waste management technology in space and increased reliable energy for running necessary systems. In this study, the potential of methanogenic bacteria from wastewater sludge to be a source of biomethane in the atmospheric composition of Mars was explored. Bottles of wastewater containing methanogens were prepared anaerobically and sparged with either nitrogen or a martian gas mixture and their biogas production was tracked and compared over time. Research findings proving high survivalbility rates of the bacteria and high metabolic function under these
extreme conditions suggest anaerobic digestion of mission waste to be a viable solution for recycling human waste and producing biomethane for the production of energy.

**Intersectional Analysis of Heroin Use**

Joseph Moore—Sociology

Faculty Mentor(s): Clare Evans

Session 5.5: McNair Scholars Presentations

The current opioid epidemic has produced long-lasting consequences for a large population of people in the United States. One of these consequences is addiction, leading to the transition from the often expensive prescription opioids that are prescribed by doctors to the use of less expensive and easily accessible heroin. This research answers the question of how does heroin use differ by race/ethnicity, gender, and socioeconomic status and what is the predicted probability of future use among these strata? To accomplish this task I will perform statistical analysis using the most recent survey data sets ranging from 2015-2018 as they were made available by the National Survey on Drug Use and Health (NSDUH). These public use data sets contain 226,632 non-institutionalized US participants aged 12 or older combined. I will use these public data sets to run regression models and calculate probability. My findings thus far demonstrate a higher usage pattern among males living in poverty of all race/ethnicities, with white males using at the highest rate. Furthermore, the least amount of usage rests with African-American females living at more than 2 times the federal poverty threshold level. The results of this study will demonstrate the extent at which heroin is used among different social strata contributing to the existing knowledge.

**Race and Space: Gentrification in Tacoma/Eviction Crisis**

Joseph Moore—Sociology

Faculty Mentor(s): Raoul Lievanos

Session 5.5: McNair Scholars Presentations

Gentrification is a process in which middle class homebuyers, landlords and developers build new structures on previously developed land once occupied by working class populations. This practice has displaced low-income and African-American residents from their homes with little to no time to come up with the type of capital needed to relocate. This research was focused on the gentrification taking place in the Hilltop neighborhood in Tacoma, Washington, which has been a historically African-
American area since the early 20th century. The purpose of this study was to use data in the form of firsthand accounts from the residents of Tacoma, narratives from past case studies, city of Tacoma documents, and historical analysis to demonstrate the use of discriminatory real estate/housing practices that have dictated the use of space within Tacoma. This study also used data in the form of eviction rates, percentages, number of evictions, and the number of eviction notices from the Hilltop neighborhood in comparison to the data from the city, state, regional, and national levels. Further data was used in the form of the rising rent costs and property values that have contributed to the displacement of low-income and African-American populations from the Hilltop neighborhood. This study will culminate in a well-researched article that will contribute to existing knowledge and provide further evidence for the occurrence of gentrification in Tacoma.

Rational Design and Synthesis for Nickel Catalyzed Hydrosilylation

Parker Morris—Chemistry

Faculty Mentor(s): Amanda Cook, Kiana Kawamura

Session: Prerecorded Poster Presentation

The chemical industry, which accounts for ~7% of the US’s energy consumption, is the source of synthetic products used every day, from plastics to pharmaceuticals. Catalysts are used abundantly in industry because they make reactions faster and more selective, thus generating less waste. One important class of reactions is alkene hydrosilylation, which combines two molecules (an alkene with a carbon-carbon double bond and a silane) into one molecule that is then used to make products like rubbers and cosmetics. Hydrosilylation is limited because purifying the starting alkene is energy intensive. Current industrial catalysts use rare platinum metal and produce waste. In our research, we utilize catalysts based on nickel, an Earth-abundant metal, for hydrosilylation of alkenes. In this project, 15 nickel catalysts were tested to determine their reactivity with styrene and diphenyl silane. Two of the 15 catalysts were designed and synthesized in multi-step organic synthesis. A primary objective of the work was designing and synthesizing a library of proposed catalytic compounds. It was found that of the 15, the two synthesized in lab were the most effect catalysts in terms of both selectivity and yield. Based on the work, we were able to hypothesize a catalytic reaction mechanism. Using this rational approach to catalyst design, we aim to develop a novel catalyst that can influence the chemical industry.
**Antihaitianismo in the Dominican Republic**

Catherine Morse—Psychology and Philosophy  
Faculty Mentor(s): Matthias Vogel  
Session: Prerecorded Poster Presentation

The Caribbean island of Hispaniola, home to the Dominican Republic and Haiti, has long been known for its agriculture and tourism industry. Its beaches and attractions are known around the world but the images of tropical paradise are deceptive. In the Dominican Republic, there is great oppression against Haitians often called “Antihaitianismo.” Starting during the age of colonialism, racism especially against people of darker skin color has been a prominent issue which is continuing to circulate inhumane discrimination today. Currently, almost all Haitians living on the island are facing prosecution, poverty, elements of human insecurity, and racial/sexual violence leading to a narrative of a racist, misogynistic culture. In analyzing recent opinions and events, the central questions I address deal with the effects of dissolved Haitian birthright citizenship and the extent of racial and sexual violence against Haitian women. Combining case study interviews and in-depth research, I will highlight the extent of this oppression and its historical importance. With my research project I hope to provide insight into the workings of racism and unravel “Antihaitianismo” and its continuing influence today.

**Guidelines for the Representation of Women in Written News**

Julia Mueller—Journalism  
Faculty Mentor(s): Peter Laufer  
Session 3: Pens & Clicks are Mightier than the Sword

Researchers have recently begun to realize the impact of patriarchy on language, and the consequential role of male-centric or male-normative language in separating men from women, thus reinforcing women’s roles as the “second sex” in society. Even as society takes strides towards impartiality, implicit bias is still present in the way we speak, write—and specifically, report. This thesis examines and analyzes current industry standards of style guidelines related to the representation of women in written news in the context of contemporary psychological and linguistic research on the interplay of language and gender. Developing case studies from the results of a survey disseminated to over a thousand journalism professionals in the Pacific Northwest, this project explores current industry practices, newsroom-specific practices, gender-focused trainings
or lack thereof, and the survey subjects’ own perceptions of where journalistic standards are lacking with regard to the representation of women in the news.

**Outlasting the Binary: Analysis of Gender and Queer Representation in Outlast II**

Maggie Murphy—Psychology  
Faculty Mentor(s): Oluwakemi “Kemi” Balogun  
Session 1: Human Behavior—I am Who I Am

The components within Horror Media has been a topic of study for decades. A major gap in the scholarship is how representations within horror media impacts marginalized communities negatively. Using the first-person survival horror game Outlast II, I ask how these tropes accentuate the archetypes of hegemonic masculinity and emphasized femininity as well as how they conventionalize individuals that challenge the gender binary. The cutscenes, dialogue, documents, and recordings collected will be analyzed, providing evidence for the forthcoming discussions about the representation of gender and queer communities within this game. Results show that the game emphasizes similar themes commonly found in horror media. These include: the “male protector” and “damsel in distress” archetypes, the violent mistreatment of women, framing sexually transmitted diseases (STD’s) as grotesque, exclusion of primary female characters, stereotyping queer characters, and emphasis on hegemonic masculinity, a term coined by Connell (1987). This case study will provide further evidence for ongoing research on horror media and its use of the gender binary, stereotypical male/female roles, and exclusion of non-stereotypical gender non-conforming or queer characters.

**Examining Validity of MTurk Workers Responses Based on Monetary Reward: A Qualitative Data Analysis**

Maggie Murphy—Psychology  
Faculty Mentor(s): David Condon  
Session: Prerecorded Poster Presentation

Amazon’s Mechanical Turk is an online crowdsourcing marketplace (OCM) that has become widely used for data collection in scientific research, especially in the social sciences. In psychology research, a common use of the platform is to pay MTurk workers (aka “MTurkers”) to complete surveys and online behavioral tasks. The MTurkers are then paid for their contribution to the survey;
however, little research has considered the effect of payment on data quality (Chmielewski & Kucker, 2019). We hypothesize that the accuracy of responses are partially dependent on the amount the MTurk Workers are paid for their responses. In this study, we sought to evaluate the effect of compensation on the care that MTurkers displayed in their responses to the survey. We look to explore the validity of MTurk responses using an SPI norming survey created by Professor Condon, and delineating it by three factors: one that compensated workers at a rate equal to the US federal minimum wage, one paying minimum wage plus 25%, and a third paying 25% less than minimum wage with an unannounced bonus (up to minimum wage) after the work was completed. We compare their responses based on the time spent responding to the survey, inter-item correlations, and evidence of “patterned responding” (e.g., choosing the same response option for several questions in a row). The findings from our research will be beneficial to researchers using MTurk and other OCMs for data collection.

**Characterization of sound-evoked responses of photo-identified auditory striatal neurons**

Matthew Nardoci—Biochemistry/Biology

Co-Presenter(s): Jewlyssa Pedregon

Faculty Mentor(s): Santiago Jaramillo

Session: Prerecorded Poster Presentation

The striatum plays a critical role in decision-making based on sensory input. Specifically, the posterior region of the striatum receives projections from auditory regions of both the cerebral cortex and the thalamus. This posterior region of the striatum contains several classes of neurons, but it is not known whether these distinct neuron classes respond uniquely to different sound stimuli. Specifically, the striatum contains two types of medium spiny neurons (MSNs) that form the direct and indirect pathways, suggesting that these MSNs play distinct roles. To test whether these two types of MSNs differ in their responses to sounds, we characterized evoked responses to basic acoustic stimuli such as pure tones and amplitude modulated white noise in naive mice. We discovered that the two populations of striatal neurons differ in the way they represent temporal modulations of sounds. This suggests that direct and indirect pathway neurons in the posterior striatum differently influence sound-driven decisions as they each process distinct sound features.
Advancing threespine stickleback as an outbred immunogenetics model by pinpointing the onset of adaptive immunity

Emily Niebergall—Biology

Faculty Mentor(s): William Cresko, Emily Beck

Session 4: Earning your Stripes

Understanding when the onset of the adaptive immune system occurs is important for understanding host-microbe interactions and etiology of disease. While the onset of adaptive immunity has been studied in inbred animal models, i.e. mice and zebrafish, these laboratory models lack the genetic diversity found in humans and may not be appropriate for all studies. We are advancing threespine stickleback fish (Gasterosteus aculeatus) as a novel outbred immunogenetics model to elucidate the complexities of these interactions in the context of genetic variation. It is currently unknown when adaptive immunity is onset in threespine stickleback. To pinpoint the timing of onset of adaptive immunity, we looked at the expression of an early adaptive immune gene known to be involved in T-lymphocyte development throughout a developmental time series. T-lymphocytes are a primary adaptive immune cells able to recognize and elicit a response against pathogens. Early development of these cells utilizes two interconnected protein complexes: CD3 and TCR. The pre-TCR/CD3 supercomplex has been used to study the ontogeny of the immune system and has provided insight into the development of the adaptive immune system. In this study, we chose to focus on cd3d, a gene involved in the CD3 complex. Similar work determining the onset of adaptive immunity in other fish has produced a wide range of results, from 72 hours post fertilization to 20 days post hatching (dph). We found that by 10 dph, cd3d was expressed in all individuals, with population level variation indicating some may exhibit expression earlier in development.

The Pearl of Santa Radegonda: An Investigation into Chiara Margarita Cozzolani’s Musical Fortune and Success during the Early to Mid-Baroque Era

Natalie North—Percussion Performance and Music Theory

Faculty Mentor(s): Holly Roberts

Session 3: Beyond a Melody

In the second-half of the sixteenth century, the Council of Trent declared nuns as political entities whose musical activities required strict oversight. These papal mandates utterly failed in Milan, as they were met with the fiery opposition of Milanese nuns whose music would remain as heralding feats of their communities. In this project, I explore the music and life of Chiara Margarita Cozzolani
(1602–78), a seventeenth-century nun and composer at the Milanese Benedictine convent, Santa Radegonda. In 1996, Robert Kendrick’s groundbreaking monograph (Celestial Sirens, Oxford University Press) immensely detailed the biographical and musical accounts of early modern women religious. For over twenty years, few scholars have continued this important work. Minimal scholarship has investigated how the backgrounds of Milanese nuns affected their long lasting legacies while living in cloistered convents. I contend that Cozzolani’s musical contribution would not have been celebrated during her lifetime had it not been for her entrance into the monastery as a member of Milanese nobility, during a time in which local clergy allowed women religious more artistic freedom. Additionally, I argue that Cozzolani’s position as maestra di cappella (choirmaster) of Santa Radegonda afforded her the unique privilege to perform, print, and preserve her music which ensured her legacy as a formidable composer in a field usually reserved for men. Support for my argument comes from the lack of extant biographies of Cozzolani’s female contemporaries that are without extraordinary upbringings. Had it not been for her fortunate happenstances, would Cozzolani’s music survive today?

Supersymmetric Long Lived Particle Search Using Proton-Proton Collision Data and Simulations from the ATLAS Experiment

Laura Nosler—Physics
Faculty Mentor(s): Laura Jeanty
Session 5: To the Moon and Back—Relativity Matters

Despite the wealth of information gained by high energy physics over the past few decades, there are still several fundamental gaps in our understanding of the universe. One theory that may provide answers to some of these questions is supersymmetry, which predicts the existence of new particles. In many variations of supersymmetry, some of these particles are expected to have comparatively longer lifetimes. Our research attempts to optimize searches for long lived particles by studying the properties of their signatures and comparing two different methods of reconstructing the energy missing after a collision, with the goal of understanding how the reconstruction algorithms behave for these new particles. To do this, we compare simulated data from proton-proton collisions detected by the ATLAS experiment at the Large Hadron Collider at CERN reconstructed with these two different algorithms and perform analyses that reveal their differences. The results we have found so far have displayed the differences in the efficiencies of these reconstruction methods in our search, revealing the impact these algorithms will have on our final results and allowing us to improve our sensitivity by tuning our selection routines. The final goal of our experiment is to gain
a more comprehensive understanding of how to accurately identify these particles in real data, at which point we will extend our experiment to include non-simulated collision data from the ATLAS experiment.

**Glomerular Signals Underlying Olfactory Navigation**

**Nelly Nouboussi—Biology**

**Faculty Mentor(s): Matt Smear, Amanda Welch**

**Session 3: The Substance of Us**

The olfactory system is the least studied sense although it is very important for our existence. Our lab has examined the behavioral structure of olfactory navigation. Our next goal is to compare sampling movements directly against sensory input in order to establish a correlation between neural activity and behavior. The first step in this goal, which is the topic of my thesis, is to successfully express fluorescence indicators in the olfactory bulb and to detect this expression using our imaging apparatus. We are focusing specifically in the glomeruli, which contains the neurons responsible for converting odor information into action potentials. To achieve the expression of our fluorescence sensor GCaMP, we either injected a virus encoding the fluorescence protein into mice brains or engineered mice to encode the sensor gene in their genome. We worked with three mice strains: B6 mice which can express GCaMP anywhere, Tbet-Cre mice which can express the virus only in the mitral layer and Tbet-Cre-Ai148D mice which contain the GCaMP gene in their genome. Histology revealed that we successfully expressed GCaMP in B6 mice, but we could only observe background fluorescence in Tbet-Cre and Tbet-Cre-Ai148D mice. This could result from the frying of the bulb due to continuous expression of the protein or the degradation of the virus. Despite the difficulty of the surgeries, we could visualize activity in the glomeruli of live mice with the two-photon microscope, although our success rate remains low. We are continuously adjusting our protocol to improve our techniques, so we can move on to the next stage of our project.

**A Critical Examination of Abstraction in John Dewey’s Reflective Thought**

**William O’Brien—Philosophy**

**Faculty Mentor(s): Steven Brence**

**Session 3: Beyond a Melody**

In this paper, I critically examine our human capacity for abstraction. I examine this tool in the pragmatic terms of John Dewey, wherein abstraction is understood as our human capacity used to
successfully engage in our environment and achieve our interests and purposes. Specifically in the context of John Dewey’s reflective thought, I critically examine abstraction’s process and purpose. From this examination, the essential role that the tool of abstraction plays comes to light. It is seen that abstraction is necessary for reflective thought to function, and without it, this personally familiar process would cease to be. After showing abstraction’s essential role in this familiar context, I get into explaining problematic aspects of reflective thought’s logical understanding of abstraction. This understanding of abstraction has been the basis upon which reflective thought may produce logical results that are problematically ‘out of touch’ and biased. I take up the ‘reasonable woman standard’ in law to illustrate a concrete example of this. Ultimately, I conclude that for reflective thought we still need the same logical understanding of abstraction, but only insofar as it serves as a basis for a new logical understanding, wherein we must always ask and consider the question of who, in order to avoid logical results that are problematically exclusive and biased.

The Atomistic Reconstruction of Coarse-Grained Polymeric Systems via Machine Learning Techniques

Jake Olsen—Chemistry and Mathematics

Faculty Mentor(s): Marina Guenza, Jake Searcy

Session 1: It’s a Science Thing

Polymeric systems, things like proteins, DNA, and synthetic plastics, are of great interest for their applications in material design and the biomedical industry. Therefore, having time-efficient and inexpensive approaches to investigate these systems on multiple scales, from the microscopic to the macroscopic level, is of great importance and necessity. Molecular dynamics (MD) simulations are one such tool for investigating these systems; however, MD simulations that simulate polymer systems in their atomistic (AT) representation are unable to reach the time scale necessary so that the system exhibits the correct chain characteristics. Thus, coarse-graining (CG) methods, a process by which the local degrees of freedom are averaged out, are applied to improve upon computational time. Unfortunately, the computational gain is coupled with the loss of statistical information from the CG process. Therefore, to regain the lost AT information the CG trajectories need to be transformed back to an AT representation. This process is known as backmapping. Utilizing state-of-the-art machine learning techniques coupled with AT data, we have developed a backmapping procedure for CG polymeric systems. The model, centered around a recurrent neural network (RNN), shows strong agreement with the AT data across many statistical quantities prompting further investigation and development of the model.
Coercion of Seventeenth Century Laity Under the Guise of Religion
Sydney O’Neil—History Sociology
Session: Prerecorded Poster Presentation

In early 1692, an episode of witchcraft occurred that was different from any other outbreak in New England. The series of accusations, trials, and executions lasted longer, jailed and executed more suspects, and rippled the social, political, and religious norms within Salem, Massachusetts, more than any other incidence of suspected witchcraft. In the end there were some 1,600 accusations, 162 arrests, 54 confessions, 20 executions, and, shortly after its end, a government repudiation as a colossal mistake. This episode was caused by something deeper than petty squabbles between neighbors which seem to have been at the root of earlier and less extreme episodes of witchcraft. The goal of this research was to offer a more fully encompassing explanation of how the Salem Witch Trials became a moral panic. In accordance with a seventeenth-century Puritan worldview, in which religion played a central role, the rhetoric of sermons was analyzed to determine causation between sermons and trial accusations. The style, tone, and substance of the ministers sermons are examined before and during the trials. The persuasive sermons and everyday rhetoric by Puritan ministers acted as a call to action for Salem citizens, and were key in promoting the ministers' personal agendas. Similarly, through these sermons ministers provided an explanation for the disproportionate prosecution of women, as well as the unjustly extracted confessions of satanic collusion from accusers, leading to extreme numbers of accusations, trials, and executions, and perpetuating the duration and extremity of the Salem Witch Trials.

Lolicon and Its Effects on Japanese Society
Natalie Padilla—Computer science
Co-Presenter(s): Elizabeth Chandler, Jamie Arpan
Session: Prerecorded Poster Presentation

Hypersexualization of minors is a continuous problem prevalent in Japan. This particular brand of hypersexualization is known as Lolicon which is the attraction to prepubescent girls, particularly in anime and manga. Historically, it is derived from the 1955 novel titled Lolita, which depicts a middle-aged man’s dark obsession with a young girl, but Lolicon didn’t become a recognized genre until the 1970’s when fan artists depicted their favorite female characters of the time as underage girls. There is still ongoing debate within Japanese society about its harmful effects, some dubbing it as a “sickness”, while other individuals find no problem with continuing the practice. Regardless, it is
still incredibly easy to find openly in Japan, with convenience stores selling magazines containing lolicon imagery. Utilizing academic research, we will showcase how this problem is influencing and normalizing the attraction to underage girls. We will discuss the impact, local and globally, on the acceptance and societal effect of Lolicon, as well as the steps taken to combat its influence in Japan.

**Characterizing the Conformational Fluctuations of DNA Under Physiological and Salt-Stabilized Conditions**

Maya Pande—Biochemistry, Political Science  
Co-Presenter(s): Anabel Chang  
Faculty Mentor(s): Andrew Marcus  
Session: Prerecorded Poster Presentation

The Marcus Group conducts studies on the dynamics of macromolecules in biological environments. In our experiments, we used a variety of techniques to analyze the structure of DNA with the overall goal of better understanding the conformations it can take. Our studies were focused in two areas: (1) understanding the mechanisms of DNA breathing, and (2) conducting experiments on the stabilizing and destabilizing properties of salt solutions on DNA. Techniques included circular and linear dichroism, UV-Vis spectroscopy, and Förster Resonance Energy Transfer (FRET). Determining the structure of DNA is crucial to understanding biochemical and molecular events essential for gene expression and DNA replication. For these processes to occur, various proteins must access ssDNA coding templates which are otherwise inaccessible due to complementary base pairing in dsDNA. Proteins rely on thermal fluctuations in the DNA double-stranded region at physiological temperatures known as DNA ‘breathing’. Studies are ongoing, but thus far have led us to a better understanding of the energetic favorability of various conformations of DNA.

**How Does Our Background Influence Social Output?**

Kathryn Paulus—Linguistics, Pre-International Studies  
Co-Presenter(s): Claire Amistoso, Bryan Salazar, Owen Morgan  
Faculty Mentor(s): Melissa Baese-Berk  
Session 1: Human Behavior—I am Who I Am

Recently, intersectionality has been used to analyze social dynamics around the world. We recognize that everyone comes from different places and has many different experiences. To
Operationalize social background, we divided social background into four subsections: race/ethnicity, socioeconomic, language and gender. Our research focuses on how people express each subsection of social background. We plan on releasing a survey that focuses on four major topics by asking a series of questions within each topic. Because of the current situation of the world, we plan on releasing this survey on our social media platforms such as Snapchat and Instagram. The significance of this research is to identify the results of intersectionality through social output from diverse backgrounds.

Focusing on those aspects of our lives is something that not everyone around the world fully realizes yet, as we only focus on either one or two of those. So it's a topic that we as a research group want to focus as to how everything builds up to one point in our lives and how impactful it is for better or for worse.

Effects of Feedback-Related Negativity on Executive Function and Development in Preschoolers

Dakota Paulus—Biology, Biochemistry Minor
Co-Presenter(s): Nisha Sridhar, Katia Pramono
Faculty Mentor(s): Tyson Barker, Leticia Hayes
Session 5: The Wonders of the Brain

Executive function (EF) is a set of higher-order cognitive skills that support early learning and development. EF is highly influenced by environmental factors such as exposure to stress and social interaction. The prefrontal cortex (PFC) is one of the primary neural regions underlying EF. As the PFC develops during early childhood, the brain begins to lay the groundwork for more complex processing. One neural component that supports EF, feedback-related negativity (FRN), is measurable using electroencephalography (EEG), a device that measures the brain's electrical activity. FRN is observed following both positive and negative feedback and is generated by the PFC. Although FRN is theorized to represent EF, little is known about the FRN development in early childhood: a period of critical EF development.

We predict that children's FRN will be positively related to a behavioral measure of EF, which was collected during a previous study. Thus, we propose that FRN will reflect an early neural indicator of EF. Previous research has used tasks without intermittent reinforcement making it difficult to maintain children's attention. We will be using the Doors Game, which is a novel feedback-based task providing intermittent random reinforcement to children upon their selection between two doors. This task presents the reward immediately alongside feedback, thus it is more age-appropriate due
to its ability to sustain their motivation. As feedback processing serves an important role in early childhood development and may serve as a novel indicator of EF, it is a promising area for research.

**What Parts of Status Matter? Comparing Respect and Admiration to Social Influence**

Joshua Pearman—Psychology

Faculty Mentor(s): Bradley Hughes, Sanjay Srivastava

Session: Prerecorded Poster Presentation

In social hierarchies, people are organized based on their relative status compared to others. A person’s status is determined by the judgments of others and has two components: respect and admiration and social influence. The focus of this work was to understand the relationship and effects of these components in interpersonal perceptions. We tested three hypotheses: 1) The components of status, respect/admiration and social influence, will be associated such that individuals who are perceived as having greater respect/admiration will also have higher levels of social influence; 2) Others will agree about who has status in a group (consensus), and will also agree about their own relative status in the group (self-other agreement); 3) Personality traits will predict who attains status. To test these hypotheses, we had groups of n = 4 – 6 (N = 218) complete a leaderless group decision making task and then provide ratings about the status and personality of each of the other members of the group and make decisions about who they would prefer to work with on future tasks. The preregistered analysis will use a Social Relations Model approach to account for dependencies in the data and linear regression models to test the hypotheses. We will present the results from this analysis and discuss implications of a two-component approach to status for future work.

**Hogs and Hazelnuts: resolving conflict between oak conservation and organic agriculture**

Calvin Penkauskas—Environmental Science and Biology

Faculty Mentor(s): Alejandro Brambila, Lauren Hallett

Session 2: Oregon Trails

The Oregon hazelnut industry makes up over 99% of domestic production and 4% worldwide. The key economic pest of hazelnuts in the Pacific Northwest is filbertworm and population sinks are located in nearby oak habitat. This is of concern because there is only 5% of oak habitat left in the Willamette
Valley, which is mostly on private agricultural land, and oaks are an important keystone species. Here, I present a case study of a novel strategy to reconcile this conflict by using domesticated pigs (hogs) to reduce pest pressure in surrounding native oak habitat. I investigated the use of hogs to glean filbertworm infested acorns from an oak woodland floor, the effects on the mating population, and the subsequent proportion of infested acorns. My results demonstrate that grazing in oak patches can be an effective method to reduce filbertworm pest populations. While hog silvopasture has potential to be an effective biological pest control method, this practice will only be implemented widely if hazelnut farmers are receptive to the benefits it can provide. Furthermore, in addition to supporting diverse and sustainable farm operations, silvopasturing hogs in oak patches can benefit oak conservation goals by converting them from a landowner’s liability into an asset. Since this novel pest management approach seeks to regionally benefit both environmental concerns and farmers, this example provides a model for similar challenges and conflicts where agricultural and wildlands interact in the same landscape.

**Characterizing the relationship between bacterial motility and range expansion**

Noah Pettinari—Physics

Faculty Mentor(s): Raghuveer Parthasarathy

Session 5: To the Moon and Back—Relativity Matters

Self-propelled organisms were first observed under the microscope over 300 years ago. Since then, great strides have been made in characterizing the mechanisms behind motile behavior in bacteria, but current models relating cellular motility to bulk range expansion have not been rigorously tested. To better characterize the relationship between these micro- and macroscale patterns, our research is focused on the analysis of images collected via light sheet fluorescence microscopy of bacterial cells and macroscopic imaging of range expansion. Preliminary results have suggested disagreements between predicted rates of range expansion and cellular motility. Further data and analysis is needed to confirm these results. These findings may highlight the need for the consideration of spatial structure or the possibility of unknown mechanisms in current models.
Meeting Needs and Reclaiming Communal Autonomy: Post-Conflict Community Organizing in Rural Colombia

Sarah Pishioneri—Political Science

Session 4: Cultural Considerations—The Other

This presentation details community organizing practices that work to rebuild a social framework devastated by armed conflict in Caño Berruguita, a rural village in the Montes de María region of northwestern Colombia. Through an exploratory analysis of this particular community’s post-conflict experience and by looking more broadly at the rural reform efforts by governmental bodies and nongovernmental organizations, this presentation highlights local organizing efforts as the primary means of Colombian communities to reclaim their communal dignity and assert their territorial autonomy. The findings of this work are primarily sourced from a 10-day field study in Caño Berruguita, and secondarily from varying peace and conflict contexts provided in a 4-week intensive study program in Cartagena, Colombia. Results show that while structural organizations, projects, partnerships, and goals of informal and formal community groups not only rebuild, but embolden rural communities, community leaders themselves face significant risk by engaging in this work.

Emery Owens Abstract

Chelsea Pitarresi—Journalism, Cinema Studies

Faculty Mentor(s): Dan Cheung

Session 4: Let’s KIDD Around: KIDD Creative Writing Program

“Emery Owens” is a story of the liminal spaces of life; the peculiarity of the early stages of adulthood and adult relationships, when you have been given both the freedom and restrictions of an established adult, but have no idea how to take advantage of them. Max finds comfort in these in-betweens, and has difficulties moving to the next “big thing” his life has to offer. While adjusting to surprising annoyances in his new job at the bowling alley, Max leans on his brand-new relationship with Delilah for comfort. As the relationship progresses though, he finds himself not wanting to break the illusions of perfection that newness can offer relationships, and directs his anxieties towards Delilah’s unusual pet, Emery Owens. When I first started writing the story, I was focused purely on the strange dynamic between Max and Emery Owens and was writing with a very specific and dramatic ending in mind. However, as my writing came into shape, I found the real value of Max’s story in the smaller moments.
Lobodon carcinophaga: Evolutionary constraints on the spatial variability of crabeater seal postcanine teeth for successful filter-feeding foraging strategies

Megan Pollak—Earth Sciences—Paleontology
Faculty Mentor(s): Kellum Tate-Jones
Session 6: The Earth, Sky & Everything In Between

Pinnipeds, the group that includes true seals, eared seals, and walruses, generally display highly variable tooth spacing. Previous studies have credited this variability to the typical pinniped feeding mechanism, a combination of suction feeding and pierce feeding known as the "grab-and-gulp" method, which does not require precise dental occlusion. However, the crabeater seal (i.e., Lobodon carcinophaga) is unique among pinnipeds as a filter-feeder. The distinct sieve-like postcanine tooth processes such as high-cuspation and intricate trellis-like morphology allow the crabeater seal to effectively strain small krill from the water. I hypothesize that individuals in this group with unevenly spaced teeth are unlikely to survive ecological pressures and are thus removed from the population by natural selection, leading to lesser variation in crabeater seal tooth spacing than in grab-and-gulp feeders. I test this hypothesis by assessing whether the distinctive feeding method of the crabeater seal constrains tooth spacing by comparing the variability in tooth gaps of crabeater seals to that of bearded seals (i.e., Erignathus barbatus). I measured the tooth gaps between the postcanine teeth of 21 specimens of L. carcinophaga and 11 specimens of E. barbatus. I then performed an F test of equal variance on these two datasets. I found that crabeater seal tooth gaps are significantly less variable in spacing than those of bearded seals. This result supports my hypothesis that natural selective processes have generated evolutionary constraints for lower variability in tooth spacing in the filter-feeder, L. carcinophaga, than in grab-and-gulp feeders such as E. barbatus.

What I Wanted to Say, But Couldn’t: Epistolary Poetry’s Effects on Access and Intimacy for Asian-American Diasporic Poets

Katie Quines—Spatial Data Science, Geography
Faculty Mentor(s): Ariel Machell
Session 4: Let’s KIDD Around: KIDD Creative Writing Program

While much attention has been paid to the thematic similarities between poetic works produced by Asian-American writers, little commentary exists on why several Asian-American poets are partial to a particular poetic form: the epistolary poem, or a poem stylized as a letter. Contemporary poets
ranging from Franny Choi to Ocean Vuong have produced several epistolary poems that discuss their perspectives on the experience of being part of the Asian diaspora. However, the epistolary form creates varied and distinct effects on themes common to diasporic writing, with some letter-poems giving authors access to voice and emotions that critique external, social structures, while some choose to address issues that exist internal to the Asian-American community. This project explores different benefits that the epistolary format confers upon poems written to address the experience of diaspora. By analyzing letter-poems from four Asian-American poets in relation to Marie Myuk-Ok's theory that the epistolary poem functions as a means of giving minorities access to social critique, I argue that the letter-poems give access to more than pure critique. Rather, the epistolary format functions as a liminal space, which allows diasporic writers to both confront and come to terms with various forms of absence (racial equality and power, of knowledge of our own communities or histories, of physical separation from loved ones, etc.). This project aims to help poets like myself, who write under the shadow of diaspora, understand the epistolary poem as a form that is ripe with potential for creating new understandings of identity.

3D GM study of effects of age on cranial shape large-bodied Papionins, using molar wear as a proxy for age
Andrea Quintanilla—Anthropology
Faculty Mentor(s): Stephen Frost, Evan Simons
Session: Prerecorded Poster Presentation

Primate cranial shape in relation to age, sex and taxonomy is a growing topic of research, with large-bodied Old World monkeys being among the most studied using geometric morphometrics (GM) and used as models for human cranial shape variation. Ontogenetic changes to skull shape from juveniles to adults are well studied, but those that occur during adulthood are less well known: a twenty-year old is still an adult, but their skull could differ in shape compared to that of a sixty-year old. In this project, we used GM and multivariate analyses to observe changes of cranial shape that occur with post-adult aging. Forty-five 3D landmarks were collected with a Microscribe 3DX digitizer on a sample of 347 wild-collected baboon (Genus Papio) crania, and subjected to generalized Procrustes analysis using the Geomorph package in Rstudio; this superimposes the data and standardizes geometric size, but leaves shape differences. The resulting Procrustes shape coordinates were adjusted for size and sex with multivariate regression analysis to mitigate the effects of allometry and dimorphism. These adjusted coordinates were then regressed against upper third molar wear stage as a proxy for
age, using multivariate tests for significance. Principal components analysis was used to summarize the resulting shape space. Results demonstrated that there is a significant effect of molar wear stage on cranial shape, even after accounting for size and sex differences, but it is a subtle effect that accounts for approximately 1% of shape variance. In the future, we will investigate causes of this shape change.

**The T-shirt Problem: Environmental Issues Caused by Fast Fashion and Simple Ways to Upcycle a Cotton T-shirt**

Megan Rangel-Lynch—Environmental Studies  
Co-Presenter(s): Grace Kowalski, Freya Rhodes, Isaac Wasserman  
Faculty Mentor(s): Sarah Stoeckl, Kathryn Lynch  
Session 1: Environmental Leaders ARC

The t-shirt is a clothing item that fills all people’s drawers, but when not sourced or disposed of sustainably, can have serious environmental impacts. This project aims to explain the negative environmental impacts of the fast fashion industry, a system of rapid production of on trend items using low quality materials, focused on high consumption rate. We are focusing on the t-shirt because it is a simple item almost everyone owns, and there are easy ways to use the fabric to upcycle, create new products, and reduce additional waste other products create. Our project will present alternatives to throwing away unwanted clothing items by upcycling shirts into reusable bags and plant hangers. Our tutorials provide a reusable alternative to products that create waste and ultimately emphasize a more sustainable way of upcycling items instead of buying new ones. Through researching the impacts of the T-Shirt and product alternatives such as plastic bags we will represent our research and our solutions through DIY instructional videos and an analysis of the data found from our research. By creating a video that discusses our research and gives DIY alternatives to clothing waste, we hope to educate viewers on the negative implications of buying into the fast fashion industry and prompt them to make choices emphasizing sustainability and upcycling old clothing resources.
Intergenerational Effects of Maternal Obesity on Offspring Mitochondrial Reactive Oxygen Species Production and DNA Damage

Maurisa Rapp—Human Physiology
Faculty Mentor(s): Carrie McCurdy, Byron Hetrick
Session: Prerecorded Poster Presentation

Epidemiological studies have shown that offspring from pregnancies complicated by maternal obesity have a 4-fold greater risk for developing childhood obesity and symptoms of metabolic syndrome. The developmental origins of health and disease (DOHaD) hypothesis states that certain environmental exposures during critical windows of development may have consequences for an individual's long-term health. DOHaD may explain a portion of the continual increase in obesity rates among children. In a non-human primate model, offspring of obese dams become sensitized to obesity-induced metabolic disruptions, including insulin resistance and mitochondrial dysfunction. Increased reactive oxygen species (ROS) production contributes to mitochondrial defects observed in obesity. Oxidative stress, which is caused by overproduction of ROS, can lead to mitochondrial DNA (mtDNA) mutations, decreased copy number, reduced membrane permeability and subsequent suppression of mitochondrial respiratory chain activity. Therefore, I hypothesize that maternal obesity increases offspring mitochondrial ROS production leading to mtDNA damage without loss of mtDNA abundance. To study the effect of maternal obesity, we used a previously established Japanese macaque model of fetal programming. Dams were fed either a control (CON) diet or western style diet (WSD) prior to and during pregnancy and lactation. Offspring were then weaned at 8 months and fed a healthy CON diet. Skeletal muscle biopsies from offspring were collected at 3 years of age and relative mtDNA abundance was measured using quantitative PCR (qPCR) amplification of short regions of mtDNA. No differences were measured in the amount of mtDNA between offspring groups. Moving forward, I will test for elevations in ROS-induced mtDNA damage by qPCR amplification. Overall, these data indicate that exposure to maternal obesity and WSD during fetal development does not reduce mitochondrial abundance in skeletal muscle of adolescent offspring.
Utilizing Behavioral and Molecular Techniques to Study Gap Junction Channels in Developing Zebrafish

Laura Reich—Biology

Faculty Mentor(s): Rachel Lukowicz, Adam Miller

Session 5: The Bonds that Make Us

Animal behavior requires coordination between the nervous and muscular systems. These systems communicate at specialized subcellular structures, found within and between systems, that allow the cells to coordinate their activity to achieve movement. One type of communication arises from gap junction channels (GJCs), which are built by the Connexin (Cx) family of proteins that allow for direct ionic and small molecule exchange between interconnected cells. The GJC family is large with up to 20 individual genes encoded in the human genome. Given this complexity, it is unknown how individual Cxs contribute to behavior. We are using the embryonic zebrafish to address this question due to its rapid development, genetic access, and its first behavior, spontaneous coiling, which requires GJCs. We first identified Cxs that were likely to contribute to coiling using a combination of RNA-seq and RNA detection in vivo and found a previously uncharacterized Cx, Cx46.8, expressed in slow muscle fibers. To understand Cx46.8’s involvement in coiling, we developed an automated behavioral tracking system, using DeepLabCuts (DLC), to track movement during spontaneous coiling. Using this system, we found that animals lacking Cx46.8 have defects in coiling, indicating that we have identified a novel Cx that contributes to behavior. Further experimentation will utilize DLC, in addition to molecular techniques, to unravel the molecular and functional mechanisms of Cx46.8 and other Cxs that contribute to GJC communication in behavior.

Perception of Language and Gender

Ava Reisman—Exploring

Co-Presenter(s): Cece Locati, Nico Sorensen, Hannah Hannley

Faculty Mentor(s): Melissa Baese-Berk

Session: Prerecorded Poster Presentation

Communication is one of the main ways humans perceive one another. By engaging in a conversation, more detail is likely to form one’s perception of an individual. Linguistically, we can display a specific message to an audience and have it understood, but what are the other factors involved in one’s interpretation of the information received and how is it linked to gender? Throughout history, the
physical form has been used to deplete the voice of intelligent speakers through societal bias against genders. Our focal point is an individual perception which we believe to be a product of traditional gender roles and most recently the pressures that outside sources like the media place on gender today. The end goal of our research is working towards an explanation of the biases that men and women face in both professional settings and in everyday life. By conducting our study we hope to help the community search for deeper equality between genders.

Polycomb Repressive Complex 2 Ensures Robust Skeletal Growth and Patterning During Zebrafish Fin Regeneration

Bryson Tyler Ricamona—Biology

Faculty Mentor(s): Scott Stewart, Kryn Stankunas

Session 5: The Bonds that Make Us

After amputation zebrafish regenerate their fins back to the correct size and shape. Fin bone regeneration is driven by an endogenous “stem cell” population generated by dedifferentiation of mature osteoblasts at the amputation site. The resulting osteo-progenitors both self-renew and re-differentiate until regeneration is complete. Yet it is unknown how mature osteoblasts reprogram and change gene expression patterns upon dedifferentiation. Recent in mammal work links chromatin function and covalent modification of histones to cellular potency and differentiation. Ezh1 and Ezh2 are key subunits of Polycomb Repressive Complex 2 (PRC2) that tri-methylates lysine 27 of histone H3 (H3K27me3) to maintain repressed states of developmental regulatory genes in mammals. To test if PRC2 is required for dedifferentiation during fin regeneration we analyzed regeneration in ezh1 and ezh2 mutant zebrafish. Here we show that, although ezh1−/−; ezh2+/− mutant fins regenerated largely to the same size as wildtype, they display notable defects in bone patterning. These defects, including the formation of large bony plates and the fusion of adjacent rays occur within 5 days post-amputation suggesting PRC2 is needed for a relatively early phase of regeneration. Such defects are exacerbated when PRC2 mutants are subjected to a second round of amputation in the regenerated region, possibly due to an increased amount of cells with abnormal H3K27me3 levels leading to dysregulation of gene expression. This suggests that PRC2 is a necessary regulator in the lineage specific osteoblast pathway during regeneration due to observations of abnormal bony ray morphology.
Digital Infrastructure and Physical Displacement in Portland, Oregon.
Marcella Rosen—Art and Technology
Faculty Mentor(s): David Rueter
Session 3: An Unprecedented Creative Work
In June 2018 the Portland City Council adopted Resolution 37371, which aims to implement programs that will transition Portland, OR, into a smart city. This thesis investigates Resolution 37371's obscured relationship to large tech conglomerations such as Google and AT&T. It explores the financial incentives that drive corporations to hide their influence over the urban built environment, and the digital facades that are created in order to do so. Employing the work of contemporary artists such as Mishka Henner, Guy Debord, and Hito Steyerl, as well as contemporary theorists such as Shoshana Zuboff, Shannon Mattern, Maros Krivy and Orit Halpern. This thesis will build a framework for understanding the dangers of hidden profit-driven cybernetic urbanism that will inform better conceptualization of Resolution 37371, as well as contribute to the methodology of a web and video art piece that will be accessible and digitally circulatable.

New Capabilities for Self-Driving Networks
Nolan Rudolph—Computer Science
Faculty Mentor(s): Ramakrishnan Durairajan
Session: Prerecorded Poster Presentation
Granted the annual trends in increasing internet usage, the University of Oregon Networking Research Group preemptively researches the concept of Self-Driving Networks (S-DNs) to create a self-remediating, high-performance network. In efforts of accomplishing this project, the lack of S-DN compatible software compels new research to be conducted on new capabilities for a self-driving network. In this project, we accomplish a light-weight visualization framework for flow level data accompanied by a scalable flow to packet generator usable by S-DNs.
Defining the roles of conserved DNA repair complexes in maintenance of C. elegans meiotic genome integrity

Alina Salagean—Biology
Faculty Mentor(s): Erik Toraason, Diana Libuda
Session 6: Interact & React

Most organisms utilize meiosis, a specialized form of cell division, to produce reproductive cells such as sperm and eggs. Failure to maintain genomic integrity during meiosis can result in serious diseases, including infertility and cancer. The Structural Maintenance of Chromosomes 5/6 complex (SMC-5/6), its E3 SUMO ligase subunit NSE-2, and the BRCA1/BARD1 heterodimer are conserved protein complexes implicated in ensuring accurate meiotic DNA repair and are known to genetically interact. However, the specific mechanisms by which these proteins interact to preserve genome integrity is unknown. To determine the NSE-2 specific and NSE-2 independent meiotic functions of the SMC-5/6 complex in meiotic DSB repair, we utilized immunofluorescence imaging and a mortal germline phenotype assay to assess smc-5 and nse-2 C. elegans mutants. Our findings suggest a separation of function within the SMC-5/6 complex, which performs NSE-2 dependent functions promoting efficient meiotic DSB repair and NSE-2 independent functions in preservation of germline immortality. Finally, to define epistatic relationships between BRC-1/BRD-1, SMC-5/6, and NSE-2 in DNA repair, we assessed the germline sensitivity to exogenous DNA damage by scoring the brood viability of pairwise brc-1, smc-5, and nse-2 double mutants. These data reveal that exogenous DNA damage repair is differentially regulated within meiotic prophase I and implicate SMC-5/6 as a central regulator of both NSE-2 and BRC-1 dependent DSB repair. Taken together, our research defines fundamental genetic mechanisms and interactions preserving genomic integrity.
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Murderess in the Headlines

Erin Sandvold—English

Faculty Mentor(s): Heidi Kaufman

Session 3: Pens & Clicks are Mightier than the Sword

Crime has permeated society and stimulated generations with stories of mystery, grotesque motives, and gruesome scenes. Crimes from over a hundred years ago still draw our interest as we seek to find answers to the basic question we ask at any tragedy: why? While our modern perspectives have given us tremendous insight into the minds of various criminals and murderers, I wish to explore how journalists of the early twentieth century and contemporary podcasts present these cases to the general public. Murder and storytelling about murder have always been present in society, but the early twentieth century featured these stories on the pages of newspapers with blazing headlines on the front pages. These sensationalized headlines continue to inform researchers and storytellers as they remake true crime stories for new audiences. My project will focus on two murderesses: Belle Gunness (1859-1908) and Amy Archer-Gilligan (1873-1962). On the surface, these women appeared to live ordinary and productive lives. Yet, in distinct ways, they both pushed against the societal norms of domestic femininity to become sensational figures in the American press. My discussion of these case studies will focus on the role of gender in the legends about their crimes. While I will begin with newspapers published immediately following the discovery of their criminal acts, discussions will...
extend to later versions of storytelling about these women. Hence, I will subsequently consider the ways that later versions of these legends respond to shifting gender constructions over time.

**Assessing Typology of Pre-Mazama Corner-notched Points in the Northern Great Basin**

Shelby Saper—Anthropology  
Faculty Mentor(s): Dennis Jenkins  
Session: Prerecorded Poster Presentation

Some researchers support a “long-chronology” for corner-notched points in the Great Basin, with these points dating to as old as 8,500 cal BP. Opponents support a “short-chronology”, suggesting corner-notched points are younger than 5,000 cal BP. This debate suffers from the use of a variety of typological schemes, regional variability, and lack of buried sites. Corner-notched projectile points exhibiting atypical morphology from traditional types have been found in a well-stratified context associated with cultural features at the Connley Caves, Oregon. In this poster we apply a variety of typological schemes to these points and others found in contexts below Mount Mazama tephra (ca. 7630 cal BP) in Oregon to provide information on the typology and age of pre-Mazama corner-notched points in the northern Great Basin.

**The Correlation Between Stigma Stemming from HIV and Antiretroviral Packaging: Design Recommendations for Introducing Discrete Packaging for Adolescents in Western Kenya**

Arden Saravis—International Studies  
Faculty Mentor(s): Clare Evans  
Session 1: Time for Your Check-Up—Decolonizing Global Health

Failure to adhere to antiretroviral therapy (ART) persists in exponentially large numbers in the adolescent population in Western Kenya. The presence of stigma surrounding HIV heavily contributes to this immense prevalence in society. Adolescents living with HIV fear premature disclosure to their peers, so many choose to not bring their ARTs in public and even hide them in their homes. We assessed perceptions of the ART pill bottle/pill to see if this contributes to non-adherence and discussed ideas on changing the bottle or developing a new, discrete pill casing. We conducted nine
key informant interviews among professionals who work with adolescents and young adults living with HIV and conducted four focus group discussions with 42 adolescents living with HIV at a hospital in Western Kenya. We found that currently, because of the pill bottle, many adolescents and young adults remove their pills and place them in other items, reducing pill potency, however the results include proposed ideas and designs for an alternative pill bottle that they will use and confirmed that their adherence would increase if these such items were implemented.

**Peirce’s phenomenological grounding of Science and Matters therein**

*Timothy Schatz—Philosophy, Math*

*Faculty Mentor(s): Scott Pratt, Erin McKenna*

*Session 1: It’s a Science Thing*

Any survey of C.S. Peirce’s philosophy will reveal a vast but shattered continent. Hence, any reader who ventures beyond a single text will have to ask themselves how they are to regard the relation of these texts. I am aligned with the unitary interpretation, espoused by the late Dr. Joseph M. Ransdell, and so affirm the Peircean system as essentially phenomenological. The divisions of science, or systems of science, maintains three divisions: mathematics, philosophy, and special science. Phenomenology finds its home in philosophy, and it is here where knowing first encounters being. As such, following Peirce’s underlying gestures towards positive philosophy, post-Kantian empiricism, realism, and christen mysticism, phenomenology naturally arises as ground and loci of his philosophy, insofar as it places the subject in a living world. In the first division of this work, the general system of phenomenological reflection reveals a form of knowing which is inherently human in which beings are known as a world and not disparate things. This reflection is threefold in which reflection folds back onto itself to reveal the triadic structure of Being. Thus the second division shall take up the triadic structure, the categories, in phenomenological detail qua their expression in being. Lastly, this paper culminates in the general architecture of phenomenology, which serves as the ground for Peirce’s Weltanschauung, that is, his conception of the cosmos.
How the second person perspective utilizes distance as a way to tell traumatic stories, specifically from marginalized perspectives

Hayley Schlueter—English
Faculty Mentor(s): Will Alden
Session 4: Let’s KIDD Around: KIDD Creative Writing Program

This project aims to understand the unique ways in which the second person perspective can be utilized for stories about trauma, and therefore, stories about marginalized identities and experiences—meaning people who experience some form of systemic oppression, such as women, people of color, and LGBTQ+ people. The second person often creates a sense of discomfort in the reader by calling direct attention to the reader, essentially forcing them to become a part of the story by inhabiting the “you” and the life of the story’s character. At the same time that the “you” creates this often uncomfortable intimacy, it also creates a sense of distance. My research explores the ways in which the second person perspective utilizes these seeming contradictions between intimacy and alienation, discomfort and distance, as a method for telling stories about trauma and identity through the examination of short stories such as Michael Cunningham’s “Mister Brother” and Kiese Laymon’s “You are the Second Person.” I am interested in the ways in which marginalized authors and characters, who already experience the world as deeply alienating, are able to use the second person as a way to emphasize and control that alienation.

Quantifying the spatial morphology of organic films through polarization-dependent imaging

Madelyn Scott—Chemistry, Physics
Faculty Mentor(s): Kelly Wilson, Cathy Wong
Session 2: Cells R Us

Organic semiconducting materials are appealing, green alternatives to conventional semiconductors because they can be solution-processed into flexible films. However, solution-processing fabrication methods can be prone to morphological disorder, meaning that crystalline structures in the film exhibit a variety of sizes and shapes. A large degree of morphological disorder inhibits the electronic functionality of a film for use in technological devices. Examining how film morphology varies with different deposition conditions allows us to connect the physical properties of organic
semiconducting films to macroscopic perturbations in their formation environments. In this work, we used a homebuilt microscope to image the polarization-dependent absorption of organic films, and developed an image analysis software package to characterize their spatial morphology. A series of pictures are collected of the sample, rotating the polarizer between each image. For every pixel in the image, the absorption signal as a function of polarization angle is fit to a sinusoidal curve. These fits are employed to assign pixels in the image to discrete aggregate domains within the film. Quantitative domain metrics are computed to describe the morphology of the film. Several organic films are produced under different deposition conditions and their resulting morphologies are compared. By better understanding the relationship between deposition conditions and film formation, existing solution-processing techniques can be further controlled and refined to achieve target physical properties in organic semiconducting materials.

**Equilibrium Solutions for 2-Dimensional Nonaxisymmetric Disks**

Daniel Sellers—Physics

Faculty Mentor(s): James Imamura

**Session 5: To the Moon and Back—Relativity Matters**

In this study we seek equilibrium solutions for compressible, self-gravitating, 2-dimensional nonaxisymmetric disks. Such structures arise in binary star systems and other systems where tidal forces arise such as in the Earth-moon system. These disks are governed by a Scalar Momentum Equation (SME) and a partial differential equation describing hydrodynamic flow within the disk (Stream Function Equation). We solve these equations using a self-consistent field approach. At each iterative step, the Stream Function and gravitational potential are approximated at all grid points using Guass-Seidel iteration. These quantities, taken with the SME and appropriate boundary conditions are used to find an updated guess for the density distribution.

Guass-Seidel algorithms are applied to the relevant partial differential equations which have been discretized using a finite central-differencing technique. These solvers are implemented in python and verified using analytical solutions for simple cases, such as axisymmetric disks with uniform density. We find that our solvers converge to the analytical solutions over many iterations.

Parameters for the overall equilibrium solutions are taken from Andalib's 1998 Dissertation focused on 2-D self-gravitating systems. Present work is focused on reproducing some of the presented solutions as both a check on our equilibrium solutions and as a starting point for further research.
Vacuum Airship Design With Finite Element Analysis
Daniel Sellers—Physics
Faculty Mentor(s): Ben McMorran
Session: Prerecorded Poster Presentation

The ultimate expression of Archimedes’ principle of buoyancy would be to enclose a vacuum with some structure of less mass than the air displaced by that structure. So far such a craft has never been realized in prototype due to the daunting material and engineering challenges. We propose a novel design for such an airship, using inflatable supports and an Aramid fabric shell, and examine the physical constraints and material requirements using both SolidWorks (SW) Simulation Finite Element Analysis and principles of structural statics.

We develop a dynamic simulator (in python) to approximate the shapes formed by thin fabric shell sections under unbalanced pressure loads. The resulting geometries are converted to thin shell SolidWorks models and analyzed. Attempts are made to verify the results, including mesh independence and comparison to empirical stress/strain results performed on similar materials and configurations.

Deflection of thin shell sections using material properties of Kevlar Aramid fiber are found to agree qualitatively with the theoretical results of Timeshemo, though actual deflection predicted by SW is marginally smaller than predicted by theory, which in turn only very roughly agrees with the experimental results considered. The tensile stress within the shell models is found to be well within acceptable limits for typical Aramid fibers. Some models for the inflatable support structure currently under development are presented, without results. The advantages and challenges of the Finite Element Method for novel design concepts are briefly discussed.

Dimana? Disini: The effects of migration and political strife on the Chinese Indonesian family, name, and identity.
Kezia Setyawan—Journalism
Faculty Mentor(s): Sung Park, Tuong Vu
Session 4: Cultural Considerations—The Other

Dimana? Disini. Translated, this means, where are you/us? I/We are here.
Over the span of many generations, Chinese Indonesians have migrated to all corners across the globe. I hope to reckon and reflect upon how my family has changed and how others in our community
have. This professional project will explore how identity and values shift through the lens of migration and assimilation for Chinese Indonesians. I have conducted in-person interviews in English and Indonesian and taken portraits of each interviewee. Through the process, I have tried to parse together patterns that show similarities in perspectives and what are contradictions. The final work is split into different components, one aspect is the literature review, which provides context and background information that informs contemporary Chinese Indonesian existence, timelines that illustrate historical events and family migration illustrating the changes in familial names over generations, and a series of studio lit portraiture on location with captions from their interview on what informs who they are. The project matters because it is a multimedia journalistic package that has many different entry points for the audience to engage with cultural identities different than their own.

**Optical access to auditory cortex for in-vivo two-photon calcium imaging**

*Raj Shah—Human Physiology*

*Faculty Mentor(s): Santiago Jaramillo, Beth McCarry*

**Session 5: The Wonders of the Brain**

In vivo two-photon calcium imaging is a powerful tool that enables measuring activity of hundreds of individual neurons simultaneously. To understand how the brain makes predictions about sounds, we will use this imaging technique to measure how neurons from the auditory cortex of awake mice respond to expected and unexpected sounds. To image activity at the neuronal level, optical access is achieved via implantation of a cranial window. However, the auditory cortex is not easily accessible during surgery due its lateral location and large muscles and arteries around the ears. Here, we report an updated protocol for cranial window implantation over the auditory cortex for use in two-photon calcium imaging. With optical access to the auditory cortex, we are able to use in-vivo two-photon calcium imaging to evaluate sound-evoked responses of hundreds of auditory cortical neurons. These data will allow classifying and mapping the location of neurons that represent either predictions about a stimulus or errors in these predictions.
Investigating the Relationship between Acute Mountain Sickness, Patent Foramen Ovale, and Systemic Inflammation

Karina Shah—Human Physiology

Faculty Mentor(s): Kaitlyn DiMarco, Andrew Lovering

Session: Prerecorded Poster Presentation

Acute mountain sickness (AMS) occurs when individuals rapidly ascend to high altitude, but its exact cause is unknown. A patent foramen ovale (PFO) is a hole in the heart present in one-third of the population. PFO+ subjects have greater AMS incidence, but the reasons are unknown. AMS is associated with systemic inflammation as determined by elevated cytokines and data from our lab suggests that PFO+ subjects have greater systemic inflammation. Thus, we hypothesized that the association between AMS and PFO is explained by increased inflammation. To test this, 17 PFO+ subjects (9 women) and 17 PFO- subjects (9 women) were exposed to 10 hours of hypoxia simulating 15600 feet and AMS was assessed using the Lake Louise Questionnaire. Blood samples taken before and at 10 hours of hypoxia were assayed for 13 inflammatory mediators. We found that 83% of PFO+ subjects but only 61% of PFO- subjects got AMS. AMS- subjects had significantly higher levels of IL-12p70 at 10 hours than AMS+ subjects. All other cytokines had significant time effects, and the greatest increases were in AMS- subjects. Compared to PFO- subjects, PFO+ subjects had significantly higher IL-1Î±, interferon (IFN)-Î±2, IL-8, IL-10, and MCP-1 levels before and at 10 hours. PFO+ subjects had the greatest increases in IFN-Î±2, MCP-1, and IL-10 and PFO- subjects had the greatest increases in IL-1Î± and IL-6. These data suggest inflammation levels differ with PFO and AMS, but with separate patterns. Therefore, systemic inflammation in AMS and PFO may be more complex than previously thought.

Alutiiq Use of Birds at Rice Ridge (49-KOD-363), Kodiak Island

Amy Shannon—Anthropology

Faculty Mentor(s): Madonna Moss

Session: Prerecorded Poster Presentation

Rice Ridge is a deeply stratified archaeological deposit on Kodiak Island. It has a well-preserved faunal assemblage, including an extensive bird bone assemblage, associated with the Ocean Bay tradition (7600-4200 BP). One study has shown that birds are an important part of the lifeways of Ocean Bay groups, but this has not yet been investigated on Kodiak Island, where Alutiiq ancestors have been conventionally portrayed as primarily dependent on marine mammals and fish. We have
studied bird bones from four of the sixteen excavation units at Rice Ridge, yielding 4,714 bone fragments identifiable to element, of which 3,734 were identified to taxon. Cormorants (Phalacrocorax spp.), ducks (primarily Melanitta spp. and Somateria spp.), geese, and murres (Uria spp.) were the most prevalent taxa. Less than 5% of all fragments were from terrestrial species, indicating a heavy exploitation of marine birds. This poster presents our analysis of modifications to the bones, such as cut marks and burning, as well as the representation of different skeletal elements. We are able to infer that birds were used not only as food sources, but to make bird skin clothing.

**Affiliative David’s Scores: An Analysis of Social Change over Two Years in a Semi-Free Ranging Group of Japanese Macaques (Macaca fuscata)**

Caitlin Shreeve—Anthropology

Faculty Mentor(s): Kylen Gartland, Frances White

Session: Prerecorded Poster Presentation

Typically, dominance in primates is determined through aggressive interactions with initiation of aggression indicating higher dominance rank. David’s Score analyses using aggression are frequently used to calculate dominance hierarchies in primates. However, if fights are rare then it can be hard to identify male rank. Non-aggressive behaviors like grooming can also indicate rank based on directionality. For example, higher-ranking males are often groomed more whereas lower-ranking males will do more grooming. For this study, we were interested in: 1) whether a dominance hierarchy could be constructed from non-aggressive behaviors, and 2) whether there were significant changes in grooming directionality and intensity over time. We examined a group of Japanese macaques (Macaca fuscata) at the Oregon National Primate Research Center. We collected a total of 475 hours of behavioral data between two summer study periods in 2018 and 2019. We collected data on 11 adult males using 15-minute focal follows with 1-minute instantaneous scans. We calculated David’s Scores for each male for 2018 and 2019 from grooming interactions and found hierarchical differences. Comparison between these scores demonstrated that the high-ranking males did not show a change in their David’s Score, indicating that their grooming effort remained constant. Lower-ranking males increased their grooming efforts directed at higher-ranking males while middle-ranking males showed only minor changes in their David’s Score. These data suggest that David’s Scores based on non-aggressive behaviors may be used to measure behavioral strategies and that the greatest increase in grooming effort is made by the low-ranking males.
Policy Mapping onto Bodies: The nexus between immigration policy, local community support networks, and migrant health outcomes in Tijuana

Samantha Sidline—International Studies

Faculty Mentor(s): Kristin Yarris

Session 1: Time for Your Check-Up—Decolonizing Global Health

The implementation of new policy at the US-Mexico border has only exacerbated the humanitarian crisis experienced by border communities and asylum-seekers. The Migrant Protection Protocols are already affecting asylum-seekers attempting to enter the United States from Mexico. Policies like the MPP disenfranchise migrants by creating the conditions in which fleeing families are vulnerable to a system that is unsupportive of their rights, exposing them to various forms of violence and hostility. Families must now wait in Mexico for unspecified periods of time for the duration of their immigration proceedings. Inevitably, policies like this one produce environments of uncertainty and neglect the framework which recognizes immigration as a determinant of health. This thesis aims to position the current asylum-seeker experience at the US-Mexico border as one at the whim of frequent United States policy changes and how this instability may impact migrant health negatively. The reality of asylum-seekers’ experiences is detailed through my participant observation research in Tijuana, where the effects of the MPP are lived day-to-day. Interviews with community workers addressing the humanitarian crisis at the border deconstruct the embodiment of such policies in asylum-seekers while simultaneously demonstrating how community support can aim to negate the harmful impacts of policy. This research will show how policy determines the livelihood of asylum-seekers coming into the United States and recognizes community networks’ role in migrant community health and fostering solidarity.

Abortion legalization in Spain: A window into the history of Spanish reproductive rights

Monica Silverman—International Studies

Faculty Mentor(s): Yvonne Braun

Session 3: The Way We Were

My thesis research analyzes the social and political history of abortion legalization in Spain, and explores the implications of this history for modern reproductive health discourse and policy throughout the country. Abortion was officially legalized in Spain for the first time in 2010 and saw
much political and social backlash. The contemporary policies regarding reproductive rights in the country are deeply connected to events during the almost 40-year-long dictatorship of Francisco Franco. From 1939, right after the Spanish Civil War, up until his death in 1975, Francisco Franco ruled Spain under a fascist dictatorship, maintaining control through repressive means and implementing a politically and socially conservative plan for Spain in collaboration with the Catholic Church. This relationship between church and state produced an environment in which a narrow version of religious morality dictated women’s autonomy in the public sphere and over their own bodies. This thesis explores the historical ties to the gendered policies and societal norms which were constructed in Franco’s Spain and largely persisted through democratization. Drawing on secondary sources, I specifically argue that rigid gendered ideologies and systematic disenfranchisement of women has been pervasive in Spanish society under both fascist and democratic regimes. Patriarchal systems of oppression have thereby persisted despite political change. Additionally, I have discovered that Spain has made enormous progress relating to reproductive justice even as there are still significant areas for improvement. A strong Spanish feminist movement continues to fight for these improvements, including equitable access to reproductive healthcare and education.

The 2008 Economic Crash and the Breakdown in Venezuelan Democracy

Garret Simmer—Political Science
Co-Presenter(s): Jon Laus
Faculty Mentor(s): Matthias Vogel
Session 5: It’s a Small World After All

This project highlights the economic policies adopted by the Venezuelan government during and after the 2008 financial crisis and its impacts on the stability of democracy in Venezuela. To gain an understanding of the experience of the populace, we trace news reporting on the crisis in Venezuelan daily publications which we contextualize with reporting from an international perspective and academic publications on economic data and social policy. Our study will illuminate how Venezuelan democracy eroded through the breakdown of institutions following economic collapse. This project’s aims are to identify some of the root causes for the Venezuelan economic crisis and the sustained disparity experienced by the Venezuelan people. We are going to show the connection between economic and political issues and their impact on political efficacy in a democracy. Our results show: as Venezuela’s economy experienced greater economic stress, the government was able to take more drastic action threatening its democracy. Political shifts are often the result of economic fluctuations on the national and international scale. When considering relevant concepts such as
globalization, media's influence, and regional issues, it becomes clear that Venezuela's backslide into authoritarianism was inextricably linked not only to the national economy but the global economy.

**Estrella Symbolic Portrait**

Kat Sincuir Alvarez—Anthropology/Cinema Studies  
Faculty Mentor(s): Lynn Fujiwara  
Session 2: Common Reading

This art was created as an inspiration from the significant amount of symbolism Helena Viramontes portrays of Estrella within the book of *Under the Feet of Jesus*. To begin, Estrella explains her agony and confusion when she thinks back to the 'Sun Maid' raisins logo, as it is a happy white woman. Estrella could not feel more different than the woman in the box. She is a Latina with a pained face as her hands are all cut from the grape vines. I found this to be incredibly important to her character, the vines in my painting symbolize her entangled chains that only bring her down to the field work she is so stuck in. When drawing Estrella, I wanted to recreate her as the young lady I imagined her to be, beautiful, broken, dirty and sad. While she may dream of tomorrow and is a strong character I chose to draw her vulnerable side as that is what almost everyone fears, and yet that is what makes us most human. Our experiences make us the people we are, and for Estrella, the reality is that she is hopeless and yet she decides to be hopeful. Her eyes hold a small galaxy of stars, the one's she is both named after and looks up to in an attempt to reach for a better tomorrow. Lastly, Estrella is clutching to wood as she is clutching to the barn. Since the beginning of the book, Estrella had a feeling that was almost spiritual with the barn, while it was falling down and it was old, there was some sort of refuge within it. And yet, she struck a deal with Perfecto to tear it down if it meant he could go to the clinic. Alas, she leaves Alejo alone in the hospital and she goes back into the barn to look at the stars. What will be of the barn?

**Planning for the Future: The International Future Time Orientation and Life Project Scales**

Madeleine Smith—Educational Foundations  
Faculty Mentor(s): Jenefer Husman

Throughout the years, extensive research has been done on what influences people's decisions. What prompts a student to apply to one school over another? Do future goals really influence a student's academic performance in a class? Researchers have found that psychological future and personal
goals play a vital role in an individual’s present behavior, decision making, and self-concept. More specifically, future time orientation (FTO) is the degree to which people’s thoughts of the future influence their present-day actions (Husman & Lens, 1999). Similarly, the theory of Life Project (LP) refers to a set of short to long-term goals that shape self-concept and identity (Little, Salmela-Aro, & Phillips, 2017). This project will develop an International Future Time Orientation Scale and Life Project Scale working in conjunction with research teams in Portugal, Brazil, Spain, Uruguay, and the United States. FTO and LP constructs have recently been created by Portuguese research teams. The remaining research teams will conduct focus groups for construct evaluation. This evaluation will focus on main constructs such as distance, connectedness, and extension from FTO as well as organization, engagement, and identity from LP. The structures of both scales’ factors will be analyzed quantitatively with exploratory and confirmatory factor analysis. The development of reliable international FTO and LP scales are a necessary instrument as they could be applicable to larger populations. Overall, this exciting research focuses on what influences an individual’s decisions and can greatly benefit prospective psychological and educational studies.

**Ultrathin Iridium Oxide Catalyst on a Conductive Support for the Oxygen Evolution Reaction in Acid**

**Nathan Stovall—Chemistry**

**Faculty Mentor(s): Shannon Boettcher, Raina Krivina**

**Session 5: The Bonds that Make Us**

Anthropogenic climate change has driven interest in the research and development of clean energy alternatives. Great advancements in renewable energy production have been made, but its intermittent nature requires the development of a large-scale storage technology. Water electrolysis is a promising solution to the storage dilemma, via the state-of-the-art proton exchange membrane (PEM) electrolyzers that can convert renewable energy into hydrogen fuel. However, the acidic operating conditions of PEM cells results in slow kinetics of the oxygen evolution reaction (OER). Iridium oxide is the only catalyst capable of withstanding these harsh conditions, but its low abundance and high costs limit large-scale implementation. My research focuses on designing a novel sub-monolayer-thick iridium oxide catalyst on an inexpensive conductive support that would allow to decrease iridium loading while maximizing activity. We have developed a novel synthetic method for adhering a cheap commercially available iridium precursor (IrCODCl dimer) to the surfaces of inexpensive acid-stable metal oxide nanoparticles. The mechanism of the assembly was investigated.
with UV-vis spectroscopy, X-ray photoelectron spectroscopy, and NMR. We discovered that the dimer attaches in a surface-limited manner allowing for precise control over the catalyst’s thickness. The determination of the mass loadings was accomplished via x-ray fluorescence and ex-situ inductively coupled plasma induced mass spectroscopy. Electrochemical measurements conducted in pH 1 have shown exceptionally high intrinsic activity at significantly reduced mass loadings. We are currently working on improving the catalyst’s stability which might in the future allow for industrial-scale implementation of water electrolysis as renewable energy storage.

**Rational Design of s-Indacene-cored Small Molecule Organic Semiconductors as a Paradigm to Tune Electronic Characteristics**

Eric Strand—Biology/Biochemistry

Faculty Mentor(s): Joshua Barker

Session: Prerecorded Poster Presentation

The Haley Lab is interested in the synthesis and characterization of organic hydrocarbon scaffolds which can be used as semiconductors. The family of indenofluorene hydrocarbons exhibit unique electronic properties such as antiaromaticity and diradical character, which contribute to their allure for scientists. Specifically, our studies into indenofluorenes have shown promise in regard to the ability of these molecules to serve as potential replacements for current inorganic counterparts within devices. Continuous fundamental studies into the electronic abilities of these molecules will help to elucidate the ideal characteristics of organic semiconductors, which is imperative for the feasible implementation of these molecules into devices. Our lab has developed highly modular synthetic routes toward many analogues of this parent scaffold, which can be further optimized through subtle synthetic tuning. Fusing a variety of aryl moieties onto the parent scaffold allows for a decrease in the HOMO-LUMO energy gap and subsequent improvement in electron mobility and conductivity. Our project initially focused on proving the diradical character in an analogue of indenoindenodibenzothiopene, and has successfully shown this by reacting the molecule through a known radical degradation pathway. This project is now focused on the optimization of previous synthetic routes such that further studies into these highly interesting molecules can be carried out. Our goal is to create a library of analogues with various electronic characteristics such that we may identify the most promising candidates for device implementation.
Barred Owl Survey

Alan Strickland (Lane Community College Student)—Microbiology
Co-Presenter(s): Matthew Shields, Stolba Human Physiology
Faculty Mentor(s): Stacey Kiser Biology
Session: Prerecorded Poster Presentation

Previous surveys identified three species of owls around Lane Community College's main campus. Undergraduate students conducted annual surveys from 2016 to 2019 to identify species and habitat. We conducted night surveys by broadcasting likely occupant owl calls, then listened and recorded responses. We encountered four species: Great Horned Owl (Bubo Virginianus), Western Screech Owl (Megascops kennicottii), and Barred Owl (Strix varia), with the Barred Owl detected only in 2019. Our results indicate that there has been a shift in species on the LCC main campus due to recent land management changes (forest clearing).

Examining the Effect of Collection Method on the Microbial Communities Detected by Shotgun Metagenomics in Elephant Dung

Joshaniel Tan—Environmental Science
Faculty Mentor(s): Claire Goodfellow
Session 6: The Earth, Sky & Everything In Between

The development of new ways to non-invasively monitor and manage endangered, cryptic or otherwise inaccessible wildlife populations is of critical importance to conservation initiatives. New fecal DNA (fDNA) approaches offer considerable potential to inform these efforts, as the DNA which is present in an animal's feces contains a wealth of information about that individual's diet, health, metabolism, and resistance to disease. Specifically, shotgun metagenomic sequencing of DNA from feces represents an exciting new development in molecular analytics, enabling high resolution characterization of microbial communities in samples. In spite of this, no studies have been done to standardize the collection methods of samples from wild animals for shotgun metagenomics or to evaluate whether different collection methods can lead to differences in the microbial communities.
which are detected in a sample. In this study, I conducted shotgun metagenomic analyses on fecal samples collected from a captive elephant at the Oregon Zoo and developed an efficient bioinformatic pipeline to analyze the microbial communities detected. Each fecal sample was collected from the same elephant using five different, commonly-used collection methods. DNA was then extracted from each of these samples, sequenced on an Illumina MiSeq, and analyzed using the pipeline which I developed. Based on preliminary results, bacteria and archaea were identified to the genus level, and detected community composition varied by collection method. This work emphasizes both the potential and feasibility of shotgun metagenomics for informing conservation efforts and the need to standardize collection methods in shotgun metagenomic studies of wild populations.

Characterizing the Structure of Twitter Network Through Socially-Aware Clustering of Users

Eugene Tan—Computer Information Science

Faculty Mentor(s): Reza Rejaie

Session: Prerecorded Poster Presentation

Popular online social networks (OSN) such as Twitter form a networked system where millions of users interconnect and exchange information. Characterizing the structural properties of the resulting "relationship graph" among the OSN users is very informative but inherently challenging because of its huge size and complex connectivity patterns. This project explores a novel "socially-aware" approach to classify Twitter users and thus partition the structure of Twitter relationship graph. To this end, we consider the top 10K most-followed Twitter users, called Twitter elite, and show that these users form coherent and socially meaningful communities, called Twitter elite communities. We define a "social interest vector" for each regular (i.e. non-elite) Twitter user where each element of this vector captures the user’s relative level of interest to a specific elite community based on the fraction of her followings in that elite community. We then rely on this multi-dimensional measure of user’s social interest to cluster millions of randomly selected Twitter users. We collect profile information, list of friends and followers along with available tweets for selected Twitter users in each cluster to assess (i) whether the resulting clusters of users are socially coherent, (ii) relative degree of connectivity between different pairs of clusters, and (iii) the key social attributes of each cluster. Overall, our analysis will illustrate if elite communities can serve as “landmarks” to meaningfully classify regular Twitter users and characterize the structure of the Twitter network.
Stress and Implications for Poor Mental and Physical Health Among Latinx Emerging Adults
Yomaira Tarula-Aranda—Ethnic Studies and Spanish
Faculty Mentor(s): Heather McClure
Session 5.5: McNair Scholars Presentations

The Latinx population is the largest and fastest-growing minority in the United States, and also has growing rates of poor mental and physical health. This research explores how stress is very prevalent among Latinx emerging adults (aged 18–23 years old) and potential contributing factors. Stress is related to an assortment of negative outcomes including development of poor mental and physical health and other outcomes. This research uses data from the Latinx Emerging Adults Project’s Emerging Adult & Peer Survey created by the Center for Equity Promotion in the University of Oregon’s College of Education. To measure stress, the Perceived Stress Scale (PSS) was used to measure the frequency, severity and perceived control individuals have over daily stressors within the previous 1-month period. Higher PSS scores have been linked to risk for diabetes, cardiovascular disease and elevation in stress hormones. Analyses explored potential differences in Latinx emerging adults’ PSS scores by different socio-demographic characteristics. Results will be presented and discussed in relation to the potential risks confronting Latinx emerging adults of stress-related poor health.

The Extent, Contributing Factors and Responses to Depression and Suicidal Ideation in Modern South Korea
James Taylor—Linguistics
Faculty Mentor(s): Matthias Vogel
Session 5: It’s a Small World After All

The Republic of Korea (Korea) has seen a high rate of economic development in the post-WWII era and is currently the country with the 11th highest GDP worldwide (International Monetary Fund). At the same time, Korea is beset by a mental health crisis more severe than similar countries in the world. Korea has the highest rate of suicide both in the South-East Asian region and in the Organization for Economic Cooperation and Development (OECD), at 26.6 people per capita as of 2018 (compared to the regional average of 10.8 people per capita in 2015 and the OEDC average of 11.4 in 2017). Other mental health problems, including depression, alcohol dependence and mood disorders, correlate to suicidal ideation; as a result, the prevalence of these disorders exacerbate the core issue of suicidal ideation. This literary review evaluates the extent of these mental health issues
in Korea, identifies correlatory factors relating to mental health, and presents current policies and approaches addressing mental health in part or in whole. In addition, it focuses on the population in general but also through four specific lenses: students, full-time employees, the elderly, and celebrities. The significance of this research mainly focuses on improving the quality of life for people in South Korea by identifying factors associated with mental health and proposing solutions that reduce the frequency and severity of mental health disorders.

You Shall Not Oppress a Resident Alien: The Conception of Immigrants in the Hebrew Bible
Miriam Thielman—Spanish and Religious Studies
Faculty Mentor(s): Deborah Green
Session 4: Cultural Considerations—The Other
An increase in global immigration has resulted in humanitarian crises across the world as countries struggle to respond to the growing number of refugees and asylum seekers arriving at their borders. Religion often influences people’s beliefs, actions, and even the policy decisions for which they lobby, and the various forms of Christianity practiced in the United States frequently use the Hebrew and Christian Scriptures as their sacred instructive texts. Understanding the specific messages within the Hebrew Bible regarding immigrants is important for developing faith-informed responses to immigrants and refugees. A detailed study of relevant portions of the Hebrew Bible, coupled with analysis of biblical commentaries and scholarly criticism, suggests that the Bible underscores the imperative to care for the most vulnerable members of society, as well as to include immigrants in the community. People of faith should take this overarching message into account when considering how to respond to immigrants’ arrival in the United States.

The SETI Scouts Project: Developing Scientifically Literate Young Women through an Astronomy Destination Camp at Pine Mountain Observatory
Maggie Thompson—Physics
Faculty Mentor(s): Scott Fisher
Session 5: To the Moon and Back—Relativity Matters
Pine Mountain Observatory (PMO) and the University of Oregon are partnered with the SETI Institute and the Girl Scouts to provide a week-long summer destination camp where 10 Girl Scouts from
around the US come together to engage in cohort building, outdoor adventuring, and an immersion in STEM programming related to astronomy. This program combines several of the main goals of PMO: undergraduate astronomical research, scientific outreach to public and educational partners, and the development of science literacy in STEM interested groups. The Destination Camp welcomes high-school age Girl Scouts from across the United States to the Observatory, where they learn about astronomy and astronomical research through interactive lessons and close peer mentoring from University of Oregon students. This program has not only educated and inspires the Girl Scouts to continue their interest in STEM careers, but it also provides an opportunity for undergraduate physics students to develop science communication skills through mentoring. Over the two years of the program, PMO has proven to be a great resource for astronomy outreach and research with many of the smaller projects introduced during the camp being replicated by the scout alumni of the program back with their home troops. Additionally, many of these programs can be adapted to other observatories to instill a greater passion for science in the general public.

**Confirming the 3-dimensional shape of Asteroid 283 Emma from Observations at Pine Mountain Observatory**

**Maggie Thompson—Physics**

**Faculty Mentor(s): Scott Fisher**

**Session: Prerecorded Poster Presentation**

To determine the shape of asteroid 283 Emma, we obtained time-resolved photometry of the asteroid on August 28, 2019 from 07:44:24 to 09:27:39 UTC at Pine Mountain Observatory (PMO). The observations were carried out using the 0.35m Robbins telescope and a large format CCD camera with a Sloan g filter. The brightness of 283 Emma was calibrated using three standard stars removing the influence of airmass. We found that the brightness changed from mag(g) = 12.5 to 12.8. The light curve (time variation of the brightness) we obtained was consistent with the previous research which determined that the shape of 283 Emma is an ellipsoid. Through the process of data analysis, information on the atmospheric extinction coefficient in the Sloan g-band at the PMO was also obtained, which is useful for other observations at the observatory. The results of our observations give us confidence that we can obtain research-grade data with PMO and that this data can be analyzed by undergraduate students.
Measuring instructor quality and student learning at the University of Oregon, using a value added measure
Marie-Rose Tonguino—Economics
Faculty Mentor(s): Bill Harbaugh
Session 2: Oregon Trails
Student evaluations of instructors are widely used in higher education to measure the quality of teaching of professors and instructors. Yet, recent research suggests that these evaluations are often biased, especially toward women and ethnic minorities, and that they do not necessarily provide an accurate measure of teaching quality. Research has found that some instructors tend to teach to the test in order to improve student performance on standardized tests, therefore omitting important skills that students need as they further their education. Other instructors have also been found to have bad evaluations and yet appear to be the ones who better prepare students for subsequent classes than their counterparts. For this reason, some researchers have been looking at value added and continuation rates to measure teaching quality, as opposed to measuring instructor quality solely using student evaluations and student performance on standardized tests. Value added is a method of measuring teaching quality through evaluating a student’s performance in a subsequent course compared to their counterparts, after taking the first course from different instructors. Continuation rate is a measure of the percentage of an instructor’s students who go on to take a subsequent related course. This research paper focuses on value added and continuation rate methods to measure instructor quality using University of Oregon data, as opposed to using student evaluations of instructors.

Sensors and Materials for In-field Aqueous Analysis of Nitrate and Other Ions
Ian Torrence—Biochemistry
Faculty Mentor(s): Sean Fontenot
Session 2: Cells R Us
Chemically sensitive field effect transistor (ChemFET) development have been well studied as ion-sensing chemical sensors. These devices are attractive to other chemical sensors due to their low cost, low power consumption, small size, and their compatibility with electronics. By applying an ion-selective material, typically a polymer, on the ChemFET it is possible to create an interfacial potential difference between the environment and the gate-oxide of the FET. This ion-selective material can be designed to ensure the potential difference is dependent only on the activity of a target analyte.
Currently, there is a need for a real-time chemical sensor to detect both nitrate and ammonium concentrations in soil, dubbed “total-N” content of the soil, as described by the NSF grand challenge for closing the nitrate cycle. This is primarily to combat fertilizer runoff caused by over fertilization of crops resulting in high concentration of nitrate in lakes, rivers, and streams. My research shows promising results for two ChemFETs that are sensitive and selective for ammonium and nitrate respectively which can be measured simultaneously for real time nitrate sensing in aqueous systems.

The competitive relationship between linguistic perception and production when learning a new sound contrast

Tillena Trebon—Linguistics, Spanish

Co-Presenter(s): Zoe Haupt, Allegra Wesson, Maggie Wallace

Faculty Mentor(s): Dr. Melissa Baese-Berk, Dr. Zachary Jaggers

Session 6: Cerebral Matters

This research investigates the connection between perception and production when learning to discriminate between unfamiliar sounds. It is commonly assumed that humans use the same neural mechanisms for recognizing a spoken sound and producing a sound. If this assumption is correct, when we get better at perceiving sounds, we should also get better at producing them, and vice versa. Our research asks: Do linguistic perception and production utilize the same neural processes? Does one get better at perceiving the difference between two sounds by producing them? To answer these questions, experiment participants were trained on a new sound contrast. In the “Perception and production” condition, subjects produced the sounds during training. In the “Perception only” condition, subjects did not produce sounds during training. Results show that “Perception only” participants learned to perceive the difference between the sounds they were trained on. “Perception and production” participants did not learn the contrast nearly as well. Our research challenges traditional assumptions of linguistic perception and production by showing that the relationship between perceiving and producing new sounds appears competitive. Our research reveals that producing new sounds while learning to discriminate between those sounds hinders perceptual learning. Our results are consistent with recent research, which also show that perception and production may not utilize the same neural mechanisms. These results shed light on the complex language acquisition mechanisms in the brain. Understanding the relationship between linguistic perception and production is essential for optimizing second language teaching methods and for understanding how humans acquire language.
Vices in the Middle East: Censorship and Substance Control Laws in Dubai
Gabriel Tsui—Journalism
Faculty Mentor(s): Matthias Vogel
Session: Prerecorded Poster Presentation
Gambling, alcohol, and pornography are restricted in a variety of ways across the Middle East. The predominant religion within the region—Islam—forbids anything that can be considered “shameful, indecent, evil, rebellious, and oppressive” according to the Quran and, given Islam’s influence over the Middle Eastern sphere, has heavily influenced state laws governing activities seen as unethical. However, the growth of the tourism industry, particularly in countries like the United Arab Emirates, has contributed to greater tolerance of these culturally taboo activities. This project will show that tourism can be considered a significant factor contributing to the relaxation of laws governing censorship and the control of regulated substances through the examination of international news media such as Al Jazeera, AP, Reuters, and reports and statistics on tourism in Dubai, as well as the United Arab Emirates’ most recent penal code to trace the most recent trends and establish a link between the tourism industry and drinking laws. Additionally, I will also conduct interviews with Arab exchange students at the University of Oregon to trace shifting public opinion on the issue. Ultimately, my research may help predict if the trend of liberalization and relaxation of laws could indicate a future of greater social freedom for the people of Dubai and the United Arab Emirates.

The role of the Chemoreceptor Zinc-Binding Domain in bacterial signal transduction
Dan Tudorica—Biochemistry
Faculty Mentor(s): Arden Perkins
Session 3: The Substance of Us
Previous work presented at the undergraduate research symposium hypothesized that the chemoreceptor zinc-binding (CZB) domain acted to sense bleach in certain bacteria’s environment and correspondingly direct bacterial swimming patterns. This project presents an expanded view of the CZB domain as being responsible not just for informing bacterial swimming patterns in the presence of bleach, but also for regulating the formation and dispersal of bacterial biofilms. Through the use of genetically-modified bacteria and biofilm-quantification assays, we determined that bleach in the bacteria’s environment encourages the formation of biofilms. In addition, we find that modifying the active site of the CZB domain in such a way as to make the domain “always on” increases the amount
of biofilm produced by the bacteria in a fashion largely insensitive to subsequent addition of bleach. This evidence suggests that the CZB domain, known to regulate bacterial swimming patterns, is also used by bacteria to modulate the amount of biofilm that they form. This work helps us understand the biochemistry of how bacteria, particularly gut-colonizing human pathogens, behave in order to survive and thrive in their environment, possibly setting the groundwork for future therapeutic interventions.

**Demographic Differences between Mothers with and without Substance Use Disorders**

Avery Turner—Psychology, Political Science  
**Session: Prerecorded Poster Presentation**

The present study investigates the demographic differences between mothers with Substance Use Disorders (SUD) (n=67) and mothers without (n=84). The data was collected as part of a larger study that found significant differences in brain reward activation between the two groups when looking at happy and sad faces of their own and unknown infants. Age of the mother, ethnicity, mother’s education level, employment, annual family income, and marital status were collected from each participant in both groups via a self-report questionnaire. The two groups were compared on each of these measures using an independent samples t-test. The differences between the non-substance abusing and substance abusing groups on all of these variables, except for age, was statistically significant. This finding indicates that brain activation results need to be adjusted for these factors, in order to determine differences solely related to drug use. Further, it may imply that these demographic variables are themselves risk factors for the development of SUDs. More research must be done with demographically similar control mothers in order to conclude that differences between the two groups are the result of SUD status and not confounded by significant demographic differences.

**Global Perspectives on Wide Scale Outbreaks**

Kira Veselka—Business Administration, International Studies, German  
**Co-Presenter(s): Meama Scott**  
**Faculty Mentor(s): Matthias Vogel**  
**Session: Prerecorded Poster Presentation**

With many modern viruses and bacteria becoming increasingly more deadly, how countries react to disease outbreaks becomes more crucial than ever. With the recent Coronavirus epidemic beginning in Wuhan, China, spreading across the globe, we are able to watch first-hand how modern
industrialized societies react to massive viral outbreaks. In this research project, we examine how countries such as China, the United States of America, Germany, and Sweden react to a massive viral outbreak and how what they do to protect their citizens from these deadly diseases interacts with existing narratives of prejudice against certain countries or segments of their population. Examining and evaluating public news media in China, Germany, Sweden and the USA we find that large-scale outbreaks can affect the public’s perspective on the perceived ‘Other’ and push narratives of fear promoting confusion and misunderstanding. A country can take a number of precautions from only warning the public and suggesting enhanced hygiene practices to quarantining large segments of its population in an effort to prevent a more significant outbreak. Which measures are taken affects public opinion and could save or stifle the efforts to contain diseases. Our research ultimately promotes ongoing efforts of overcoming narratives of prejudice and fear which and contributes to progress in the prevention of disease.

**Association between marital status and number of chronic health conditions among US Latinx adults**

Yessenia Villalobos—Family and Human Services

Faculty Mentor(s): Elizabeth Budd

Session: Prerecorded Poster Presentation

Background: Being married versus single is associated with better health outcomes among non-Latinx White adults, especially for men. Although rates of chronic diseases are high among Latinx adults, the association between marital status and chronic diseases among US Latinx adults is unknown. Objectives: To examine the association of marital status and number of chronic health conditions among US Latinx adults and how this association varies by gender. Methods: 798 US Latinx adults (Mage = 39.64 ± 15.05y; 59% female; 46% married or in a civil union; 35.6% single) answered a Qualtrics Panels survey. Marital status, current chronic health conditions, and gender were assessed using the Demographic and Health Data Questionnaire. One-way ANOVA stratified by gender was conducted. Results: Marital status was associated with the number of chronic health conditions (p<.001); respondents who were not married, but in a relationship had significantly fewer chronic health conditions than those married or in a civil union. Additionally, those widowed had significantly more chronic health conditions than those single and those not married, but in a relationship. Among women, those not married, but in a relationship had fewer chronic conditions than those married or in a civil union (p<.05). Among men, those single and those not married, but in a relationship had
fewer chronic health conditions than those married or in a civil union \( (p<0.001) \). Conclusions: Across genders among Latinx adults, not being married was associated with fewer chronic health conditions, inconsistent with literature on non-Latinx White adults. Health promotion efforts could target married Latinx adults.

**Quantification of Point Defects in Perovskite Solar Cells**

Nicole Wales—Chemistry and Physics  
Faculty Mentor(s): Mark Lonergan, Zack Crawford  
Session 5: The Bonds that Make Us

In order to improve perovskite solar cell efficiency, it is necessary to minimize defects within the perovskite absorber layer, which may include crystallographic point defects. By understanding how these defects form and contribute to the material’s electronic structure, we will gain insight into routes of Shockley-Read-Hall recombination and associated efficiency loss. Theoretical studies have credited some point defects with the production of energy trap states within the bandgap. As such, we aim to measure and describe the nature and formation of traps in real materials.

External quantum efficiency measurements are used to describe a gaussian distribution of traps. Additionally, capacitance techniques are applied with the added advantage of increased sensitivity to the absorber layer. However, capacitance techniques are complicated by the hysteretic perovskite system, which is discussed. The samples used in this study include methylenediammonium dichloride-stabilized alpha-formamidinium lead triiodide, a perovskite with interstitially incorporated chloride. External quantum efficiency measurements showed lower defect densities compared to devices of different compositions, however, one sample did show a small signal with a defect transition energy of \( 1.08 \pm 0.01 \) eV. Findings may point to material suppression of sub-gap defects associated with methylenediammonium dichloride-stabilization compared to alternative compositions. It will be interesting to determine if methylenediammonium dichloride is the source of defect suppression in these samples. To understand how the composition might affect defect states, it will also be necessary to take measurements of other stabilizing agents with different compositions.
The Role of Semantic Predictability in Adaptation to Nonnative-Accented Speech
Kayla Walker—Linguistics
Faculty Mentor(s): Melissa Baese-Berk
Session: Prerecorded Poster Presentation

Nonnative-accented speech is more difficult for native listeners to understand than native-accented speech. However, listeners can improve their abilities to understand nonnative-accented speech through exposure and training. The goal of this project is to explore whether exposing native listeners to different sentence types affects listeners’ adaptation to nonnative speech. Listeners will be trained on high predictability sentences (e.g., “The color of a lemon is yellow”), low predictability sentences (e.g., “Mom said that it is yellow”), or semantically anomalous sentences (e.g., “The green week did the page”). Previous research has demonstrated that semantic predictability impacts speech perception, but its influence on adaptation to nonnative speech is unknown. This research aimed to answer the following questions: Does training with low predictability or anomalous stimuli require listeners to focus more attention on the acoustic-phonetic properties of the accent and thus lead to greater adaptation and generalizable learning? Or will training with high predictability stimuli provide valuable semantic information that will allow listeners to create a better framework for improving perception? Overall, preliminary results indicate that training with low predictability sentences provides listeners with an advantage over training with high predictability sentences. Using higher effort in training with more challenging sentences allows listeners to construct generalizable knowledge about the speech rather than relying on semantic prediction during a transcription task.

Government Response, Epidemiology, and Impacted Communities in New York during the Coronavirus Pandemic
Angelique Wallmann—International Studies, French
Co-Presenter(s): Amelia Hardeman, Hannah Heskin
Faculty Mentor(s): Kristin Yarris
Session 2: US Outbreak Breakout—COVID-19 Research

During this unprecedented time of global health crisis, Covid-19 has impacted each state in the United States differently. A lack of guidance from the federal government has allowed state governments to develop varying responses to the crisis bringing individual results. New York has quickly become the epicenter for the disease in the US, because of this, I have chosen to follow the
state-level response to Covid-19 in New York as part of the INTL Field Experience: GH Crisis course this term. My project uses social media to share and analyze important information related to disease epidemiology, government response through policies, and impacted communities. This research is ongoing as the crisis continues to unfold, at this time focus is being given to how and when the New York state government will begin to prepare for a transition out of emergency response to Covid-19.

Language Proficiency and Lexical-Semantic Processing in Bilingual Toddlers
Abbey Ward—Communication Disorders and Sciences; Spanish
Faculty Mentor(s): Stephanie De Anda
Session 6: Interact & React

Prior research suggests that language systems are not entirely separate but interact in bilingual individuals. The current study seeks to extend prior work by investigating whether or not bilingual toddlers organize vocabulary words and their meanings (i.e., lexical-semantic networks) within and across languages as early as 2 years of age. Of interest is how the words a toddler hears (i.e., language exposure) versus the words that they say (i.e., language proficiency) influence this organization of dual vocabulary systems. This study presents findings from a group of Spanish-English bilingual toddlers (N = 20, Mage = 24.65 months) to examine the association between (a) language exposure and (b) language proficiency with lexical-semantic processing. Four measures were used: the Language Exposure Assessment Tool (LEAT) captured exposure, whereas the Computerized Comprehension Task (CCT) and the English-Spanish Vocabulary Inventories (ESVI) measured vocabulary size in both languages. Lastly, eye-tracking measures assessed lexical-semantic processing within and across Spanish and English. Consistent with prior literature, results suggest that vocabulary systems interact in bilingual toddlers by 24 months of age. As a group, toddlers with larger vocabulary sizes and faster speed of word recognition in their stronger language (Spanish) demonstrated inhibition, such that they were more likely to efficiently discard words similar in meaning (i.e., semantic competitors) in order to correctly identify the target. When processing semantic relationships between words in their weaker language (English), toddlers with slower speed of word recognition demonstrated facilitation in order to continue ongoing activation of their sparse vocabulary networks. However, language exposure was not associated with lexical-semantic processing. Together these findings demonstrate that the words bilingual toddlers say and understand (and not necessarily what they hear) influence the organization of dual language systems. Ultimately, our findings contribute to the current understanding of bilingual first language acquisition and emerging theoretical models on bilingual language development.
Women Most Vulnerable: The Role Traditional Gender Roles Played in the Salem Witch Trials

Maya Ward—Political Science

Session: Prerecorded Poster Presentation

This project looks at what were the largest influences in the accusation of a person during the Salem Witch Trials. After preliminary research the main question of inquiry became, why were women more likely to be persecuted in the Salem witch trials and what factors further increased likelihood of accusation and conviction? This question was answered through both analysis of court documents, recorded sermons, and secondary scholarship on the lives of the people accused. It was concluded that the women of Salem, especially the poor and outcast, supposedly influenced by the Devil, became the primary justification for instability in the community. The largest factors that amplified the likelihood of being accused, especially for a woman, was her age, economic status, and outspokenness in the community. These conclusions can help to explain why the moral panic in Salem occurred, and help to demonstrate the danger of oppressive gender roles in a society that, when not strictly followed, can create an ambiguity manipulated by powerful figures that can hurt those most vulnerable.

Human Trafficking in Haiti

Sydnee Warren—Exploring

Co-Presenter(s): Sara Harvey

Faculty Mentor(s): Matthias Vogel

Session: Prerecorded Poster Presentation

The State Department of the United States of America has in 2019 raised concerns about human and sex trafficking taking place in the Dominican Republic and in Haiti. Our research project examines the many factors contributing to human trafficking in the nation of Haiti, where thousands are affected by human trafficking every year. As a developing country, Haiti struggles to overcome this problem. We seek to expose the main developments and causes for the Haitian sex and labor trafficking market by reviewing and compiling government data, reports issued by international non-governmental organizations, and individual case studies over the past decade. We will show that the Haitian government has not taken sufficient action to hold traffickers accountable or to eradicate the “Restavek” system, a system that has delivered one quarter of Haitian children into
domestic servitude and harsh labor. We contend that Haiti continues to be in a human rights struggle of devastating consequences for individual lives. Our project aims to bring to widespread public attention the violations of basic human rights in developing and often ignored countries like Haiti and we hope to shine a spotlight onto human trafficking in Haiti in an effort to try and gain support for the movement to overcome human trafficking.

Yerba Mate—Production Analysis and Education of Sustainable Alternatives

Cian Whalen—Environmental Studies

Co-Presenter(s): Sarah-Anne Bedrosian, Garren Lum

Faculty Mentor(s): Sarah Stoeckel, Kathryn Lynch

Session: Environmental Leaders ARC

Students at the University of Oregon are highly reliant on prepackaged food and drinks to keep energized throughout the day. Many students consume multiple caffeinated beverages each day, often served in a single use container. Due to its popularity on campus, we are using Guayaki brand Yerba Mate as a case study to exemplify the impact of the high consumption of single use products. We hypothesize when analyzing the environmental harm and pollution created by the production of packaging materials, packaging for loose leaf tea will have an overall lower environmental impact than glass bottles or aluminum cans. Our group will research the production analysis of glass bottles, aluminum cans, and packaging of loose leaf tea looking at the embodied energy, waste materials, and overall environmental impact from production. The research will be presented in a video presentation that will educate the UO population about the production analysis of aluminum cans, glass bottles. We argue consumers should consider purchasing loose leaf Yerba Mate and brewing their own tea instead of creating waste by consumption of the drink in a glass bottle or aluminum can. By exploring the production analysis and the environmental, social, and economic components of the different variations of Guayaki Yerba Mate, we hope to educate the student body on the implications of their consumerism and prompt them to make more sustainable consumer choices.
“Desde Abajo, Como Semilla:” Narratives of Puerto Rican Food Sovereignty as Embodied Decolonial Resistance

Momo Wilms-Crowe—Political Science
Faculty Mentor(s): Dan Tichenor, Michael Fakhri

Session 1: Oh, the Humanities!

This thesis explores the power, possibility, and agency embedded in food in the contemporary Puerto Rican context. Building from participatory ethnographic fieldwork with activists, chefs, and farmers engaged in food sovereignty work on the island, I examine the concepts of agency and subjectivity as they relate to embodied experiences of politics. This approach is made possible with the understanding that the food we consume directly connects our individual lived experiences to broader structures of power in intimate and material ways. Through food, I offer a grounded critique of US colonial violence, inherently linked to ecological destruction, cisheteropatriarchy, and disaster capitalism. I also document dynamics of radical prefigurative politics as visible in people’s generative reimagining of relationships with their bodies, each other, and the land. This analysis is supported theoretically by key indigenous, anarchist, and queer/feminist perspectives which similarly connect the personal to the political and offer examples of political action that extend beyond state-centric formal politics. Ultimately, I argue that food is a powerful site of resistance, source of resilience, and mechanism of resurgence; as Puerto Ricans reclaim autonomy via food, they are resisting deeply rooted patterns of colonial extraction and dispossession and directly cultivating a more ecologically, socially, and politically just future.

The University of Oregon’s EMU: Cultural Epicenter and Incubator for Oregon’s Film Industry (1967-77)

Katherine Wilson—English
Faculty Mentor(s): Stephen Rust

Session 1: Flicks and Pics

This research project answers the questions relating to how the University of Oregon’s EMU helped create Oregon’s First Film Crew in the 70’s; how that in turn resulted in National Lampoon’s Animal House being filmed at the UO in 1977; and why significant events were held and filmed specifically in The EMU:
A) How Animal House Came to the UO: https://vimeo.com/401518226/f72da257a4
B) The Casting Call: https://vimeo.com/400122172/8de7c92b45
C) The Food Fight: https://vimeo.com/399570228/6eab0a62f7
The EMU was considered one of the Nation’s cultural epicenters because of its programs supporting and housing new social, intellectual, political, artistic, journalistic, filmic and musical paradigms of the 60’s. Because of this, a group of Poetic Cinema filmmakers emerged from this cultural center in 1969 and became Oregon’s first film crew; not only helping create Oregon’s film industry, but stepping in to help save Animal House from being scrapped by a Hollywood studio. These filmmakers all met on July 8th, 1969 on the Free Speech Platform of the EMU while watching a Communist debate the ASUO Student Body President. From there they formed FWAPS to help Kesey edit his 1964 footage, participated in Jack Nicholson’s film Drive He Said (1970), Elliott Gould’s Getting Free (1971), the Grateful Dead’s Sunshine Daydream (1972), as well as supporting Paul Newman’s Sometimes A Great Notion and Michael Douglas’ One Flew Over the Cuckoo’s Nest (1975), before becoming key personnel on Animal House in 1977.

History of the Animal House: (1977-20)
Katherine Wilson—English
Faculty Mentor(s): Philip Krysl
Session 1: Flicks and Pics

This research project asks what is left of an old fraternity house made famous in 1977 during the filming of National Lampoon’s Animal House, and is answered in a short motion picture: https://vimeo.com/401735276/4367deb178

In the mid-60s and early 70s the Animal House was a half-way house for parolees going to college. In 1977 it’s exterior starred in the movie Animal House, but the interior was off limits. So the set decorators bought two identical doors, and mounted one of them as the front door on the “Exterior” of the Animal House, while the other they mounted on the Sigma Nu House, which also had sidelights, and would help continuity-wise to not only mimic the living room and basement of the other house, but would double as the Interior door.

In 1986, an old friend of Katherine Wilson’s contacted her about trying to save the house from being demolished. She was on-location in Washington state and was unable to help, and it was demolished. However, pieces of the house were saved, and ended up in her possession in 2012. In 2017, she was asked to create a movie set from the various pieces for The Oregon Film Museum’s fundraiser, and she recreated the front porch. In 2018, the Cottage Grove Hysterical Society, planning for the 40th Anniversary Celebration of Animal House, used it as a backdrop at Bohemian Park for the concert starring Otis Day and The Kingsmen. Watch for it again in 2021.
The Cinema 7 History
Katherine Wilson—English
Faculty Mentor(s): Peter Alilunas, Stephen Rust
Session 1: Flicks and Pics

Cinema 7 was a unique “art house” movie theater in Eugene, Oregon, 1974–87. It was part of Oregon’s emerging film culture in the early 70s; showcasing the films of Poetic Cinema Filmmakers Ron Finne, Sharon Genasci and Don Cato, among others; and was partially funded and staffed by Oregon Film’s Pioneer Film Crew member Katherine Wilson, a professional Location Scout and Casting Director. The cinema boasted attendance by such notables as cast and crew from One Flew Over the Cuckoo’s Nest, Animal House, and Stand By Me; as well as local icon Ken Kesey.

Curious about what the venue looked like, U of O Cinema Studies Professor Alilunas discovered in 2020 that one of the students in his class, filmmaker Katherine Wilson, had worked there; and an opportunity arose to learn more about the theater’s special place in history.

Only a single photograph from the Eugene Register Guard Newspaper (of the hidden projector room) and one polaroid image of a corner of the lobby existed, so Katherine made the decision to make a diorama from the blueprints Dr. Alilunas had found at Eugene’s City Planning Department.

The interior design itself was inspired by the great former movie and opera houses of Eugene (the ornate theater seats were reused and recycled from the demolished Heilig Theater in 1973) as it mimicked The Egyptian Theater and The Bagdad Theater in the Art Deco/ Egyptian Revival style popular in the 1920s.

Therefore, it became more important than ever to somehow preserve the theater’s history for students who were studying how and why Art Houses were so important beginning in the early 70s; as these “underground” artistic filmmakers helped create Cinema as we know it today.

Additional photos were later found and printed from negatives by the Cinema’s Interior Designer and Graphic Artist Lynn Peterson, who also designed all the Cinema 7 posters starting 46 years ago. Lynn had donated many of them along with Katherine’s to the Katherine Wilson Special Collection at the Knight Library in 2016. Video link: https://vimeo.com/401805694/0167ee0cc3
Ensembles link RNA thermodynamics and molecular evolution
Daria Wonderlick—Biochemistry
Faculty Mentor(s): Mike Harms
Session 5: The Bonds that Make Us
Designing better biomolecules is a long-standing goal for biochemists. Doing so requires a rigorous understanding of how the sequence of a biomolecule determines its properties. Sequence changes, known as mutations, alter these properties and drive the natural evolutionary process. If we can accurately predict how mutations impact biomolecular properties, we can engineer novel biomolecules for applications in medicine, energy, and technology. Predicting a mutational effect is challenging, however, because the effect often depends on the presence of other mutations. Previous work in the Harms lab suggests that some of these mutational interactions emerge from a thermodynamic property of biomolecules—the ensemble. A biomolecule's ensemble is the collection of interchanging structures it can adopt. A mutation may impact any structure in the ensemble, and its effect arises from perturbations to the relative populations of these structures. Mutations will have different effects depending on the degree to which other mutations have redistributed the ensemble. To mechanistically understand how the ensemble mediates mutational interactions, I am characterizing the effects of five mutations alone and in combination on a magnesium- and adenine-binding RNA molecule with a simple four-structure ensemble. By measuring the amount of a fluorescent adenine analog bound in the presence of varying magnesium concentrations, I can detect the effect of mutations on each of the four structures in this ensemble. The simplicity of this system will provide detailed mechanistic insight into the relationship between ensembles and mutations that can be used to improve the mutational predictions required for successful biomolecule design.

Preserving the Authenticity of Chinese New Year in Process of Modernization Through Generational Perspectives
Evelyn Woo—Psychology, International Studies
Co-Presenter(s): Tina Chan
Faculty Mentor(s): Matthias Vogel
Session 5: It’s a Small World After All
This project explores generational gaps in celebrating Chinese New Year, which is arguably the most important holiday in China. Also known as the Spring Festival, traditional rituals include the family
reunion dinner on New Year’s Eve, putting up lucky red decorations, handing out red envelopes to children, and setting off firecrackers. In the last decade, many new forms of commemorating Chinese New Year have developed among young people, such as sending virtual red envelopes for online money transfers via WeChat, a popular messaging app, and watching the extravagant Chinese New Year Gala on screens rather than participating in small festivities with family. These technology-driven changes are of particular concern to some elders who think that the younger generation is turning away from traditional family values and customs. The purpose of this project is to examine attitudes toward the Spring Festival and question whether it is losing its authenticity. We debate in how far this transition is indicative of a larger restructuring of Chinese society and contrast different generational perspectives by analyzing Western and Chinese news outlets, social media blog posts, and websites. We expect to find that with China’s rapid urbanization, cultural traditions are not lost but simply changed, which some may see as growth, while others interpret it as a disappearing act. Our project has strong social significance, as it points out schisms in Chinese society and issues China faces in its process of modernization.

Observations of Mobile Health Clinics in Honduras: A Case Study on El Centro De Salud Integral Zoé

Mitchell Yep—International Studies, General Science
Faculty Mentor(s): Lesley Weaver, Melissa Graboyes
Session 1: Time for Your Check-Up—Decolonizing Global Health

Visual impairment and blindness are debilitating conditions with increasing rates around the globe. The World Health Organization estimates at least 2.2 billion people have a vision impairment or blindness, of whom at least 1 billion are preventable or remain unaddressed (Bourne et al., 2017; World Health Organization, 2019). El Centro de Salud Integral Zoé uses an innovative Mobile Health Clinic model to deliver cataract screenings and visual acuity exams to populations marginalized from the Honduran health care system. Zoé’s outreach model actively removes systemic barriers that prevent individuals from seeking care such as cost, distance, logistics, and lack of knowledge. The colonial legacy and proposed neoliberal development policies have resulted in the underdevelopment of health infrastructure and widespread exclusion from these services. The expansion of accessible health care is a pressing national issue as the State’s Ministry of Health estimates 18% of the population (over 1.5 million Hondurans) do not have access to health services (Secretary of Health, 2015). Implementing the Right to Health under the 1948 Universal Declaration of Human Rights and achieving the 2015 United Nations Millennium Development Goals requires the foundation of
accessible health care. Mobile Health Clinics present an alternative development strategy to ease disparities of access to health care by bringing medical services to communities that would not receive them.

**Yakuza in Japan: Why are they still there?**

**Caitlyn Yost—International Studies**

**Co-Presenter(s): Calvin Parker-Durost**

**Faculty Mentor(s): Matthias Vogel**

**Session: Prerecorded Poster Presentation**

For generations, Japan has been trying to control and contain their mafia organizations known as the yakuza. The yakuza groups have, since the Tokugawa era in the early 1800s, been an issue and to this day they continue to defy the Japanese government which has never been able to fully rid the country of these organizations. In our research, we examine why the Japanese government has such a hard time trying to deal with yakuza and why the yakuza have a big impact on Japanese society. For our research, we will be using sources such as historical documents, police reports, articles/newspapers, and first-hand accounts on dealing with yakuza. Taking a look at such sources has led us to finding out that the Japanese government is starting to crack down on yakuza more since 2011 with the support of the United States government though the yakuza still continue to hold roots in Japanese businesses and citizens still go to yakuza to deal with issues rather than deal with the Japanese legal process. We hope to bring awareness to this topic and teach people how the yakuza organizations have changed and adapted over the years, how they are currently being handled in Japan, and how they could be dealt with in the future.

**Investigating the structural differences between Norway and the US that lead to the different incarceration and recidivism rates**

**Ella Young—General Social Science, Political Science**

**Faculty Mentor(s): Alison Gash, Kristen Bell**

**Session 1: Global Views—We vs. Them**

Incarceration is a pressing issue, affecting most countries around the world. In the United States, incarceration and recidivism rates have been generally increasing over the past decades. In contrast, Norway has almost uniquely low incarceration and recidivism rates, despite its many
other similarities with the US. While there are a multitude of studies and theories about causes and contributions to incarceration and recidivism, examining the structure of societies is relatively new. This paper aims to go beyond the practices and policies that may affect incarceration and recidivism. Through the investigation of the structural differences between the US and Norway, it will be shown that the two countries have drastically different philosophies about crime and criminals. As more money and resources are spent on prisons, it is important to understand the true cost of incarceration, including everything from federal funding to the opportunity cost of wasted human productivity. Through analyzing the different policies enacted by the US and Norway, as well as the ideologies behind the policies, this paper will show that the solution to incarceration and recidivism is not as simple as legislation. It is clear that while there are programs that have been successful in lowering incarceration and recidivism rates in the US, similar to the successful ones in Norway, the societal perspective on crime is preventing the US from being proactive about decreasing incarceration and recidivism.

How does legislation of foot traffic in Machu Picchu affect the economic livelihood of indigenous groups in Peru?

Emma Ziari—International Studies, Political Science

Co-Presenter(s): Edwin Guerrero, Eloise Navarro

Faculty Mentor(s): Matthias Vogel

Session: Prerecorded Poster Presentation

How does the legislation of foot traffic in Machu Picchu affect the economic livelihood of indigenous groups in Peru? In January of 2020, Peru deported five tourists accused of damaging a temple in Machu Picchu, the famous ancient Incan ruins in the Andes. Our presentation discusses how tourism in Machu Picchu has disaffected indigenous culture, indigenous people, and the environment in the Peruvian Andes. We examine societal and economic pressures and argue that each has been magnified by tourism as our analyses of policy changes, environmental degradation in Machu Picchu, and indigenous narratives show. We contend that while tourism in Machu Picchu seems to have clear economic benefits, the societal and environmental costs have been steadily increasing. Culturally, tourism has led to the desecration of indigenous burial sites. Environmentally, because the number of tourists has been increasing, the erosion of the site has continued to increase. Our research of this issue wants to contribute to a better understanding of the effects of global tourism. This information will be useful in identifying key global issues in tourism and contribute to informed decision-making processes for the implementation of a more environmentally and culturally-conscious tourism industry.