UNIVERSITY OF OREGON

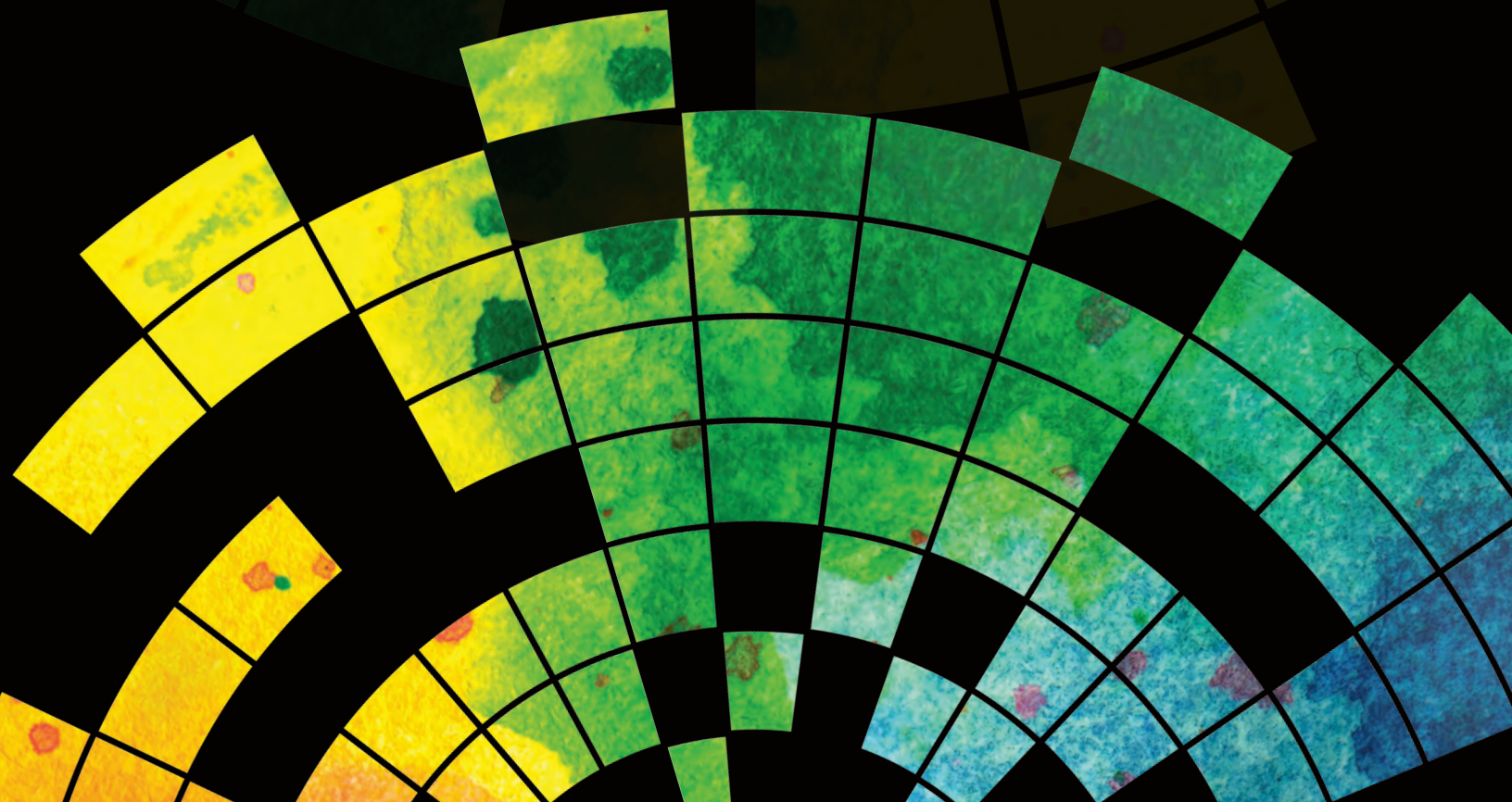
# EVENT PROGRAM

## 2024

# UNDERGRADUATE RESEARCH SYMPOSIUM

ARTS • SCIENCES • HUMANITIES • SOCIAL SCIENCES

urds.uoregon.edu/symposium



# 2024
# UNDERGRADUATE RESEARCH SYMPOSIUM

## Table of Contents

# Student Advocacy and the Research University

May 23, 2024

### Welcome to the 14th Annual Undergraduate Research Symposium!

As a top-tier liberal arts and sciences research institution, discovery, inquiry, creativity, and innovation underlie everything we do. Part of our mission is to help students question critically, think logically, reason effectively, communicate clearly, and act creatively. The Undergraduate Research Symposium is an embodiment of that mission and invites the community to engage with our undergraduates and their mentors and witness the promise and impact of their ideas and work for local community and broader society.

Over the past 13 years the symposium has hosted 4,245 student presenters and 2,705 research mentors. Despite the continuing recovery from the profound disruptions to research and creative work experiences by students and research mentors over the past three years, we are inspired to celebrate the work of **490 presenters and their 377 research mentors** at the 2024 symposium.

The unprecedented number of 405 presentations include students from all eight colleges and schools, the Phil and Penny Knight Campus for Accelerating Scientific Impact, 73 majors, 77 minors, and 47 institutes and centers. A record 329 presenters received funding to support their research and creative work from 70 different internal and external sources.

The foundation for the current breadth and scale of the symposium rests with our students. In 2010 student leaders formed the Affiliated Students of Undergraduate Research and Engagement (ASURE) to advocate for three initiatives to support undergraduate research and creative work across the schools and colleges–an annual conference, a student-edited journal, and a dedicated office. Their voices and experiences catalyzed endeavors to develop these

resources, which existed widely at Association of American Universities (AAU) comparators. A coalition of partners led by the Division of Undergraduate Education and Student Success, and including the College of Arts and Sciences, Division of Equity and Inclusion, Office of the Vice President for Research and Innovation, Robert D. Clark Honors College, University Housing, and UO Libraries, collaborated with the ASURE students to advance this work.

In 2011 the *Oregon Undergraduate Research Journal* (OURJ) published its inaugural issue, and the Undergraduate Research Symposium debuted with 69 presenters and 40 faculty mentors, spanning 20 majors and four colleges. With a student editorial board and executive editors OURJ established a strong model for a peer-reviewed, open-access, interdisciplinary, student-led journal. Similarly, ASURE and OURJ students assumed central roles on the symposium steering committee to help plan and execute the event. Their joint offerings of developmental peer-facilitated workshops on poster design, abstract writing, oral presentations, and conferencing skills continue to expand, and this year included sessions titled "Crafting and Developing an Abstract, Project Summary or Artist Statement" and "The Art of Designing an Impactful Symposium Presentation."

The final objective of the original student leaders–a dedicated office for undergraduate research–was realized in 2014 with the founding of the Undergraduate Research Opportunities Program (UROP) and the creation of the Center for Undergraduate Research and Engagement (CURE) in 2017. These allied offices support a diverse portfolio of undergraduate research fellowship and conference travel award programs. They also serve as central hubs for exploring and pursuing opportunities in undergraduate research, scholarship, and creative work.

A new generation of students now leads OURJ and ASURE, and student voices continue to actively invigorate the Undergraduate Research Symposium, CURE, and UROP. As we look to the 15th anniversary of the symposium and OURJ in 2025 our teams reflect on the privilege it has been to gain inspiration and wisdom from our students as they helped transform the undergraduate research landscape at the University of Oregon.

Our 2024 symposium alum keynote speaker, Adeline Fecker '20, is one of the former ASURE student leaders whose undergraduate work intersected the sciences and humanities. While helping to plan the symposium as an undergraduate she also presented at the event for three consecutive years with project titles including, "Forebrain Control of Social Behavior in Zebrafish Model" (2018), "Ecopoetry and Us" and "Influence of Sensory Systems on Social Behavior" (2019), and "Visual Input Principally Drives Zebrafish Social Behavior" (2020). Adeline is a third-year medical student at Oregon Health Sciences University and shares that she continued her leadership in medical school–starting an elective course to prepare students for their surgery rotations, which won her outstanding medical student award and the Forging the Way Award. We encourage you to view Adie's introduction video.

We welcome students, families, staff, faculty, alumni, and community members to this "open house" of the public university showcasing the research and creative work of undergraduates with the hope visitors will enjoy inspiration, dialogue, and exploration.

Congratulations to all the student participants and their research mentors who have made this event happen!

**Kevin Hatfield**
Chair, Undergraduate Research Symposium Planning Committee
Assistant Vice Provost for Undergraduate Research and Distinguished Scholarships

UNIVERSITY OF OREGON

# Agenda Overview

Visit our **schedule web page** for full symposium schedule with oral presentation, creative work, film screening, and poster locations in the EMU and Alan Price Science Learning Commons, as well as presenter names and abstract titles.

## May 23

| | |
|---|---|
| 9:00 a.m.–noon | Student Academy to Inspire Learning (SAIL) Pre-College Collaboration Day |
| 9:00–10:30 a.m. | Concurrent Oral Presentations and Works-in-Progress Session 1 |
| 10:40–11:50 a.m | Works-in-Progress Session 2 |
| 10:45 a.m.–12:15 p.m. | Concurrent Oral Presentation Sessions |
| 12:15–1:15 p.m. | Keynote Reception in Redwood Auditorium<br>• Opening remarks by President Karl Scholz<br>• Alumni keynote address by Adeline Fecker '20, Biology |
| 1:15–2:45 p.m. | Concurrent Oral Presentation Sessions |
| 1:30–3:00 p.m. | Works-in-Progress Session 3 |
| 3:00–4:30 p.m. | Concurrent Oral Presentation Sessions |
| 4:30–6:30 p.m. | Poster Session in EMU Ballroom |
| 5:30–7:30 p.m. | Asian Studies Event |
| 6:30–9:30 p.m. | Creative Works and Student Film Screenings |

## June

All remote presentation videos will be available on the symposium **YouTube channel** as an ongoing digital exhibit of undergraduate research and creative work, curated through thematic playlists and are keyword searchable.

## Keynote Reception Run of Show

### Redwood Auditorium, EMU

**12:15 Welcome**
Kevin Hatfield, Symposium Committee Chair

**12:20 Remarks from the President**
University of Oregon President John Karl Scholz

**12:30 Introduction of Keynote Speaker**
Josh Snodgrass, Professor of Anthropology

**12:35 "Fail Cool"**
Keynote Address by Adeline Fecker '20, Biology, Clark Honors College

**12:55 Discussion and Q&A with Adeline Fecker**

**1:05 Closing Remarks**
AR Anshuman ("AR") Razdan, Vice President for Research and Innovation

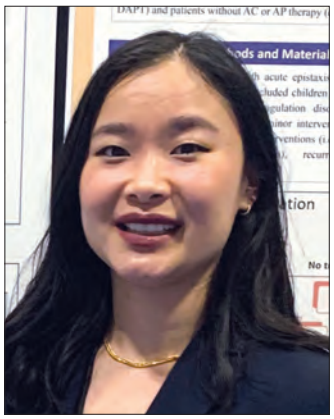
**1:10 Conclusion of Reception, Introduction of Concurrent Presentation Sessions**
Kevin Hatfield

# Alumni Keynote Speaker

## Adeline Fecker
## "Fail Cool"

**Thursday, May 23, 2024, 12:15 p.m., EMU Redwood Auditorium**
**Also available on the symposium YouTube channel**

Adeline Fecker '20 is a third-year medical student at Oregon Health and Science University. Her journey winds through the humanities, sciences, and across multiple countries. At the University of Oregon, she worked between the sciences and humanities as a poet and scientist. Now she is undertaking a year of research to study human cognition using deep brain electrodes to advance targeted treatment for obsessive compulsive disorder, addiction, and beyond.



Adeline Fecker

Research enhanced her education and taught her valuable lessons in perseverance and leadership. She was instrumental in planning the 2020 Undergraduate Research Symposium and has continued her leadership in medical school. She started an elective course to prepare students for their surgery rotations, which won her outstanding medical student award and the Forging the Way Award. She is so excited to be returning in 2024!

# Inaugural Film Screening and Discussion at the Symposium

**Thursday, May 23, 6:30–9:30 p.m., EMU Redwood Auditorium**

For the first time, the Undergraduate Research Symposium is accepting film submissions. Recognizing film as a powerful medium—not only for art and entertainment but also for research and social change—we have included a Film Screening and Discussion session to showcase the breadth and depth of film projects produced by University of Oregon undergraduate students. This new session underscores the importance of providing a platform for students to showcase their work and engage with the community.

This year, we are excited to introduce three Filmmaking Awards to recognize outstanding contributions in the field, with prizes sponsored by the Undergraduate Research Symposium in partnership with the Cinema Studies Department, Ducks After Dark, and UO Presents. The awards include a grand prize of $300, a second prize of $150, and an audience vote award of $50.

## Films To Be Screened

- *Environments Interconnected: Alaskan Coastal Wetlands Support Wildlife & Community* (Eden McCall, [Year])
- *The Irish Potato Famine: A video essay by AJ Jernigan* (AJ Jernigan, [Year])
- *La Chicana Académica: Dr. Yvette Saavedra* (Claire Aspeitia, [2024])
- *Growing Roots* (Daniela Cortes-Montesinos, [2024])
- *Encontrando Pertenencia/Finding Belonging* (Adamaryz Lopez-Navarette, [2024])

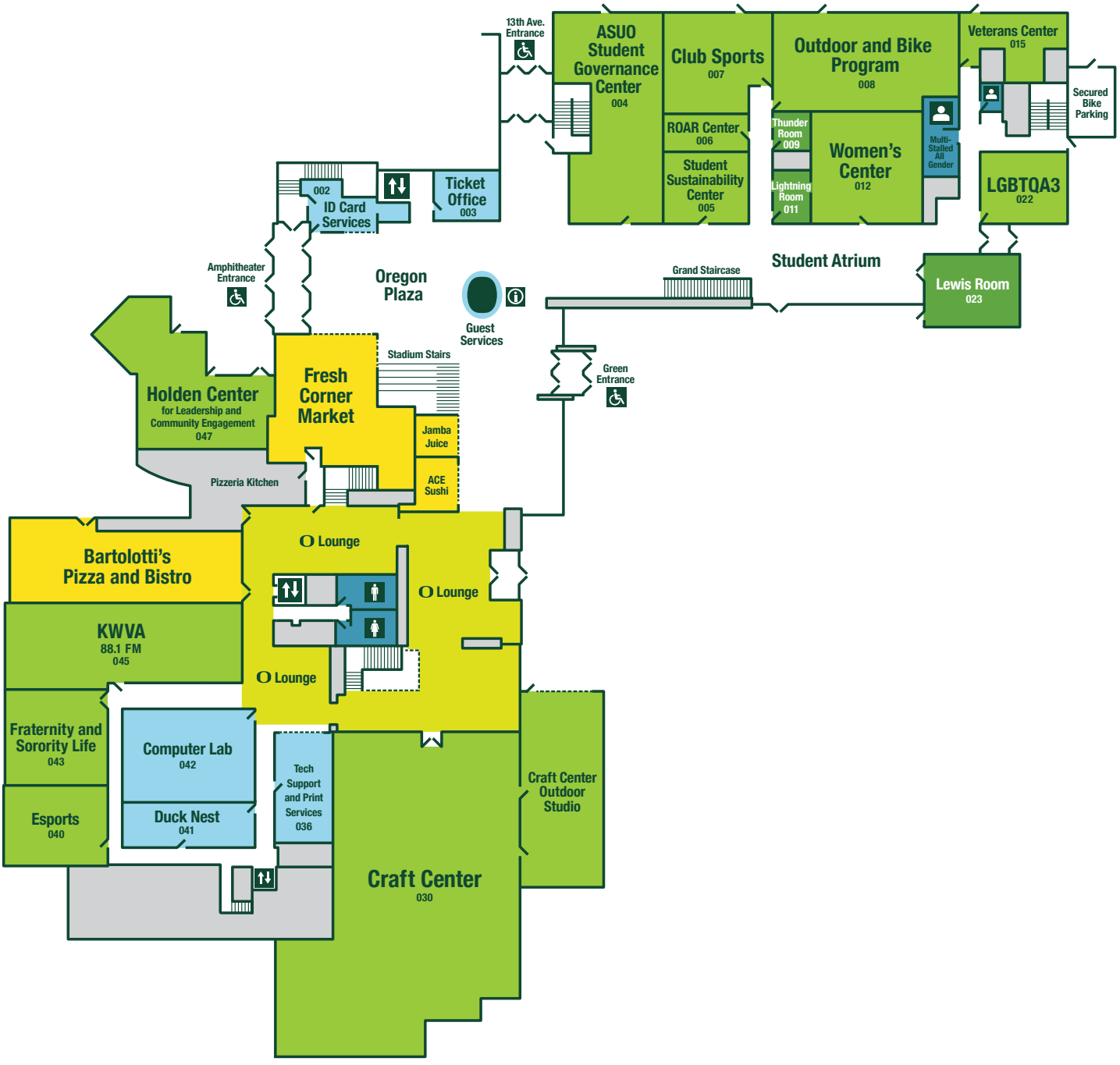
- *Raices Latinas / Latino Roots* (Angel Saul Escorcia-Nuñez, [Year])
- *Native Students Learn How to Captivate the Cultural Treasures of Elder's Stories with Film Cameras* (Submitted by Katherine "K'iya" Wilson, Indigenous Film Training Mentor, University of Oregon Longhouse 2022-2023):
- *The Lost Story of the U of O Powwow* (2023) by Jordan Herrington, Klamath (UO Grad '23)
- *The Culture Keepers* (2023) by Anaïs K. Wilson, Powhattan (Molalla High School, Class of '26)
- *A History of Native Music* (2023) by Treydon (Kimo) Emary, Klamath/HI Native/Japanese (on leave from UO)
- *Kla-Mo-Ya Languages* (2023) by Princess Mason, Western Shoshone/Klamath (UO Grad '23)

Join us for an evening of cinematic exploration, a celebration of students' filmmaking accomplishments, and discussion. Popcorn and soda will be provided!

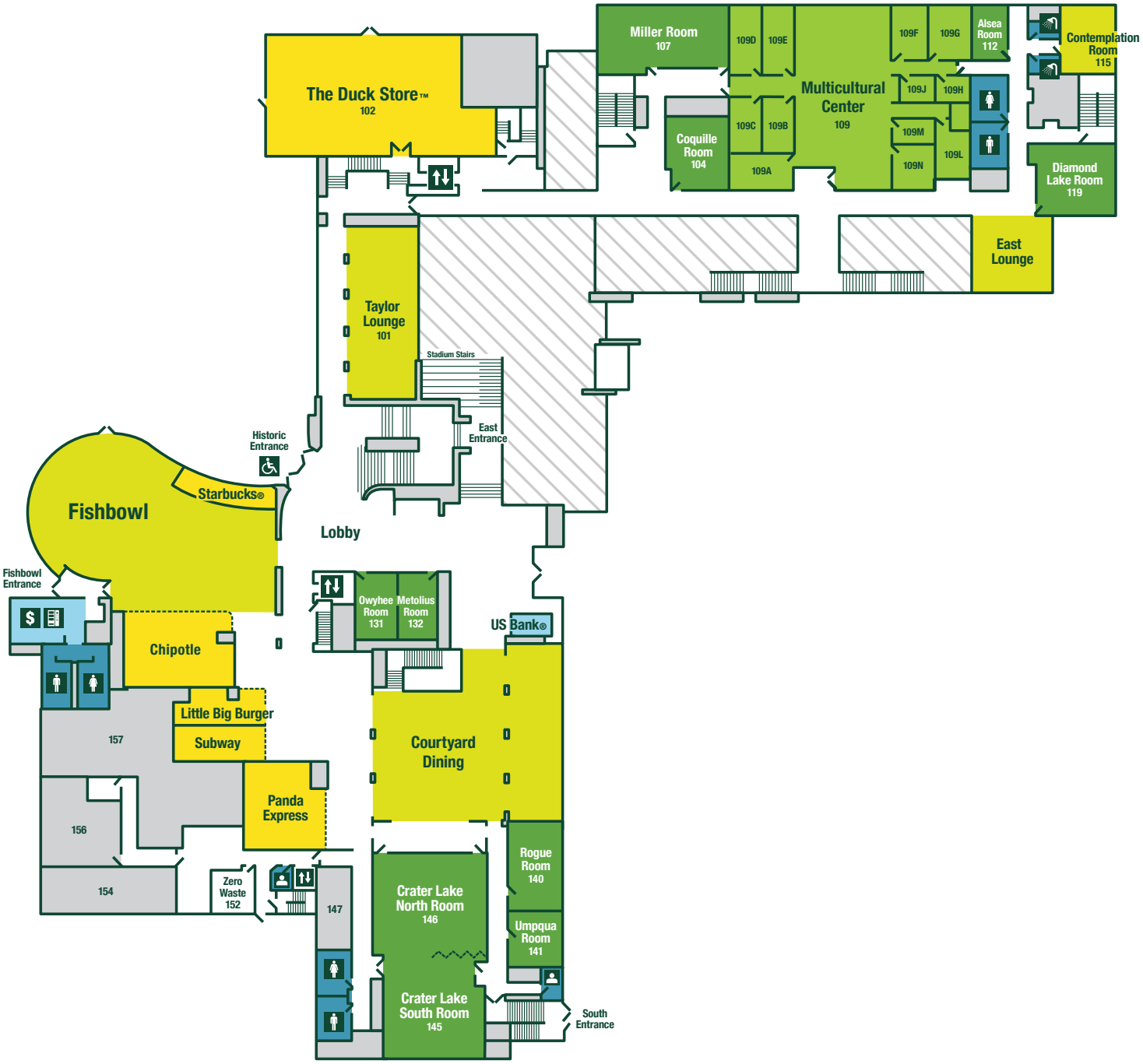
**"It's so exciting to have a new section this year which has given undergraduates the opportunity to showcase the important and interesting work, and further the wide variety of work that the [symposium] has displayed up to now. I'm looking forward to having this year's array of films be shared and celebrated, as well as opening up the doors for students hoping to share their films in the future."**

*–Anthony DiStasio, president of the student cinema club* ***UO Presents***

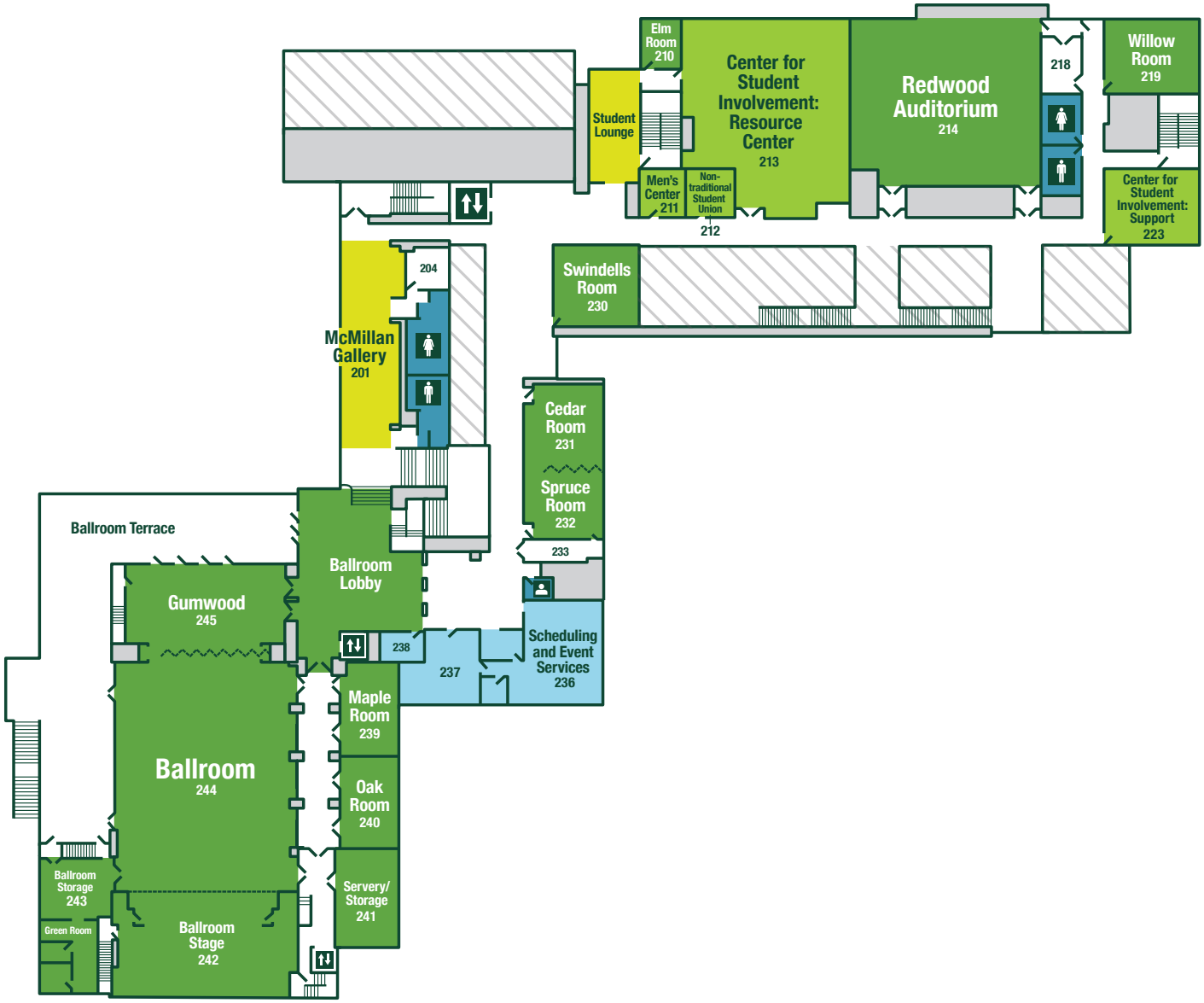
# Erb Memorial Union Ground Floor



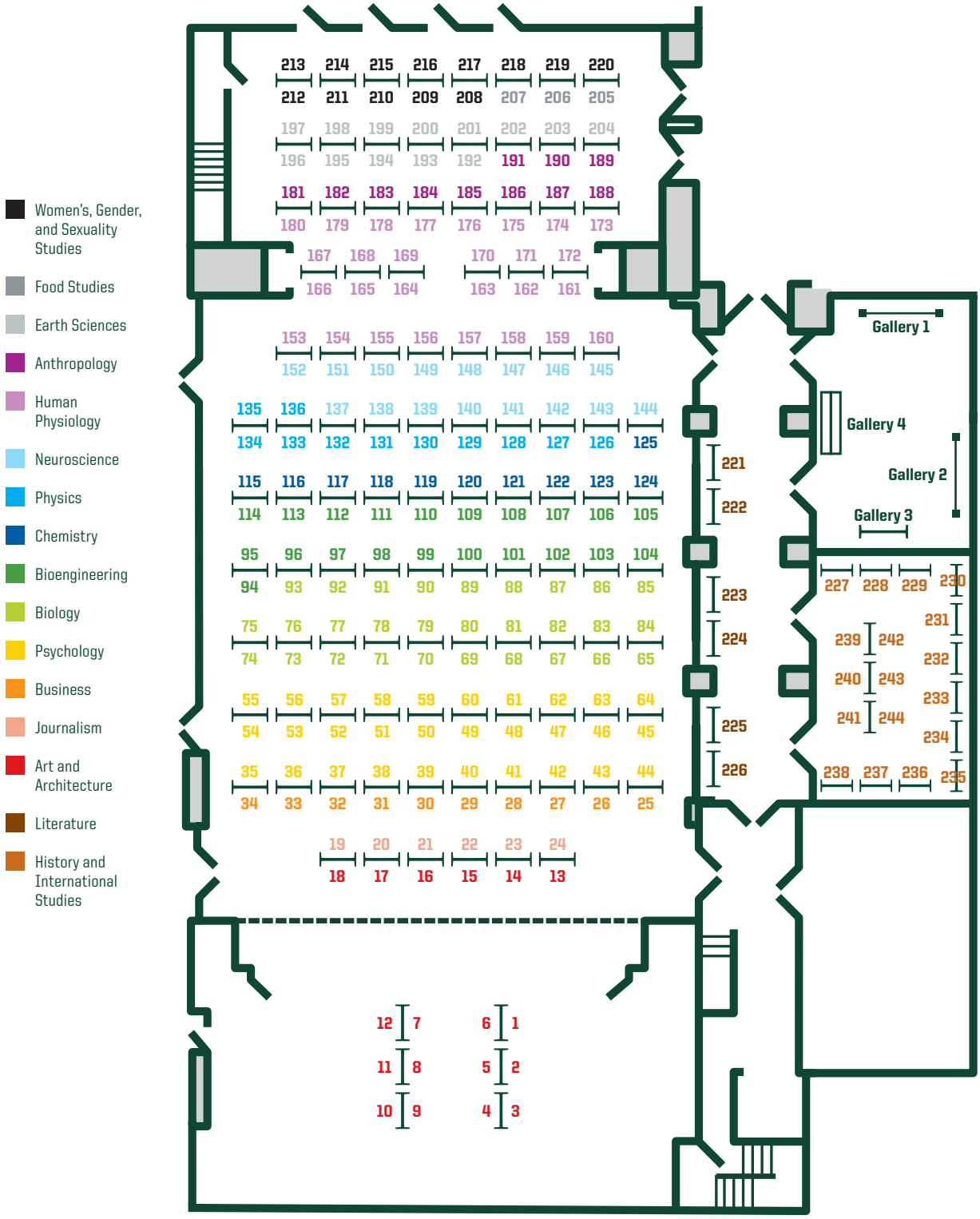
# Erb Memorial Union Level One



# Erb Memorial Union Level Two



# Erb Memorial Union Ballroom



# Acknowledgements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Undergraduate Research Opportunities Program
Institute of Neuroscience
University of Oregon Libraries
Robert D. Clark Honors College
Ronald E. McNair Scholars Program
College of Design
We wish to recognize the University of Oregon Libraries, for funding the printing of all 246 presenter posters.

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Gehna Greenslate
Emory Homan
Shanie Jorgenson
Caitlyn Lloyd
Kristina Trinh
Lucia Ventura
Jess Yang

# Presenter Statistics

The Undergraduate Research Symposium debuted in 2011 with 69 presenters and 40 research mentors spanning 20 majors and four colleges and reached a pre-pandemic high-water mark in size and breadth in its ninth year with 513 presenters and 290 research mentors spanning 75 majors, 21 minor programs, 33 minors, and eight colleges. Over the past 13 years the symposium has hosted 4,245 student presenters and 2,705 research mentors.

Despite the continuing recovery from the profound disruptions to research and creative work experiences by students and research mentors over the past three years, we are inspired to celebrate the work of 490 presenters and their 377 research mentors at the 2024 symposium. We also wish to acknowledge the unprecedented number of 92 graduate student mentors this year.

The unprecedented number of 405 presentations include students from all eight colleges and schools, the Phil and Penny Knight Campus for Accelerating Scientific Impact, 73 majors, 77 minors, and 47 institutes and centers. A record 329 presenters received funding to support their research and creative work from 70 different internal and external sources.

Several institutionally sponsored research experiences for undergraduates (REUs) have incorporated symposium participation as a condition of the award, including the Ronald E. McNair Scholars Program; the Center for Undergraduate Research and Engagement's (CURE) Summer Under Research Fellowship (SURF), First-Year Research Experience (FYRE) Fellowship, Small Grants, and Conference Travel Award Programs; and the Undergraduate Research Opportunities Program's (UROP) Humanities Undergraduate Research Fellowship (HURF), Hui Undergraduate Research Scholars, Knight Campus Undergraduate Research Scholars, and Vice President for Research and Innovation Research Fellowship (VPRI) Programs.

In response to the pandemic the symposium shifted to a virtual format in 2020 and 2021 allowing 667 students to continue to present their research and creative work via synchronous remote presentations with expanded reach to families, alumni, donors, and the community. The necessity of recording presentations catalyzed the creation of a permanent digital exhibit of UO undergraduate research on the symposium YouTube channel currently curating over 1,000 research presentations. The symposium continue to add content to the channel by offering in-person presenters the option of self-recording presentation videos for submission.

The symposium proceeds with a hybrid format to accommodate 381 students choosing to present in-person in the EMU and Allan Price Science Commons and Research Library, and 24 preferring virtual presentations.

The symposium is honored to host student presenters and attendees from Central Oregon Community College, Lane Community College, and Umpqua Community College, and expand the collaboration with the NSF Science Pathways Program and the Office of Academic Advising to develop a visit day agenda for the visitors, including a touch-down room with lunch, campus hosts, tour of the New Apartment Style Residence Hall (home of the Transfer Scholars Residential Community) and the facilitation of transfer student meetings with academic departments and faculty.

The Student Academy to Inspire Learning (SAIL) will host more than 275 local high school students and their teachers at the Symposium and coordinate campus tours of research and creative work spaces, from science labs and theaters to design and art studios. Schools including Churchill, Creswell, Elmira, Junction City, Sheldon, South Eugene, Springfield, and Thurston will be joining. The UO Ronald E. McNair Scholars Program continues to partner with the symposium to host visiting McNair Scholars.

The symposium and campus partners will also offer over 60 presenter awards totaling nearly $16,000. Winners will enjoy the opportunity to have their work, bios, and research mentors bios installed in the residence halls learning commons, UO Libraries, and EMU along tour routes for prospective students.

## Presenter Profile

Total presentations . . . . . 405
Total presenters . . . . . 490
Total faculty mentors . . . . . 377

## All Colleges: Major and Minor Programs Represented

Colleges . . . . . 8
Campuses . . . . . 2
Majors . . . . . 73
Minors . . . . . 77

## Institutional Profile

UO–FTFT students . . . . . 398
UO–Transfer students . . . . . 44
UO–First Generation . . . . . 74
ARC students (former and current) . . . . . 86
Lane Community College students . . . . . 13
Umpqua Community College students . . . . . 8

## Class Standing

First-year (0–44.99 credits) . . . . . 23 (5%)
Sophomores (45–89.99 credits) . . . . . 32 (6%)
Juniors (90–134.99 credits) . . . . . 91 (19%)
Seniors (≥135 credits) . . . . . 344 (70%)

## Presentation Type

Poster . . . . . 246 (61%)
Oral . . . . . 82 (20%)
Virtual . . . . . 24 (6%)
Works in progress . . . . . 22 (5%)
Creative works . . . . . 21 (5%)
Film screening . . . . . 10 (3%)

## Research Area by Presentations

Natural/physical sciences . . . . . 198 (49%)
Social sciences . . . . . 138 (34%)
Humanities projects . . . . . 31 (7.6%)
Fine/performance arts projects . . . . . 16 (4%)
Design . . . . . 22 (5.4%)

## UO Major and Minor Programs Represented by College

### College of Arts and Sciences

**Majors ..... 46**

Psychology ..... 61
Human Physiology ..... 55
Biology ..... 43
Environmental Science ..... 34
Neuroscience ..... 32
Environmental Studies ..... 31
Anthropology ..... 28
Physics ..... 23
Biochemistry ..... 21
Political Science ..... 18
History ..... 15
Sociology ..... 13
Data Science ..... 12
English ..... 12
Global Studies ..... 12
Marine Biology ..... 12
Chemistry ..... 10
Economics ..... 10
Linguistics ..... 9
Cinema Studies ..... 8
Multidisciplinary Science ..... 8
Computer Science ..... 7
Mathematics ..... 7
Computer and Information Science ..... 6
Earth Sciences ..... 6
General Social Science ..... 6
Women's, Gender, and Sexuality Studies ..... 6
Exploring ..... 6
Spacial Data Science and Technology ..... 5
Comparative Literature ..... 4
Spanish ..... 4
Japanese ..... 3
Pre-Global Studies ..... 3
Folklore and Public Culture ..... 2
Geography ..... 2
German ..... 2
Theater Arts ..... 2
Asian Studies ..... 1
French ..... 1
General Science ..... 1
Humanities ..... 1
Indigenous, Race and Ethnic Studies ..... 1
Medieval Studies ..... 1
Philosophy ..... 1
Religious Studies ..... 1
Romance Languages ..... 1

**Minors ..... 56**

Chemistry ..... 54
Spanish ..... 20
Biology ..... 19
Global Health ..... 19
Environmental Studies ..... 11
Mathematics ..... 11
Psychology ..... 10
Creative Writing ..... 9

## College of Education



## College of Design



## School of Music and Dance



## School of Journalism and Communication

## Lundquist College of Business

### Majors . . . . . 3

Business Administration . . . . . 9
Pre-Business Administration. . . . . .3
Accounting. . . . . .2

### Minors . . . . . 4

Business Administration . . . . . .12
Sustainable Business . . . . . .7
Entrepreneurship . . . . . .3
Sports Business . . . . . .1

## School of Law . . . . . .1

### Minor Programs . . . . . .1

Legal Studies. . . . . 6

## Lane Community College

### Majors

Biochemistry . . . . . .2
Exploring . . . . . .2
Accounting. . . . . .1
Anthropology. . . . . .1
Biology . . . . . .1
Creative Writing . . . . . .1
English . . . . . .1
Fish and Wildlife Conservation . . . . . .1
Global Studies. . . . . .1
Music . . . . . .1
Philosophy . . . . . .1

## Umpqua Community College

### Majors

Physics . . . . . .3
Chemistry. . . . . .2
Computer Science . . . . . .1
Engineering . . . . . .1
General Science . . . . . .1

## School of Law . . . . . .1

### Minor Programs . . . . . .1

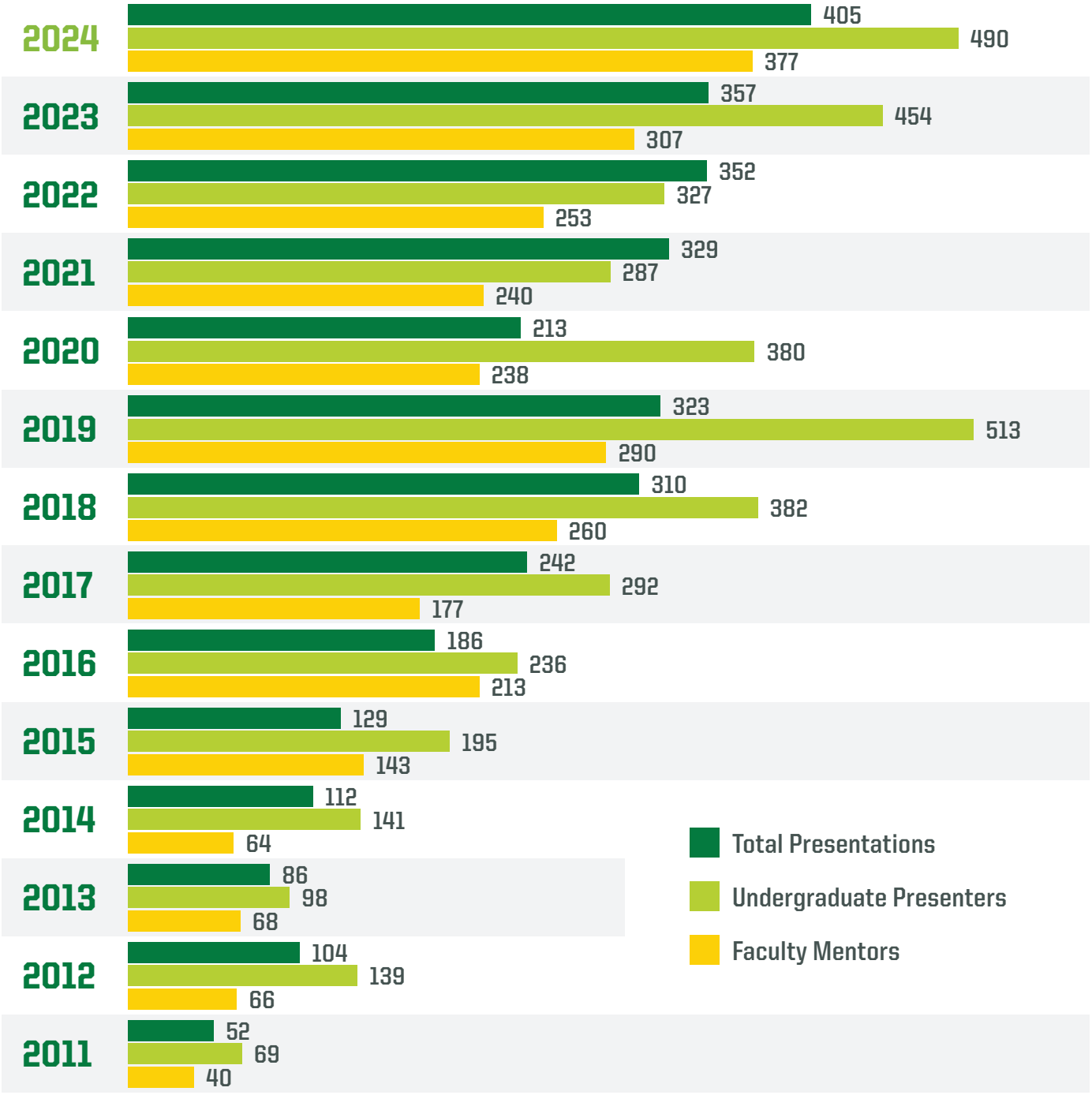
Legal Studies. . . . . 6

## Research Centers, Institutes and Labs. . . . . .47

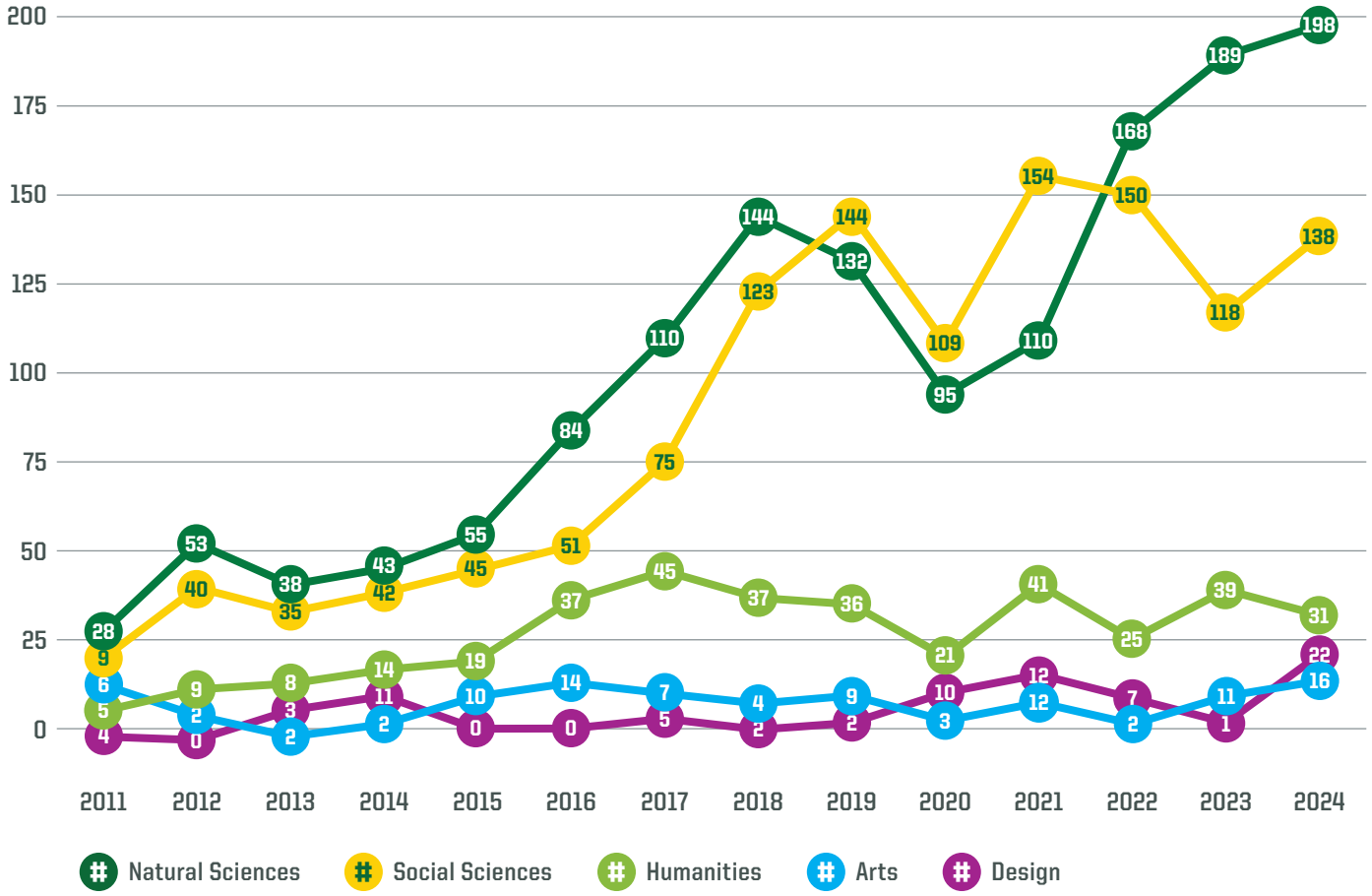
Action Control Lab . . . . . .1
Aging and Vascular Physiology Lab . . . . . .1
Bowerman Sports Science Center . . . . . 10
Brain and Memory Lab . . . . . .1
Center for Big Learning. . . . . .1
Center for High Energy Physics (CHEP) . . . . . .2
Center for the Study of Women in Society (CSWS) . . . . . .1
Center for Latino/a and Latin American Studies (CLLAS). . . . . .1
Center for Science Communication Research . . . . . .1
Center for Sustainable Business Practices . . . . . .1
Center for Translational Neuroscience . . . . . .2
Diversity and Social Cognition Lab. . . . . .1

## Sponsored/Funded Research and Creative Work Sources (70 Sources, 329 Students)

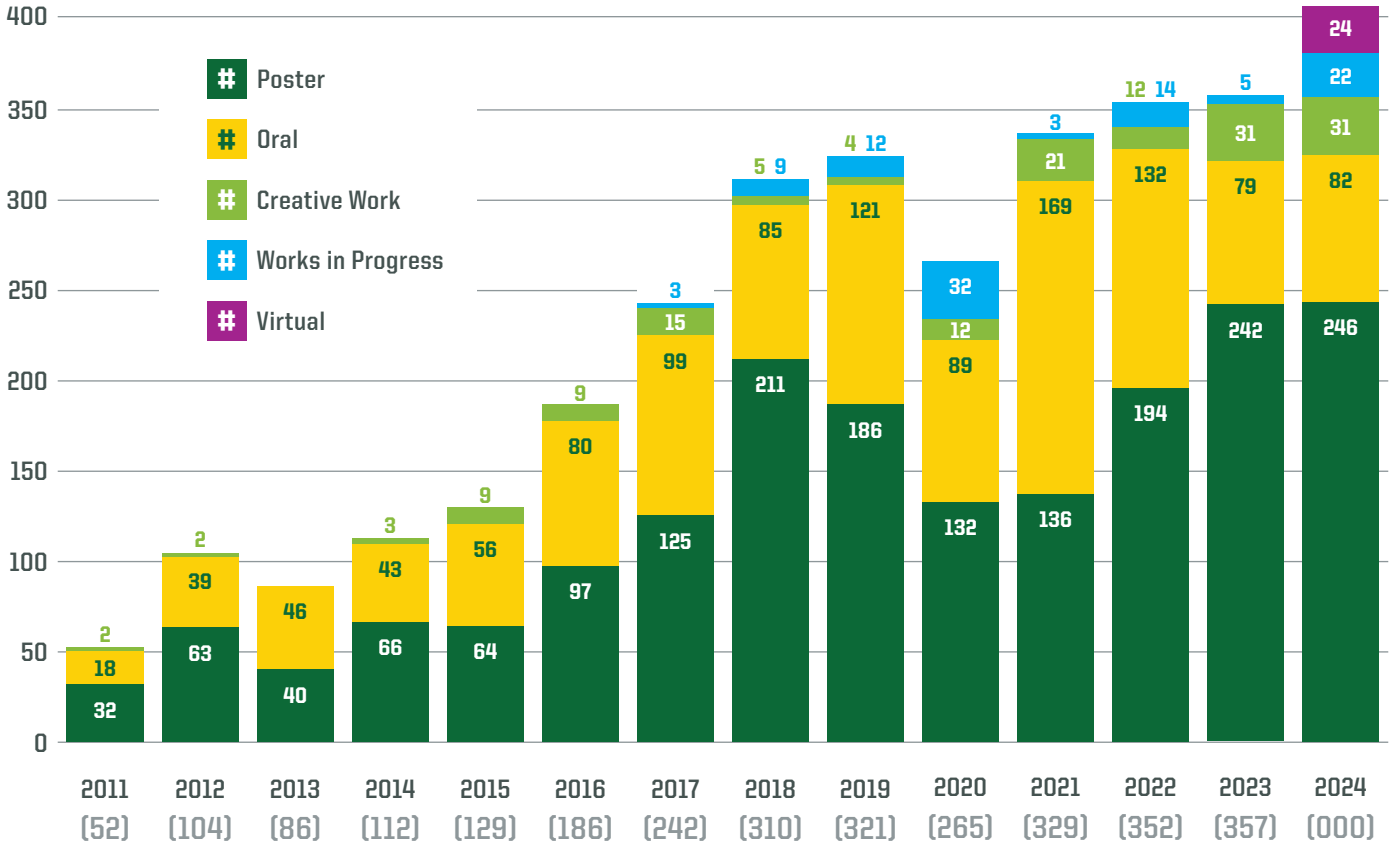
# Total Presentations, Presenters, and Faculty Mentors



# Total Presentations by Divisional Area



# Total Presentations by Type



# Symposium Presenters

Visit our **schedule web page** for full symposium schedule.

Heidi Aaron
Jenna Achord
Riley Acker
Megan Adamec
Danger Adams
Faith Adler
Alexandra Aeschliman
Alexander Aghdaei
Calvin Ajizian
Tamara Alarcon Basurto
Julia Albertson
Georgia Allen
Anya Anand
Richard Anderson
Taylor Anderson
Simon Apollo
Jenna Armer
Story Arney
Charlotte Arnswald
Nayantara Arora
Khalil Arps
Claire Aspeitia
Daniel Au
Kaitlyn Augienello
Emily Avey
Henry Axon
Lucas Bambaren
Kelly Barber
Nadia Barnard
Bailey Barrett
Sanjana Basak
Adele Bauer
Diego Becerra
Haley Bell
Lainie Bell
Chase Berryman
Gio Betancourt
Anneliese Bishop-Perdue
Ivan Biskis
Kali Bissanti
Olivia Black
Loïe Bonnet
Leo Bordeaux
Elizabeth Borst
Seth Boyd
Amya Bradley Woods
Aiden Brahn-Perrot
Evan Brandon
Alexa Brannen
Helene Brehl
Blaine Brennan
Megan Brennan
Sophia Breslin
Jurnee Brinson
Sam Brooks
Corinthia Brown
Thomas Brugnara
Megan Brunelle
Zac Bryner
Lilia Buckingham
Audrey Bunce
Anna Burger
Nico Burns
Anouk Butler
Cass Byrne
Junah Calceta
Quinn Calhoon
Bryn Callie
Ian Camacho

## Symposium Presenters

Maggie Campbell
Caitlyn Cannan
Sue Carney
Aileen Carrillo
Adrian Cervantes
Zackary Cheatham
Yazzie Chee
Michaela Cheechov
Maya Chesak
Hye Lynn Choi
Ananya Chowdhury
Kristopher Chu
Kenji Clair
Dylan Clark
Theodore Clayton
Tiare Cockcroft
Michael Colucci
Maggie Combs
Percy Conrad
Evelyn Cooper
Vincent Cortes
Daniela Cortes-Montesinos
Lainey Costa
Madison Coultrap
Chase Crandall
Carlie Crowther
Will Cubias
Hope Cursetjee
Valerie Dagley
Emma Daniels
Alana David
Kimberley Davis
Laurel Davis
Bree Davis
Abraham de Jonge
Merel De Leenheer
Gideon Dean
Keane Deas
Rogan deCalesta
Charlotte Deibele
Nithi Deivanayagam
Jessica Depasquale
Camilla Der
Elliana DeRego
Chelsea DiFini
Maggie Dobson
Christina Dorofeev
Caitlin Dougherty
Alisa Dougherty
Luke Dougherty
Jo Downing
Anna Easton
Carlyn Ereso
Angel Saul Escorcia-Nuñez
Isabela Espino-Marquez
Zachary Esterling
Olivia Estes
Ashley Fale-Olsen
Caleb Farrow
Sarah Field
Maxwell Finke
Mariam Fischer
Sophie Fisher
Logan Fisher
Catharine Fleming
Madeleine Ford
Aidan Foster-Green
Sof Fox
Nick Frainey
Sonoma Frederick
Rose Frerichs
Bess Frerichs
Amara Frost
Finn Fujimura
Amiya Fulton
Nitai Gaash
Mary Gach
Leah Gano
Juan Garcia
Gene Garcia
Natalie Garcia
Aidan Gardner-O'Kearny
Ciara Gates

## Symposium Presenters

Zealon Gentry-Lear
Madeleine Getz
Hanna Gibson
Lia Godino
Grace Gonce
Paige Gordon
Vithika Goyal
Jessica Graber
Josmarie Graciani
Paul Graf
Lilliana Granados
Rachel Gravning
Nora Green
Zoe Green
Makenna Greenwalt
Maddis Gregson
Skye Grubb
Karlie Guilliot
Quinn Gulka
Auveen Hajarizadeh
Peyton Hall
Jenna Ham
Alejandra Harris Caceres
Sierra Hawes
Robert Hawes
Jacob Hecker
Katie Hedman
Sam Heilenbach
Ava Helling
Chandlor Henderson
Seth Herron
Dora Ho
Aine Hoban
Sophia Hodgdon
Ainsley Hogan
Nate Holley
Ava Holmes
John Hooft Toomey
Layla Horner
Max Howard
Marly Howell
Hailey Howery
Cara Huato
Jordan Hulett-Quinones
Annika Huston
Joshua Iascau
Sebastian Ibanez Sanhueza
Keaton Ibendahl
Ellie Ingraham
Grace Inman
Lazar Isakharov
Benjamin Jahn
Dante James
Yanapat Janthana
Elise Jaremko
Payton Jefferis
AJ Jernigan
Adam Jette
Amanda Jiricek
Ryan Johnson
Savannah Johnson
Maxim Johnson
Sunny Johnston
Anessa Jones
Beatrice Kahn
Charlotte Kamman
Sasha Kaplow
Molly Katz
Cameron Keaton
Nitsa Kehoe
Abbey Keller
Stephenie Kerr
Brendan Kesterson
Jenna Khachatourian
Sylvia Khalil
Lauren King Watt
Audrey Kirkpatrick
Parker Kirkwood
Seira Kitagawa
Jasmine Klein
Abigail Klein
Rooke Knapton
Jade Koch
Nathan Koga

## Symposium Presenters

Emily Kondo
Emma Koontz
Maya Kosaraju
Louisa Krantz
Sarah Kraske
Abhishek Kulkarni
Olivia Lambdin
Eliza Lawrence
Braden Lawrie
Simona Lazarus
Brittney Lee
Sofia Lee
Nicolas Lee
Roxy Lee
Thomas Leonhardt
Dasha Levay
Sophia Lewis
Lydia Lewis
Drew Lightle
Audrey Lillie
Katherine Linnenkohl
Luca Lippert
Tiana Littlejohn
Haley Mae Lohf
Adamaryz Lopez Navarrete
Erin Luedemann
Gwendolyn Lyman
Blu Mackey
Wyne Johner Malaqui
Gabriel Mancuso
Georgia Manning
Elizabeth Marchant
Zach Marshall
Izzie Marshall
Zack Martin
Cam Martin
Rhett Martin
Audrey Masciopinto
Mia Matheson
Zach Mathews
Cosmo McBurney
Eden McCall
Alexandra McGowan
Zoë McKeehan
Charlie McManus
Ashauntene McNair Welch
Hannah Medved
Silkie Melloul
Fox Melo
Maya Merrill
Sam Metzger
Gillian Miller
Joshua Miller
Elton Mills
Ava Minu-Sepehr
Gayatri Misra
Mallory Mitchell
Owen Mitchem
Austin Mohler
Nina-Grace Montes
Caleb Moon
Jessica Morgan
Clara Morrison
Owen Mottau
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Timothy Mullen
Cinthia Muñiz Sanchez
Benjamin Myers
Lierta Nako
Crow Napper
Hannah Neuman
Viviann Nguyen
Ethan Nguyen
Olivia Nicholson
Olivia Nielson
Shannon O'Connell
Jazmin Ode
Daisy Ohleyer
Debbie Okeke
Andrés Olavarrieta Colasurdo
Charlotte Olds
Tucker Orman
Addy Orsi

## Symposium Presenters

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Valerie Owusu-Hienno
Lawren Paris
Bailey Parker
Sadie Paschall
Abhay Pawar
Hayden Penn
Ari Periche
Payton Peters
Genevieve Peterson
Christopher Pierce
Marcus Polk
Jane Port
Bailey Posey
Mica Presley
Allison Prince
Jin Prunuske
Sylvie Ptacek
Loralie Pulley
Abigail Punches
Kayamity Ramirez
McKenna Reclusado
Ava Reisman
José Renteria
Vivian Reynoldson
River Ribeiro
Calvin Rice
Jianna Rice
Yuji Rice
Danielle Richard
Madeleine Richter
Natalie Rico
Aria Riley
Rachel Rinelli
Maya Rios
Adrienne Rizzo
Regan Robinson
Sarai Rodriguez Lopez
Myrihe Rohbock
Katie Roles
Lyric Rosa-O'Hayer
Alexa Rose
Tanner Rozendal
Logan Russo
Audrey Saing
Prabhleen Sambhi
Rishi Sastry
Ashish Sathya
Simon Scannell
David Schmidt
Kyla Schmitt
Zoe Schneider
Kai Schoettler
Esben Schroeder
Mia Schumann
Lucille Scott
Seth Seagoe
Tharusha Seagoe
Maddie Seeley-Burton
Benjamin Segars
Madison Serrano
Liam Serwin
Shelly Seymour
Gabby Shaffer
Nikhil Shah
Gracie Sheaman
Annalisa Shehab
Ian Sherman
Anya Shetty
Jake Shim
Daniel Shlesinger
Shreeya Shrestha
Pippa Simmons
Harman Singh
Sachin Small
Braden Smelser
Ivy Smith
Kayla Smith
Madissyn Smith
Brynn Smith
Kayla Snell
Jodie Sneller
Sophie Snyder
Tapley Sorenson

## Symposium Presenters

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Quinn Spear
Mahathi Sridhar
Alex Staben
Emily Stetson
Heidi Stevenson
Hanna Stokes
Caitlin Stow
Alejandro Suárez
Emily Sverdrup
Jonathan Swenson
Ayisha Tamerhoulet
Austyn Tavernier
James Taylor
Lou Taylor
Tommy Taylor
Max Tenenbaum
Maia Thomas
Christina Thomas
Colin Thurston
Audrey Tirrill
Eliot Tom
Cami Tommeraason
Maggie Trail
Mary-Jane True
Alex Underwood
Soren Urban
Colleen Uzoekwe
Lesley Valadez
Darby Van Fleet
Mason Vaughn Brown
Mary Vernacchio
Liam Versteeg
Laurel Viles
Katie Voyles
Rigel Wakil
Kaiden Walton
Warren Watts
Peter Weisel
Aubrey Welburn
Lucy Wesson
Giselle Westerdahl
Olivia Wilborn-Pilotte
Vincent Williams
Julia Williams
McKenna Williams
Waverly Wilson
Nex Wilson
Katherine K'iya Wilson
April Winz
Phoebe Wise
Emily Wolf
Evelyn Woo
Julia Woolf
Alexa Wright
Andreas Wuthrich
Guansan Yang
Bella Yannello
Ethan Yin
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Rilynn Zarate
Tyler Zawacki
Declan Zupo

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**Emily Karolidis**
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**Mackenzie Kehmeier**
Graduate Student mentor for the Aging and Vascular Physiology Lab, Department of Human Physiology

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**Robert Kyr**
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**Lydia Lapporte**
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**Emily Larson**
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**Kristen Lee**
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**Diana Libuda**
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**Raoul Liévanos**
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**Gabriella Lindberg**
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**Shawn Lockery**
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Curator of Manuscripts and Senior Librarian, Special Collections and University Archives

## Research Mentors

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**Ahmar Zaman**
Career Instructor, Psychology

**Dasa Zeithamova**
Associate Professor, Neuroscience, Psychology

**Kevin Zumwalt**
Research Assistant, Biology

# Faculty Research Mentor Awards

The Faculty Research Mentor Awards, sponsored by the Center for Undergraduate Research and Engagement (CURE) recognizes up to four UO faculty members annually for their exceptional mentoring of undergraduate research, creative work, and experiential learning.

The CURE Faculty Research Mentor Award debuted in 2018 and is open to all full-time and part-time research and instructional faculty employed by the University of Oregon, which includes tenure-related, career, emerit, and library faculty, as well as officers of research and postdoctoral scholars.

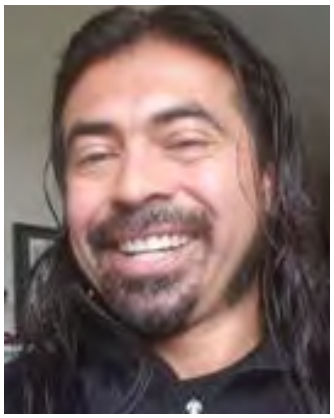
Nominations are solicited widely from current students, alumni, faculty, and staff. The recipients are recognized as part of the Undergraduate Research Symposium in late May with a $2,500 prize, framed certificate and profiles published in the Symposium Program and CURE website with previous honorees.

## Faculty Research Mentor Awards

Professor Meléndez's mentees–both current undergraduates and alumni now pursuing graduate studies–universally acknowledged his "strong research ethics, and person-centered approach to qualitative research" and his "empathy, integrity, and unwavering dedication to student growth."

One nominator conveyed "As I was learning to navigate the cultural differences between myself and the immigrant storytellers, he recommended I read the chapter from the Culture Map that not only helped me understand and overcome these differences but changed the way I understood my own identity as a second-generation immigrant and person of color. He made me feel confident in my strengths, but pushed me in other ways to set me up for success in the professional world and graduate school. He challenged me to lean into the power of vulnerability and emotion and present topics in the way I want people to talk about them. This advice still guides me as I leave college and enter the professional world."

Another mentee conveyed, "Professor Meléndez's classes were my first experience with research, and I would not have pursued [research and advocacy] opportunities without his influence and support. My work with vulnerable communities tries to reflect his model of professionalism, care and the lesson to always bring solutions where possible."



**José Meléndez**

Assistant Professor, School of Planning, Public Policy and Management

Affiliated Faculty, Indigenous, Race, and Ethnic Studies

## Faculty Research Mentor Awards

Rachelle Saltzman is recognized for her extraordinary record of mentoring undergraduates that have culminated in "capstone projects, graduate school admissions, conference papers, a radio show, and even a book manuscript."

Her nominator shared, "the study of folklore at the advanced level necessarily involves original research, most commonly interviewing practitioners as well as wide reading in primary materials and secondary scholarship. Dr. Saltzman mentors students in this practice every year, both as part of her courses, as part of the internships she supervises, and in continuing informal mentoring." Mentee's inspiration for community-centered research questions and projects regularly emerge from Dr. Saltzman's courses, such as "Folklore and Foodways."

Recent examples of her students' work include "conducting interviews with Oregon 'culture keepers' and the production of permanent records for Special Collections in the UO Libraries" to "fieldwork about the National Lentil Festival, now in its 35th year in Pullman, Washington" and "an exploration of family foodways traditions in the context of academic scholarship on food and meaning [encompassing] a survey of thirty-three people whose families make and eat various kinds of tradtional dumplings, drop dumplings and rolled dumplings."

**Rachelle (Riki) Saltzman**

Lecturer, Folklore, and Public Culture

Executive Director, Oregon Folklife Network, retired

## Faculty Research Mentor Awards

A coalition of 30 students from the Minority Association of Pre-medical Students authored a nomination letter for Professor Snodgrass and explained how with Professor Snodgrass' "guidance and support we were able to bring back Dia de Salud, a health fair put on by our students to address the gap in preventative healthcare for underserved people in the Spanish-speaking community. This event has such deep roots in the community, starting over 10 years ago with UO student Julia Ridgeway Diaz and grassroots organization and community garden Huerto de la Familia, to promote healthy living habits within the Latinx community. Over the years, MAPS and the Global Health Biomarker Laboratory led by Professor Snodgrass took leadership of the event and began to incorporate preventative health measures like blood pressure; BMI; eye exams; blood biomarkers to screen for anemia, diabetes, and heart disease; as well as partner with volunteers in medicine to give people 1:1 time with a Spanish-Speaking provider."

The student nominators also gathered testimonies from community volunteers to illuminate "how much last year's Dia de Salud event impacted them and speaks to the incredible work Professor Snodgrass has done to inspire leadership, action, and growth in his cohort of students."

The primary nominator concluded, "Whether it's students from MAPS, his Health Sciences Academic Residential Community (ARC) or his Biomarkers Lab, it is clear that everyone under his mentorship has been instilled with a strong passion for bettering the health of their communities, and the belief that they possess the ability to make that change."

**Josh Snodgrass**

Professor, Department of Anthropology

## Faculty Research Mentor Awards

The current cohort of ten research assistants in Professor Zeithamova's Brain and Memory Lab submitted individual recommendations and reflections to "collectively recognize her outstanding support and believe her commitment to nurturing future researchers makes her an exemplary mentor who truly embodies the principles of exceptional mentoring and experiential learning. Students expressed their gratitude for Professor Zeithamova's unwavering commitment to their academic growth and professional development. They also cited the manifold relationships and opportunities she has fostered that empower the students to apply their research and knowledge.

**Dasa Zeithamova**

Associate Professor of Neuroscience, Psychology

One mentee recounted, "As a student, I have always sought opportunities to have a presence in the community and give back to our future youth. This means greatly to me that I can share my education and experience to youth scholars who may be interested in psychology or neuroscience. Professor Zeithamova has provided numerous opportunities to do community outreach events where we can share elementary principles of cognition, learning, memory, and brain anatomy with students of all ages. The work of the Brain and Memory Lab goes beyond the walls of the Lewis Science building. Through Professor Zeithamova's leadership, the BAM lab is turning out trained scientists who value the importance of community engagement and education."

Another research assistant reaffirmed that "Professor Zeithamova's dedication to outreach activities contributes significantly to creating a scholarly environment that prioritizes not only academic excellence but also societal engagement and personal development as well as promoting hands-on experiences for both the individuals in the lab and children in the community."

# Undergraduate Research & Distinguished Scholarships

urds.uoregon.edu

Our allied offices and programs in the **Division of Undergraduate Education and Student Success** offer enterprise-wide, wrap-around support to undergraduates and recent alumni exploring and participating in experiential education opportunities, including undergraduate research, distinguished scholarships, learning communities, and career exploration. The centralized offices of **Undergraduate Research and Distinguished Scholarships** (URDS) and **Academic Residential and Research Initiatives** (ARRI) share the equity-centered mission of serving students from all schools and colleges to access the full resources and benefits of a liberal arts and sciences research university and navigate the hidden curriculum and structural barriers that have disproportionately impacted traditionally under-served students in these areas of undergraduate education.

The inter-divisional academic programs and strategic partnerships jointly overseen by URDS and ARRI enable the unique integration of these experiential learning opportunities into the residential first-year experience and academic-based first-year live-on requirement adopted in 2017 as an element of core education, including **Academic Residential Communities** (ARCs), **Residential Communities** (RCs), **Faculty-in-Residence**, **Faculty Fellows**, **Academic Success Hub**, and residential tutoring and advising sharing an inquiry-based curriculum that culminates with first-year residential students presenting at and attending the Undergraduate Research Symposium.

The **Council for Undergraduate Research and Distinguished Scholarships**, and the **Academic Residential Community Council** serve as the campus-wide faculty advisory boards for the:

- **Center for Undergraduate Research and Engagement** (CURE)
- **Office of Distinguished Scholarships** (ODS)
- **Ronald E. McNair Scholars Program**
- **Undergraduate Research Symposium**
- **Alpha of Oregon chapter of Phi Beta Kappa**
- **Affiliated Students for Undergraduate Research and Engagement** (ASURE)

# Undergraduate Research & Distinguished Scholarships

urds.uoregon.edu

## Conference Travel Awards

Supports undergraduate students in their academic and professional development by attending and/or presenting at academic and professional conferences and symposiums.

## Faculty Mentor Awards

Recognizes up to four UO faculty members annually for their exceptional mentoring of undergraduate research, creative work, and experiential learning. Award is aligned with the UO Mentorship Imagined initiative (network-based, responsive, reciprocal and adaptive).

## Small Grant Awards

Offers funding for research related expenses, such as materials, supplies, minor equipment, and processing fees, as well as travel costs to research sites, such as field locations or archives and special collections. Open to undergraduate students engaging in research and creative work in any field of study.

## FYRE & SURF Awards

The First Year Research Experience Fellowship (FYRE), open to students who are in their first year at UO (first-time full-time and transfer students), and the Summer Undergraduate Research Fellowship (SURF), open to all undergraduate students, provide $5,000 to the recipient who is conducting research under the supervision of a University of Oregon faculty mentor, who will receive $1000.  Students from all disciplines and majors are eligible to apply.


The University of Oregon's Undergraduate Research Symposium and the Student Academy to Inspire Learning (SAIL) pre-college program are hosting local—and beyond local— high school students to join our in-person campus event. The Undergraduate Research Symposium empowers undergraduate college students to share their ideas, discoveries, and artistic work with the campus and local community. This is an opportunity for high school students to make near peer connections and envision themselves having these opportunities in higher education.

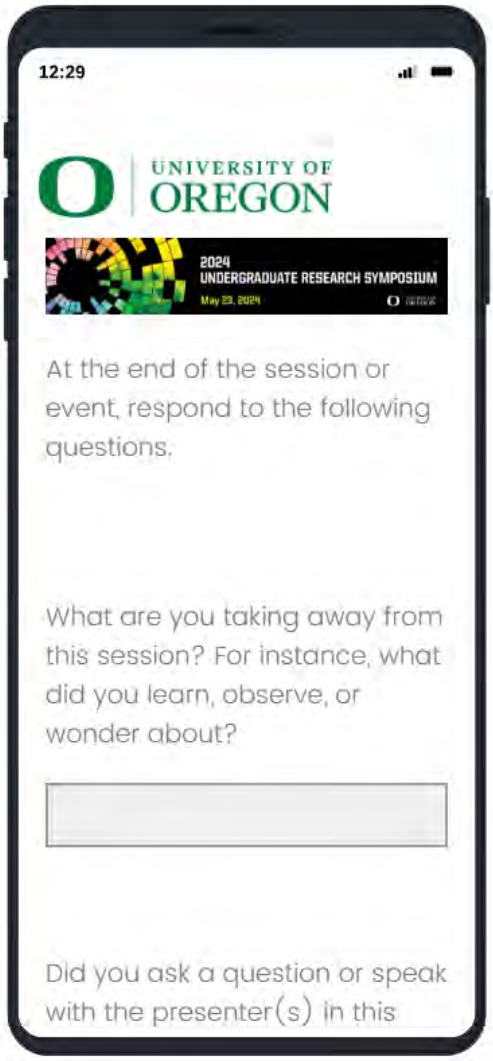
This year Pre-College Day is on May 23 and will feature college students as they share their college research, and experiences, through specialized campus tours, lab demonstrations, and poster presentations. High school students will experience a unique immersive campus tour while they discover:

- What college classes are really like
- What to expect from different majors
- What job opportunities to expect from each major
- How to get involved in undergraduate research

This interactive campus visit is designed to give high school students a firsthand college experience while fostering campus relationships. The Student Academy to Inspire Learning (SAIL) program is an additional *free* resource for high school students to spend an entire week on campus during the summer to further explore college opportunities. It is our hope that students will leave the event inspired, and with a greater knowledge of what higher education has to offer.

# Symposium Engagement Survey

Created in collaboration with the Tutoring and Academic Engagement Center, the Symposium Engagement Survey is a versatile tool to encourage students to attend the Undergraduate Research Symposium and meaningfully engage with it. Attending the URS can be highly beneficial to students. It is a prime opportunity for undergraduates to be exposed to research and creative works produced by their own peers. It provides a conference environment that serves as a safe learning ground, demystifies research, offers networking opportunities, inspires new ideas, and illuminates new paths. The Symposium Engagement Survey prompts attendees to reflect on the symposium and solicits feedback about their experience, and it is a tool for educators to encourage attendance.




Faculty and program coordinators can incentivize their students to attend the URS and track engagement through the Survey. For instance, a professor can affiliate with the Survey and create an assignment for their students to attend the URS. Custom

## Symposium Engagement Survey

questions can be added to the survey if desired. Following the symposium, the professor will receive results from their students. They may then discern who of their students attended and assess their responses to questions posed by the survey. The Symposium Engagement Survey prompts attendees to reflect on their URS experience and consider next steps through several questions. It is accessed at the URS venue via QR code and is intended to be completed at the end of each event attended or shortly after. The survey asks what the attendee learned from the event, what they gleaned from asking questions, and about their experience. It also prompts them to consider next steps to engage in research and creative work.

In its inaugural year in 2023, the Symposium Engagement Survey attracted a broad audience and revealed enriching experiences. Ten different courses and programs affiliated with the Survey spanning first-year programs to African Studies to Neuroscience. Overall, there were 134 responses to the Survey. The responses showed that students engaged deeply. Attendees related knowledge to their courses, fields of interest, and themselves. They discovered many ways that research is conducted. They reported feeling connected with others, inspired by what they saw, and excited about expanding their knowledge.

*–Kenyon Plummer, Math and Science Learning Specialist*

UNIVERSITY OF OREGON | Office of the Vice President for Research and Innovation

# RESEARCH REVEALED

## A PHOTO CONTEST FOR UNDERGRADUATES

**This contest showcases undergraduate research at the UO by displaying three winning photos at the Undergraduate Research Symposium and featuring student research stories on the research website and newsletter.**




**Come visit us at the EMU ballroom lobby!**

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# Presentation Abstracts

Visit our **schedule web page** for full symposium schedule.

**Aaron, Heidi**
Lane Community College
Mentor(s): Stacey Kiser, Colin Phifer
Poster #74

## Between Boundaries: A Student Survey of Large Mammals Near College Campus and City Park

Effective population monitoring stands as a significant aspect of gaining information regarding local wildlife. Our study aimed to monitor Black Bear (Ursus americanus) populations around the southern Lane Community College (LCC) campus and Suzanne Arlie Park. We utilized Bushnell game cameras and data collection spanned five weeks. Cameras were strategically placed in various locations alongside established pathways. The camera's data was collected from 4-32 GB SD cards and reviewed once a week. The captured footage revealed multiple sightings of coyotes, dogs, humans, deer, and bears, with humans and dogs making up 91.5% of the sightings. The limited amount of bear sightings could be attributed to multifarious factors, including human presence, seasonal influences, weather conditions, camera placements, camera theft, and data tampering. Our population monitoring endeavor, employing game cameras, discerned a nominal bear presence encircling the southern LCC campus and Suzanne Arlie Park. It is pertinent to acknowledge the constraints inherent in our research methodology that might have contributed to these observations.

**Achord, Jenna**
University of Oregon
Mentor(s): Aubrey Rossi
Virtual

## Can Self-Esteem Mediate Anxiety?

This study explores if there is a relationship between low self-esteem and high anxiety levels among a sample of 127 college psychology students aged 18-34. The sample consists of 86 women, 30 men, 7 nonbinary, and

2 other. Participants completed an online survey answering questions pertaining to anxiety and depression, which were measured through the Generalized Anxiety Disorder-7 Scale and the Rosenberg Self-Esteem Scale respectively. Building on a comprehensive literature review, the study hypothesized a moderate, negative correlation between anxiety and self-esteem. Results reveal a statistically significant and moderately negative correlation. The findings align with prior research, highlighting the potential mediating role of self-esteem in anxiety reduction. The study's implications for psychology and everyday life suggest the importance of interventions targeting self-esteem enhancement to alleviate anxiety symptoms. Future research should focus on diverse samples, longitudinal designs, and exploring mediating factors for a deeper understanding of this complex relationship.

**Acker, Riley**
University of Oregon
Mentor(s): Troy Houser, Dasa Zeithamova
Poster #139

## Theta Oscillations in Episodic Memory

Does precise timing matter when encoding new information? In this project, we explore the hypothesis that the ability to encode information fluctuates several times per second. Specifically, we test a theory that suggests the priming of the brain for memory formation is synchronized with a range of brain waves known as theta (3-10 Hz). While empirical evidence connecting these theta rhythms to memory has surfaced in animal literature, related work has remained scarce in humans. In a memory task performed by 120 participants, we tested rhythmicity in memory formation by presenting a series of images at finely tuned millisecond intervals. Our results indicate that rhythmic fluctuations in memory encoding occur within the 7-9 Hz range. These findings suggest that the temporal dynamics of stimulus presentation can influence the ability of memory formation. This research has implications for developing enhanced learning strategies and offers insights into the pathophysiology of memory-related disorders.

**Adamec, Megan**
University of Oregon
Mentor(s): Ghee Ong, Salil Karipott
Poster #87

## In vitro validation of a sensor for monitoring osseointegration

An estimated 528 million individuals suffer from Osteoarthritis (OA), a degenerative disease where tissues in joints break down over time [1]. Treatment has led to an increase in both joint replacement surgeries and revision surgeries [2]. Therefore, measuring osseointegration is imperative to assess the healing process after implantation. Current postoperative monitoring technologies lack resolution and detail at the implant-

tissue interface. This project aims to address this gap in research and patient care by leveraging capacitive sensing as a simple, robust, real-time, and low-cost method of detecting osseointegration. This sensor is a simple interdigital capacitor manufactured as a printed circuit board (PCB) which interrogates the relative permittivity of the surrounding environment. The change in relative permittivity is measured through impedance by a network analyzer, and this is used to quantify the progression of cellular development and maturation. This sensing scheme underwent preliminary benchtop testing with modified simulated body fluid (mSBF) as a model for bone mineralization with R^2 > 0.93. In vitro testing is currently being implemented to monitor the maturation of L929 fibroblasts, with further plans to monitor differentiation of MSCs to osteoblasts. This sensing scheme provides a non-destructive, passive, long-term, and real-time method of assessing osseointegration at the cellular level, ideal for future in vivio implementation.

**Adams, Danger**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Adams, Danger**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric,

and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Adler, Faith**
University of Oregon
Mentor(s): Keli Yerian, Bibi Halima
Poster #226

## Is a student-authored textbook possible? Open Pedagogy says yes!

The Open Educational Resources movement is pushing faculty to adopt free, open-source course materials to reduce the cost of materials for students. This project addresses this call by engaging students to write an open-source course textbook themselves! This student-centered, grant funded project includes five undergraduates who are creating ten multimedia, interactive chapters for LING 144, Learning How to Learn Languages. All of the students recently took this course, which focuses on theory, research, and strategies for learning languages, including languages that are less commonly taught, heritage languages, and indigenous languages that are in danger of disappearing. With the help of a Graduate Employee as a project manager, students are creating the book over a period of six months (January-June) as a team in the platform Pressbooks, which hosts open-access materials. They have completed five chapters so far, with team members dividing up work on writing, illustration, case studies, and multimedia elements that showcase key concepts in the book. This book will become the main text for future offerings of LING 144 (which enrolls about 200 students per year) and will be a living document that future cohorts of students can annotate and update themselves for course credit. Team members will design and present a poster that highlights the purpose of the project, its platform, the content, and the processes of the teamwork.

**Aeschliman, Alexandra**
University of Oregon
Mentor(s): Vignesh Rangasami
Poster #95

## Constraining Peptide Ligands to Improve the Efficiency of Targeted Drug Delivery Systems

Targeted drug delivery to fracture sites is of great interest due to the inefficiency and off-target accumulation of current medication strategies. TRAP-binding peptide (TBP) has previously been shown to exhibit an affinity for the TRAP protein deposited by osteoclasts on the surface of injured bone during healing. Micellar nanoparticles (NPs) have previously been functionalized with TBP to serve as effective drug delivery vehicles, expediting the fracture healing process. However, a high proportion of the TBP-

functionalized NPs are captured by macrophages before adhering to fracture sites. It is hypothesized that restricting the conformation of TBP in a cyclic shape will further improve its binding affinity for the TRAP protein, by mimicking the curving conformation of the 12-amino acid sequence on the glypican-4 protein that has a high degree of similarity to TBP, including an affinity for TRAP. This study aims to investigate how cyclization of TBP impacts its affinity for TRAP. Linear TBP synthesized with terminal cysteines is cyclized through formation of disulfide bonds. Bio-layer interferometry is used to evaluate the binding affinities of both cyclic TBP (cycTBP) and linear TBP to the TRAP protein. Preliminary results demonstrate the efficacy of cyclization for improved binding affinity by several parameters, with cycTBP producing greatly decreased KD and Koff values, as well as increased maximum wavelength shift (Bmax) relative to TBP in interactions with TRAP.

**Aghdaei, Alexander**
University of Oregon
Mentor(s): Jane Cramer
Poster #201

## Two Birds with One Stone: Curbing Militarism, Fixing Climate Change

Given the stark warning from the IPCC that mitigating the worst impacts of climate change necessitates an annual investment of $536 billion, there is a critical need to reassess U.S. research funding priorities. Only by divesting from offensive, unsuccessful, and costly research projects -- such as in nuclear and offensive weapons research -- can the U.S. feasibly begin to chip away at the needed investment to address climate change. Historically, large portions of the Department of Defense (DoD) budget supported “general science” -- broad grants which supported research into public good projects. However, the focus has shifted towards offensive, initiative-driven research, diminishing the public relevance of DoD R&D and curtailing needed innovation. Only by countering the entrenched norm of prioritizing defense-oriented science can the potential for substantial shifts in funding towards climate science begin to be considered. In particular, the Congressionally Directed Medical Research Programs (CDMRP), which have driven significant advances in medical research since 1992, illustrate a successful redirection of DoD resources towards the public good. Employing a similar congressionally-directed approach for climate science could align U.S. efforts with the urgent need for research and investment in climate solutions. Additionally, such an approach would curb the DoD’s militarism by avoiding costly investments in weapons which anger adversaries.

**Ajizian, Calvin**
University of Oregon
Mentor(s): R. Scott Fisher, Jim Imamura
Poster #134

## TESS Follow-up at the Pine Mountain Observatory: Observing Transiting Exoplanets

The field of exoplanet science, which studies planets outside our solar system, has seen a period of remarkable growth and interest in recent years. The most common method of exoplanet detection is by observing transit events. Not only do transit event detections aid in the discovery of exoplanets, but we can also learn about their approximate size, orbital period, and even atmospheric composition. Transits occur when an exoplanet passes between its star and the observer such that it blocks a fraction of the starlight as it passes. Observing this allows for precise measurements of the change in flux of the star-planet system over time. Utilizing the Pine Mountain Observatory's (PMO) new telescope system, we've detected thirteen transiting exoplanets with varying transit depths and target star magnitudes. Harnessing the power of aperture photometry within AstroImage J software, our observations of transiting exoplanets have opened the door to work with the TESS Collaboration (Transiting Exoplanet Survey Satellite). TESS has confirmed around 400 new exoplanets and identified more than 7,000 exoplanet candidates. Our inclusion into the Seeing Limited Ground-based Follow-up Group (SG1) has permitted us to contribute meaningfully to the ongoing TESS mission while simultaneously carrying out undergraduate research using a sub-meter telescope.

**Alarcon Basurto, Tamara**
University of Oregon
Mentor(s): Brian Gillis, Sean Kelly
Oral Panel Green Futures in Habitat and Material Science

## Exploring Sustainable Solutions: Repurposing Waste from Industrial Food Processing into Eco-Friendly Materials for Home Goods

Industrial food processing generates significant amounts of waste, contributing to environmental degradation and resource depletion. This research explores sustainable solutions for repurposing waste from industrial food processing into eco-friendly materials for home goods as alternatives to non-biodegradable materials. The study aims to address the dual challenges of waste management and material sustainability by investigating innovative techniques for transforming food waste into value-added products. Through a comprehensive analysis of waste streams, repurposing techniques, and material applications, the research seeks to identify viable pathways for reducing reliance on non-biodegradable materials in the production of home goods. Prototypes of eco-friendly materials will be developed and tested to evaluate their performance,

durability, and environmental impact. Additionally, a product will be designed to showcase the key features and benefits of the eco-friendly material, providing tangible examples of its application and functionality. Life cycle assessments will be conducted to quantify the environmental benefits of repurposing food waste compared to conventional materials.

By offering alternative solutions to non-biodegradable materials and designing a product to highlight their key features, this study contributes to the advancement of a circular economy and the preservation of natural resources for future generations.

**Albertson, Julia**
University of Oregon
Mentor(s): Carmen Watkins, Lauren Hallett
Poster #79

## Shifting Facilitative Interactions through Plant Life History in two California Grassland Species

Plant species interactions shift between competitive and facilitative, often due to environmental gradients. Biotic factors like life stage and density also likely affect interactions but haven't been well explored especially in facilitation. In California grasslands, seeds germinate with fall rains forming dense seedling communities. At high densities, some seedlings die and decompose providing a nutrient pulse to survivors. I conducted a greenhouse experiment to test how life stage and density shift interactions between a native legume, Acmispon americanus (ACAM), and an invasive grass, Bromus hordeaceus (BRHO). I hypothesized that ACAM would facilitate BRHO by increasing soil N availability, and that facilitation would be strongest at intermediate densities and in older seedlings after self-thinning. I manipulated density at ten levels measuring focal individual biomass and background densities at four life stages: germinated, juvenile, preflowering adult, and flowering adult. I found that ACAM facilitated BRHO in germinated and juvenile life stages but competed as pre-flowering adults. Contrary to expectations, density did not impact interaction strength at the life stages I measured. My results show that interactions shift throughout life stage, and here ACAM may improve BRHO growth in early life stages. This information improves our understanding of population dynamics in California grasslands and may be important for managing BRHO as it is an introduced species.

**Allen, Georgia**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## VPython Simulations of Systems Involving Oscillatory Motion and Waves

When researching physics, simulations are often created so that variables can be manipulated in a controlled environment and behaviors can be visualized. We created four simulations using VPython in the Glowscript web application to investigate properties of oscillations and waves. Individually, we created simulations of orbital motion, sound propagation in a one-dimensional solid, diffraction from a single slit, and instantaneous velocities during rolling. To create our simulations, we started with a fundamental physics concept, used the concept to develop pseudocode, and worked from this pseudocode to create a working simulation. Through this, we gained a better understanding of physics and scientific computing, starting from minimal experience with programming. The simulations produce results that are consistent with the real-life behavior of these systems. Features of the simulation programs include user interfaces to control inputs and displays of results in graphical or numerical formats. Our simulations are significant in that they allow us to investigate natural phenomena that would otherwise be too small or too fast to view with the naked eye.

**Anand, Anya**
University of Oregon
Mentor(s): Rachel Robinson, Mike Hahn
Poster #175

## Ground Reaction Force Differences Across Running Surfaces During Graded Running

Co-Author(s): Rachel Robinson, Mike Hahn

Previous studies have evaluated the effects of graded running on ground reaction force (GRF) using an instrumented treadmill. While differences in running biomechanics have been observed between treadmill and outdoor running on level ground, it is unknown whether graded treadmill running is representative of outdoor graded running. Therefore, the purpose of this study was to determine whether GRF variables measured during graded treadmill running are representative of graded outdoor running. It was hypothesized that the surfaces would yield similar GRF data. Seven healthy recreational runners completed a 5-mile outdoor run which included a paved 7.5° uphill and downhill section. The same participants performed 30s running trials on a 7.5° inclined and declined treadmill at three different speeds. The mean and standard deviation of pGRF, ALR, average force, and IMP were calculated for 10 steps of inclined and declined running for indoor and outdoor conditions. Average GRF, IMP, and ALR during incline and decline running were not significantly different between indoor and outdoor conditions. While pGRF was not different between

conditions for incline running, pGRF was significantly higher in the outdoor condition for decline running. Consistent with previous lab-based studies, it appears that graded treadmill running is comparable to outdoor graded running, as the two settings yield relatively similar GRF data, with some caution in the interpretation of downhill running.

**Anderson, Richard**
University of Oregon
Mentor(s): Matthias Vogel
Poster #235

## Deep Rooted Conflict: India and Pakistan

India and Pakistan have had a complex long standing geo-political conflict that has had powerful impacts on South Asian dynamics. The conflict that dates back to 1947 is fully rooted among both societies culturally, socially, and economically and has ranged from excessively violent to mild displeasure. This clash of nations originated from the British partition of the land after cries for independence directed at the British Empire from the citizens of the region became overwhelming. This lead to setting the roots for the conflict that would continue for decades to come. Our objective with this research is to thouroughly understand this competition between nations and how it came to be. We will do this by understanding the historical context around it, the history of wars between them, political moves, policies, economic overlapping that also affects the surrounding nations, and general moves made by each country towards one another. The study will also include many specific factors that lie underneath the broad contrast of ideas between these two nations such as the water sharing disputes, nuclear weapon development, the role of media, and terrorism carried out on one another's soil. In conclusion, the goal of this project is to offer us an understanding of one of the most complex and enduring relationships that this world has to offer to study.

**Anderson, Taylor**
University of Oregon
Mentor(s): Sara D Hodges, Eliott Doyle
Poster #39

## What Our Attraction to Love-to-Hate Characters Says About The Self

"Love-to-hate" characters are fictional characters who do bad things or who are considered villains, but still draw viewers to them. We often disapprove of people who behave in this way, so why do we connect with these characters and, is our connection to them similar to the connection we make with characters we unambiguously admire? This exploratory study will use previously collected data (N=498) to investigate the qualities of love-to-hate characters in popular media. College students rated love-to-hate characters, as

well as themselves and characters they admire, on 40 evaluative traits (both likable and unlikable). Certain traits were consistently associated with the love-to-hate characters. Additional analyses will compare the Euclidean distance between the self and a love-to-hate character to the distance between the self and an unambiguously admired character in order to identify aspects of love-to-hate characters that potentially mirror some aspect of the self.

**Apollo, Simon**
University of Oregon
Mentor(s): Gabe Sanchez
Oral Panel Voices of Resilience: Lessons in Race & Culture

## African American Graves Protection and Repatriation Act: Drawing on Lessons from NAGPRA

Recent calls have been made for an African American Graves Protection and Repatriation Act (AAGPRA) to be put into law, inspired by the Native American Graves Protection and Repatriation Act (NAGPRA) that was enacted in 1990. This marks a growing number of anthropologists, African Americans, and allies/accomplices who are advocating for institutions to acknowledge the direct harm they've done to Black communities through anthropology, including the bodysnatching and graverobbing of African Ancestors. Strong connections can be drawn between the treatment of Black and Indigenous bodies in anthropology, and similar principles for healing can push both movements forward in the protection and repatriation of their Ancestors. We will consider current legislation and lessons to learn from NAGPRA, the impacts of the Black Lives Matter movement on these discussions, the historical and current mistreatment of African American and Indigenous Ancestors, whether it's possible to decolonize archaeology, and what the future of archaeology will look like with AAGPRA or similar legislation in place. If successful, decolonized archaeology will make knowledge with communities rather than about them, and prioritize their decisions. In the coming years, we're likely to face bumps in the road on our way toward this ideal, many of which are institutional issues like lack of funding, support, and staffing as well as ongoing issues in managing collections.

**Apollo, Simon**
University of Oregon
Mentor(s): Frances White
Poster #185

## Fluctuating Asymmetry of the Crania and Postcrania in Primates

The symmetry found in the cranium and postcranium can indicate many stressors that occur in the early growth and development of individuals and affect the phenotypic expression of genotypes in the population.

Fluctuating asymmetry has been studied in both the crania and postcrania of primates, but research is lacking in connecting fluctuating asymmetry across whole skeletons, as skeletal sections experience different stressors and adaptive constraints in development. Instability in the developmental process of individuals can, therefore, affect the perceived attractiveness of individuals with consequences for mating success. To analyze the consistency of fluctuating asymmetry across the whole body, we combined measurements of the length of 2nd and 4th metacarpals with measurements of overall cranial symmetry for five primate specimens. The individuals studied are taken from the Museum of Cultural and Natural History Grand Collection, which includes 700 primate skeletons and 200 mostly complete macaque skeletons. Previous results showed that specimens varied significantly in 2D : 4D ratios. New cranial data, collected via microscribe measurements, are then compared to known 2D : 4D measurements to determine if fluctuating asymmetry is a whole body-phenomenon or if it is separately experienced by different parts of the skeleton during development.

**Armer, Jenna**
University of Oregon
Mentor(s): Kevin Zumwalt, David McCormick
Poster #148

## Comparative histological analysis of dopaminergic axons across cortical regions and sexes in mice

The neurotransmitter dopamine plays a critical role in motivation, performance, motor preparation, and learning. Previous studies demonstrate that dopaminergic neurons are predominantly located in brain regions such as the substantia nigra, nucleus accumbens, basolateral amygdala, ventral tegmental area, striatum, and frontal cortex. Projections from the substantia nigra and ventral tegmental area neurons ascend to the cortex, primarily documented in the prefrontal cortex with less literature regarding density in the sensory cortices. Furthermore, there is evidence of sexual dimorphism in the density of dopaminergic axons in different brain regions. This experiment's objective was to confirm the findings of previous research on the topic, as well as quantify dopaminergic axons throughout the cerebral cortex. This study aimed to validate such findings by utilizing transgenic mice in order to optimize two-photon axon imaging in-vivo. We employed immunohistochemistry for quantifying dopaminergic axons. This labeling technique included brain tissue preparation, antibody staining, imaging, and subsequent analysis. At this time, insufficient data has been acquired to make definitive conclusions. We hypothesize that the prefrontal cortex will exhibit more labeling when compared to the sensory cortices, but that this will depend on the sex of the animal.

**Arney, Story**
University of Oregon
Mentor(s): Jane Cramer
Poster #227
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Evaluating US Bilateral Aid to Jordan

Jordan is one of the largest recipients of US aid money. A 2022 Memorandum of Understanding committed the US to spend $1.45 billion on aid to Jordan, more than any other country in the world except Israel. I traveled to Jordan this summer and investigated the effects of this aid and the political rationale behind it. I found that aid has been largely ineffective at addressing problems in Jordan such as unemployment, inflation, and water shortages, although it has shown some success in other areas such as education and healthcare. I also found that the US is principally concerned with Jordan being politically stable, which has consistently undermined the ability of aid to grow the Jordanian economy. I am still researching this topic, primarily focusing on the unintended consequences of aid and the role of Israel/the US Israel lobby on aid policy to Jordan. The research is important for those interested in improving development policy, and also for those interested in understanding the ways that powerful states like the US achieve their foreign policy objectives.

**Arnswald, Charlotte**
University of Oregon
Mentor(s): Matthias Vogel
Poster #231

## The Black Market in Argentina

In our research project we explore Argentina's black market. We specifically focus on how it is intertwined with the Argentinian economy, politics, along with impact on low income families in recent years. To answer our questions; we turned to scholarly articles and news stories covering Argentina's black market, as well as some first hand accounts from those who have been impacted. The economy is on the brink of recession, and inflation has skyrocketed prices for citizens, whose wages have not been able to keep up. All these issues are causing political tensions to run high, as many are turning to the government to fix the issues with their once blossoming economy. We were able to conclude that Argentina's continual social and political instability has contributed to not only the creation of the black market in Argentina but also its continual prevalence. Through our research we discovered some of the challenges that the Black Market has inspired in Argentina.

**Arora, Nayantara**
University of Oregon
Mentor(s): Ashley Walker, Abby Cullen
Poster #163

## Exploring Alzheimer's: Artery stiffness & amyloid-β's impact on cognitive & cerebrovascular function

Co-Author(s): Abby Cullen

Alzheimer's disease (AD) is a type of dementia characterized by loss of cognitive function and build-up of amyloid-β plaques. Aging and cardiovascular decline, indicated by increased arterial stiffness, are primary AD risk factors. We aimed to identify if modeling large artery stiffness (LAS) in the context of AD at young age mimics impairments in cognitive and cerebrovascular function seen in old age. We hypothesized that LAS in conjunction with AD exacerbates cerebral microvascular and cognitive impairment compared to AD alone. By crossing elastin haploinsufficient (Eln+/-) and amyloid precursor protein knock-in (APP-KI) animals, we generated a mouse model of LAS and AD. We used young (6 m) male and female mice. Cognition was assessed by novel object recognition, nest building, and rotarod tests. Cerebrovascular function was measured in posterior cerebral arteries using pressure myography. To assess LAS, aortas were cryosectioned and stained to measure elastin and collagen. Thus far, our model of LAS and AD shows no effect on cognition or cerebrovascular function. We have not concluded analysis of the effect of Eln+/- and APP-KI on aortic elastin and collagen. Preliminary data suggests that at a young age, Eln+/- and APP-KI do not significantly impact cognition or cerebrovascular function, and that age is a primary contributor to these issues in AD. The insights from this study will aid in understanding how the cardiovascular system contributes to the development of AD.

**Arps, Khalil**
University of Oregon
Mentor(s): Sarah Ebert
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Music's Impact on Workouts; Mental Benefits

Listening to music while working out has benefits to improving how you feel while exercising. Being involved in the gym and our love for being active is what has inspired us to learn about effective ways to workout in a healthy form. In the research we conducted over the span of a month, we have achieved our goal to gain a deeper insight and find reasoning in how music is capable of enhancing our mental performance when it comes to being active. We hope that our project will provide a new sense of knowledge when it comes to listening to music and why we feel as though listening to music is a barrier for a safe workout environment as

well as a motivator. Working out or being active is a big part of our discourse community here at the U of O so bringing awareness as well as a new profound love for physical activity is a big accomplishment. Our primary findings consist of how different genres of music have the ability to impact many unrecognizable concepts such as positive association, distraction from discomfort, increased enjoyment, and reduced perception of effort. These effects prove how music is a great thing to incorporate in any physical activity, and anyone's preference can make a difference. We have known and had the opportunity to learn more about why music makes our workouts better and much more motivating. Listening to music is a healthy way to find natural motivation and improvements when it comes to physical exercise.

**Aspeitia, Claire**
University of Oregon
Mentor(s): Lynn Stephen, Gabriela Martinez
URS Film Screening

## La Chicana Académica: Dr. Yvette Saavedra

This film is based on testimonial stories and explore themes of personal growth, the creation of spaces of belonging, and the importance of inclusive pedagogy to create effective classroom spaces for BIPOC and queer students. "La Chicana Académica: Dr. Yvette Saavedra" is a documentary film that illustrates the journey of one of the greatest academics here at the University of Oregon. This is a short film that focuses on the life story of Dr. Yvette Saavedra, including her personal background and timeline of her academic career.

**Au, Daniel**
University of Oregon
Mentor(s): Robert Kyr
Explorations in Expression

## An Art Song for Soprano & Piano: The Rainbow by Daniel Au

Charlotte Richardson (1775-1825) was a British poet who lived something of a tumultuous life. She was born in York and by the age of 15 was orphaned. She worked as a cook and maid until she married a shoemaker at the age of 27. Unfortunately he died two years later, leaving her to raise their child by herself. A family friend of hers, Catherine Cappe, recognized her talent for poetry and helped fund her and publish her poetry, of which she sold over 600 books. With this money, she founded a small school. However, she soon fell ill in 1809 and passed away at age 50 in 1825.

This song is a setting of Richardson's poem, "The Rainbow." It opens with a thunderstorm, rumbling and building in intensity until the clouds suddenly part, the sun shines through, and a rainbow runs across the sky. The singer remarks on the peace and serenity of the scene, until she looks closer and is enthralled with

its beauty. The piano dances brilliantly like rays of light as the singer is filled with joy. Finally, having fully enjoyed the image before her, she reflects inward. She has no more words to express her feeling of wonder, but sings nonetheless.

I composed and performed this piece as part of my work for the Composers Forum Seminar in the School of Music and Dance. The vocal soloist is Grammy-winning soprano Estelí Gomez and the pianist is Grant Mack. The Rainbow was featured in the Oregon Composers Forum Concert Series on March 16, 2024 in Berwick Hall in the School of Music.

**Augienello, Kaitlyn**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering

## EAA+BFR Therapy to Promote Muscle Resilience Prior to Eccentric Muscle Damage

Healthy muscle can recover from muscle damage that occur with sports injury or surgery. This resiliency, referred to in the literature as muscle memory, is exemplified by a previously resistance trained individual re-acquiring strength and cross-sectional area faster than untrained individuals. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells) to proliferate, which give rise to new myonuclei. We hypothesized that 1 week of EAA (20 g ingested 3x/day) and BFR, performed 3 times total, will induce myonuclear accretion by activation of satellite cells. We further hypothesize that recovery from a single bout of muscle damaging eccentric contractions would demonstrate less damage and/or faster recovery vs. placebo+BFR. Muscle biopsies were collected after the combined 1-week treatment and again 7 days after eccentric exercise. Muscle cross-sections were immunostained with antibodies directed at Pax7+ cells (satellite cells), Laminin (for cell/fiber boundaries), and slow-type muscle fibers (MyHC I). Nuclei were labeled with DAPI. Images were captured with a Leica fluorescence microscope (DM4000B) equipped with a Leica DFC 360FX camera using a 20x/0.50 objective. We are currently analyzing tissue cross-sections to quantify Pax7 cell proliferation and central nuclei numbers, and degree of myonuclear accretion.

**Augienello, Kaitlyn**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #153

## EAA+BFR Therapy to Stimulate Pax7 Cell Proliferation and Promote Muscle Memory

Co-Author(s): Gabriel Mancuso, Emily Wolf, Nitai Gaash Lia Godino, Mahathi Sridhar

Muscle memory refers to the phenomenon where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. Mechanistically, this is theorized to be due to myonuclei gained during training being retained with atrophy/disuse, enabling initiation of protein synthesis and muscle regeneration without waiting for new nuclei to form. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells; Pax7+) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will persist following four weeks of no treatment. Muscle biopsy cross-sections (7 μm) were immunostained with antibodies directed at Pax7+ cells (satellite cells), laminin (for cell/fiber boundaries), and slow-type muscle fibers (MyHC I). Nuclei were labeled with DAPI. Images were captured with a Leica fluorescence microscope (DM4000B) equipped with a Leica DFC 360FX camera using a 20x/0.50 objective. We are currently analyzing tissue cross-sections to quantify Pax7 cell proliferation and central nuclei numbers, and degree of myonuclear accretion.

**Avey, Emily**
University of Oregon
Mentor(s): Raghuveer Parthasarathy
Poster #113

## Bacterial Aggregate Growth Dynamics

Due to their impact on the health of humans and other animals, the gut microbiota has been heavily investigated, and much is known about its diversity of species and their abundances. However, little is understood about the spatial dynamics and distribution of bacteria in the gut of the host, physical aspects that likely influence interactions between species. Larval zebrafish provide a useful model system for investigating gut bacterial communities. Aggregation, the clustering of bacteria, has been observed in the gut of larval zebrafish, yet the behavior of aggregates over time is under-explored. Using zebrafish commensal gut bacteria, Aeromonas (AE) and Enterobacter (EN), and in-vitro techniques, we attempt to quantify growth rates and spatial growth patterns through 3D imaging techniques, in particular, light sheet fluorescence microscopy. When planktonic bacteria are exposed to 0.4% N-acetylglucosamine (GlcNAc)

in sterile embryo media (SEM), aggregates are formed and then moved to various media including initial aggregating conditions, or enriched media conditions. Aggregates are then imaged across time. We have found that in aggregating conditions, initial aggregate structure is maintained during aggregate size increase. Yet in aggregation + growth conditions, aggregate size increase is characterized by an increase in neighborhoods of the same bacterial species. The local conformation of bacterial species can therefore give insights into underlying growth mechanisms.

**Axon, Henry**
University of Oregon
Mentor(s): Stephanie Majewski, Michael Coughlan
Poster #14

## Evaluating the Effectiveness of Indoor Air Quality Interventions in Oakridge, Oregon

Co-Author(s): Stephanie Majewski, Michael Coughlan, Ben Clark

Climate change and increasingly intense fire seasons in Oregon have led to poor air quality in many areas, posing significant health risks to residents. One approach to monitoring this issue is the use of low-cost particulate matter (PM2.5) air quality sensors that allow households and government agencies to track indoor air quality across a wide range of buildings. In Oakridge, Oregon, many homes have received interventions aimed at improving indoor air quality. The study's objectives are to evaluate the effectiveness of the indoor air quality interventions in Oakridge and investigate the relationship between outdoor and indoor air quality in the homes before and after the interventions. Statistical methods will be used to attempt to draw insights. This poster intends to present the preliminary results of this air quality analysis.

**Bambaren, Lucas**
University of Oregon
Mentor(s): Salil S. Karipott
Poster #96

## Characterization of Mechanical Environment of Bone Fractures with an Implantable Sensor

Co-Author(s): Salil Karipott, Keat Ghee Ong, Kylie Williams Robert E. Guldberg

Transverse femoral fractures have a complicated and lengthy healing process. Recent studies have shown mechanical stimuli at the site of fracture promote bone healing and reduce the recovery time. Current systems to quantify mechanical environment during healing mainly measure axial strains but do not quantify torsional loads. As torsion also plays a part in the total mechanical stimuli to the bone, real-time characterization of both torsional and axial loads allows a better understanding of the role of mechanical

stimuli and helps develop new rehabilitation techniques and optimize current ones. The goal of this study is to produce a femoral fixation device with an implantable sensor that can simultaneously measure torsional and axial forces during ambulation in a rodent with a fracture defect. Pilot studies showed the sensor can provide accurate loading values in real-time on rodents with transverse femoral fracture defects during different rehabilitation procedures such as wheel running, and tread mill running at different wheel resistances.

**Barber, Kelly**
University of Oregon
Mentor(s): Rachel Weissler
Works in Progress: Lightning Rounds

## Does using African American Vernacular English, or AAVE, influence how students view its speakers?

People's attitudes vary towards English, and its different variations differ based on who is speaking. In the United States, English variability is usually frowned upon if not spoken "properly." This research investigates how using a historically stigmatized variety, African American Vernacular English, or AAVE, influences how students from Generation Z view speakers. We ask participants to evaluate African American English sentences to elicit perspectives and show positive or negative views of the variety. This is in line with previous sociolinguistics research focused on dialectology to discern how people are viewed (Salmon, 2018). The survey created for this study consisted of 47 questions in 8 different sections. The population of interest for the research was college-aged students, and we took demographic information regarding their different identities for future analysis.

Our hypothesis is that people of this age group would be more accepting of the variety due to the prevalence of AAVE in today's culture. What we can learn from this type of research is a better understanding of how students interpret the different dialects and cultural backgrounds that people come from. College students are bound to absorb information and be more accepting of the internet because it makes it easier to be exposed to many cultures.

**Barnard, Nadia**
University of Oregon
Mentor(s): Shannon Boettcher, Nicholas D'Antona
Poster #118

## Investigating Electrochemical Ion Transfer Dynamics in Tungsten Oxide

Co-Author(s): Shannon Boettcher, Nicholas D'Antona

Investigating the kinetics of interfacial ion transfer is imperative for the enhancement of electrochemical energy storage technologies, such as cation batteries. Consequently, we study the enigmatic proton transfer mechanisms that occur at solid-liquid interfaces to evaluate parameters that may modulate the optimization of battery efficiency. Utilizing electrochemical techniques, our objective is to deconvolute the mechanistic and rate-limiting factors associated with proton insertion from an acidic aqueous electrolyte into a thin film of tungsten trioxide (WO3). While WO3 has been investigated as a battery anode, the kinetics of cation insertion remain inadequately explored despite their effects on system efficiency. Through the Potentiostatic Intermittent Titration Technique (PITT), a developed application of chronoamperometry, along with Butler-Volmer equation fitting, our research endeavors to define the exchange current density and activation energy pertinent to cation insertion. The broader implications of exploring interfacial ion transfer phenomena manifest in advancing the fundamental understanding of energy storage processes.

**Barrett, Bailey**
University of Oregon
Mentor(s): Jarrod Smith, Karen Guillemin
Oral Panel The Little Things in Life Science

## Slimy Situations: How Bacteria Lose Their Partners

Co-Author(s): Jarrod Smith, Caitlin Kowalski, Karen Guillemin

In a healthy gut, resident microbes form multispecies coaggregate communities that are crucial the health of their host. Disruptions in these communities are thought to contribute to various intestinal inflammatory disorders such as irritable bowel syndrome and colorectal cancer. Despite their importance, the mechanisms underlying bacterial coaggregation remain poorly understood. To help address this knowledge gap, I sought to study the molecular basis of coaggregation between two resident microbes of the larval zebrafish, Enterobacter and Aeromonas, that normally coaggregate in the intestine of their host. Using experimental evolution, I generated Enterobacter isolates with defects in coaggregation with Aeromonas and sequenced their genomes. These isolates were mucoid, forming large, slimy colonies. Mucoidy and production of a thick extracellular capsule can protect bacteria from viral infection by blocking access to bacterial cell surface receptors. Similarly, we suspect the Enterobacter receptor involved in coaggregation with Aeromonas is

hidden behind a think capsule in our mucoid isolates. Preliminary studies suggest mucoid Enterobacter are more toxic to the larval zebrafish. Together, these findings shed light on the molecular mechanisms governing microbe-microbe interactions, how they can impact host health, and highlight the significance of understanding microbial ecology and interactions in multi-species communities.

**Basak, Sanjana**
University of Oregon
Mentor(s): Hironori Uehara, Balamurali Ambati
Poster #92

## OptiDicer reduces long CUG RNA in corneal endothelial cells from patients with Fuchs' dystrophy

Late-onset Fuchs' Endothelial Corneal dystrophy (FECD) is a debilitating, heritable disease that is projected to globally impact 415 million people by the year 2050. Consequences of this disease include significant loss of vision and painful corneal swelling, which can only be corrected by invasive surgical procedures. This disease manifests from a progressive decrease in corneal endothelial cell density through cell death. Prior research indicates that a trinucleotide expanded repeat mutation in the TCF4 gene affects diseased corneal endothelial cells. The excessive repetition of the CTG nucleotide in this gene leads to the overproduction of CUG RNA in the cell nucleus. The overabundance of RNA forms distinct accumulations, or foci, which are toxic to the corneal endothelial cells. Our treatment, OptiDicer, is a modified form of the endogenous protein DICER1 that cleaves CUG RNA in cell nuclei via RnaseIII activity. Unlike DICER1, OptiDicer does not respond to negative feedback and can continuously cleave accumulated CUG RNA. We expect that OptiDicer will significantly reduce CUG RNA accumulations in corneal endothelial cell nuclei and thereby prevent endothelial cell death in the cornea. Developing a targeted gene therapy such as OptiDicer would mark a watershed in medical care for patients suffering from late-onset Fuchs' dystrophy.

**Bauer, Adele**
University of Oregon
Mentor(s): Amanda White, Shawn Lockery
Poster #146

## Effects of Serotonin and Psychedelic Drug on Egg-Laying Behavior in C. elegans

Co-Author(s): Amanda White, Shawn Lockery

Psychedelics have shown great promise in the treatment of mental health conditions. However, the mode of action of these drugs is largely unknown. Genetically tractable model organisms are particularly advantageous for identifying the genetic pathways involved in drug responses. We characterized the

behavioral effects of a psychedelic in one such organism, the nematode worm C. elegans. One critical behavior of C. elegans is egg-laying, which is regulated by serotonin and its corresponding receptors. Psychedelics have a particularly high affinity for serotonin receptors. We hypothesized that a psychedelic drug would have the same effect on egg-laying as serotonin. To test this hypothesis, we incubated wildtype C. elegans for 30 minutes in a 1 mM solution of the psychedelic drug 2,5-Dimethoxy-4-iodoamphetamine (DOI), a 5 mg/mL solution of serotonin (5-HT), or the control buffer solution (M9). After 30 minutes, we transferred the contents of the incubation tube, including worms and any eggs laid, to an agar plate and counted the number of worms and eggs. As expected, we found that 5-HT-incubated animals laid more eggs than the control. Surprisingly, animals incubated in DOI laid eggs at a similar rate to those incubated in the buffer solution. These results indicate that DOI does not stimulate egg-laying behavior at a 1 mM concentration. In future experiments we will map the full dose-response for DOI and egg-laying in C. elegans.

**Becerra, Diego**
University of Oregon
Mentor(s): Jessica Atencio
Poster #167

## The Acute Inflammatory Response to Different Passive Heating Modalities

Co-Author(s): Jessica Atencio, Karen Wiedenfeld Needham, Lindan Comrada John Halliwill, Christopher Minson

Chronic, low-grade inflammation is prevalent among a variety of diseases and contributes to poor health. Passive heat therapy may elicit an acute inflammatory response that aims to reduce inflammation. The purpose of this study was to compare the inflammatory response to different forms of passive heating: hot water immersion (HWI), traditional sauna (TRAD), and far-infrared sauna (FIR). We hypothesized that HWI would elicit the greatest inflammatory response. Twenty healthy adults (10F) completed three sessions of acute passive heating: HWI (45 min at 40°C), TRAD (3x10 min at 80°C, separated by 5 minutes of thermoneutral rest), and FIR (45 min at 45-65°C) on separate days. Core temperature (Tc) was measured throughout heating. Serum was collected from subjects pre-heating, post-heating, and 24 and 48 hours post-heating. Interleukin-6 (IL-6), tumor necrosis factor alpha (TNFα), and interleukin-1 receptor antagonist (IL-1ra) concentrations were measured in serum using enzyme-linked immunosorbent assays (ELISA). The change in Tc from baseline to end of heating was greatest in HWI [+1.1°C (0.9, 1.3) P<0.0001]. IL-6 increased from pre- to post-heating in HWI [+0.392 pg/mL (0.114, 0.669), P=0.0218], TRAD [+0.300 pg/mL (-0.054, 0.654), P=0.2124], and FIR [+0.476 (0.111, 0.841), P=0.0659]. HWI led to the largest increase in Tc and IL-6, alluding to its potential to be the optimal form of heat therapy for reducing chronic, low-grade inflammation.

**Bell, Haley**
University of Oregon
Mentor(s): Shuo Xu
Works in Progress: Lightning Rounds

## How Social Media Affects Activism: Ethics and Outcomes

In 2024, we are 44 years into the digital age. Since 1980, the World Wide Web has been accessible to the public. Now we have smartphones and applications that change how we communicate. Social media platforms have allowed people to communicate with each other and spread their opinions, news, misinformation, and disinformation. With social media being so accessible, citizen journalism has become an everyday occurrence. Like anything, social media can be used and abused. Since social media is a way for people to spread info to a mass audience quickly, people use these platforms to spread political information and opinions and address societal problems. The general public showing activism through social media appears in various ways. One way that has been used for several campaigns is hashtags. Some examples of this are #MeToo and #Sayhername. These campaigns spread awareness about sexual assault and Black women victims of police brutality. While spreading awareness garners support and keeps these issues fresh in people's minds, there is an ethical issue. What is left out of these hashtags is that there are many women of color leading these campaigns, that white people pick up without any acknowledgment for its origins. So what is exactly happening here? Social media seems to be too complex of a tool and weapon to deem it either good or bad for activism. Instead of trying to argue if it is good or bad, we need to simply look at exactly how social media is affecting activism.

**Bell, Lainie**
University of Oregon
Mentor(s): Lisa Munger
Poster #65
Oral Panel Unveiling Nature's Rhythms

## Phonic Richness on a New Artificial Coral Reef in Indonesia

In recent years, coral reefs globally are experiencing increasing impacts due to factors such as warming average temperatures and anthropogenic activities. Reef restoration efforts have found passive acoustic monitoring to be a helpful tool for measuring ecological health during recovery. The purpose of this study was to utilize audio data to investigate reef health within Misool, Raja Ampat, Indonesia, located in a region of high marine biodiversity.

In May 2023, the Kenari, a former pearl aquaculture service ship was situated less than 0.5 miles south of the Misool Eco-Resort to create an artificial reef. A hydrophone was placed on this shipwreck one week after

sinking, and 30 second audio files were recorded every 5 minutes over a 3.5 month period. Data were analyzed by 20 students in the Winter 2024 HC301 class, "Coral Reef Acoustic Ecology." We identified more than 20 unique sounds, the majority of which are likely from fish. We measured phonic richness, i.e. the number of distinctive individual biological sounds during an hour at dawn, midday, dusk, and night. We only focused on days that fell as a new, quarter or full moon. Our results will contribute to conservation efforts and inform our understanding of reef growth and biodiversity over time.

**Berryman, Chase**
University of Oregon
Mentor(s): David McCormick, Jackie Kuyat
Works in Progress: Lightning Rounds

## Exploring the Role of the Claustrum and the Thalamus in Psychedelic Induced States

Classical psychedelics are defined by their modulation of perceptual brain state, with many prominent psychedelics binding primarily to select serotonin receptors (5-HT2AR). New research has shed light on the circuits and networks underlying the altered brain states seen under psychedelic administration, suggesting that both the thalamus and the claustrum are prominent in mediating the mechanisms underlying these actions. The thalamus is pivotal for driving cortical state changes in the sleep and waking brain; it serves as a relay system for most sensory information and brainstem activity. Recent data shows strong bidirectional communication between the claustrum and cortex, particularly during salience processing. Given that in addition, the claustrum densely expresses 5-HT2A receptors, it is a prime candidate for driving psychedelic-mediated cortical state changes. We will explore serotonergic modulation of the claustrum, thalamus, and two cortical regions (secondary motor and primary auditory) through the administration of the psychedelic DOI (2,5-Dimethoxy-4-iodoamphetamine), using high-density silicone Neuropixels to record electrical activity. We hypothesize that the thalamus will generate psychedelic-induced brain state changes whilst the claustrum plays a major role in maintaining psychedelic-induced brain state changes.

**Betancourt, Gio**
University of Oregon
Mentor(s): Dare Baldwin
Works in Progress: Lightning Rounds

## A Categorical Analysis of Human Behavior During Earthquakes

Co-Author(s): Tess Sameshima

Earthquakes are detrimental to all societies of people, especially those who live in infrastructure that are not structurally sound. This is exactly why it is so important to promote the safest outcomes for these

individuals who may end up losing their homes, or even their loved ones. Of course, this is not a problem for all regions of the world, which makes the experience of undergoing an earthquake different for everyone. Within this work analyzing human behavior during earthquakes, a categorical analysis was made comparing how two completely distinct events in different parts of the world suffered from earthquakes of similar magnitude being the Turkey/Syria earthquakes of 2022 and the Anchorage Alaska earthquake of 2018. The results indicated that the types of footage recorded and received from the public domain differed drastically from the two series of events. Footage from the Anchorage Alaska earthquake of 2018 had none of buildings collapsing, while the Turkey/Syria earthquakes provided several. From this information, it can be concluded that enforcing strict building codes and constructing structurally sound infrastructure impacts the type of footage that is published online. From these findings, future endeavors include promoting ways that those in poorly built infrastructure can stay safe.

**Bishop-Perdue, Anneliese**
University of Oregon
Mentor(s): Judith Raiskins, Linda Long
Poster #211

## Understanding Social Organization in Lesbian Communities in Southern Oregon

We are a part of the Women and Gender Studies Archive class. As a part of the course we are researching the SO CLAP! Lesbian Lands Manuscripts collection to investigate how the historical communities of women were organized and how they established and upheld social dynamics, self-sufficiency, outreach programs, and developed their political structure. The SO CLAP! collections encompasses records, first person accounts, and other such primary sources preserved by the non-profit corporation SO CLAP! established in 1989. The summary of our research seeks to understand their origin and what has become of these lands and communities today.

**Biskis, Ivan**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced,

universally human, and individually unique experiences. Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Biskis, Ivan**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Bissanti, Kali**
University of Oregon
Mentor(s): Sam Hopkins
Poster #192

## A Reconstruction Of Sucker Creek (Middle Miocene, Oregon) Paleoecology

Co-Author(s): Grace Carlton, Kevin Lynn

The Sucker Creek formation (Middle Miocene) is a fossil rich stratigraphic unit consisting of finely laminated tuff, tuff shales, and lacustrine beds (Carpenter & Smith, 2012). It is infamous for its well-preserved floral fossils. In this study, we reconstructed the ecology of the Sucker Creek formation to answer the following questions: can flora analysis verify faunal data by revealing shortcomings in the dataset or show other factors that might be present in the fossilization process; what was the Sucker Creek ecosystem and habitat like (from producers to consumers); and finally, could floral be used across other sites from this project and other research ventures. The original faunal list was compiled using sources from the paleobiology database (PBDP). Then, we collected sources from the internet for proxies to determine habitat use, diet, and body mass. These factors, along with the list of floral assemblages, were analyzed in R-studio for statistical significance. Then, floral and faunal lists were cross analyzed to reveal potential failures in the dataset. In

conclusion, there is still much to be done to discover the full ecology of the Sucker Creek area. Expansion of our knowledge of biodiversity in the American West will help us answer the question of whether tectonic activity and topographic variety increases diversity.

**Black, Olivia**
University of Oregon
Mentor(s): Kathryn Lynch
Works in Progress: Lightning Rounds

## Picturing Perception: How the Environment is Presented in Popular Children's Literature

Books help readers expand their imagination and encourage action, both key traits for resilience in the climate crisis. Consequently, authors hold a powerful position of influence- from their illustrations to their words, authors' choices shape emerging readers' perspectives of the world. And as global temperatures rise, it is increasingly important to foster positive, sustainable perceptions of the environment. This thesis will examine how popular children's literature has presented the environment. What themes or ideas of the environment have we pushed in our stories, and how can future environmentally-minded authors, librarians, and parents make purposeful, impactful choices in the books they read and write for children. Using qualitative analysis, this thesis will examine the text and imagery of children's books for overlying themes of environmental messaging, such as call to action and sustainability. Anticipated findings aim to identify both what is being said and what is being left out. Implications for these findings could aid future readers in encouraging positive environmental perspectives in the climate crisis.

**Bonnet, Loïe**
University of Oregon
Mentor(s): Craig Young
Poster #66

## Reproductive ultrastructure in deep-sea gastropods from the western Pacific

Co-Author(s): Tara Thompson, Flynn Gorman, Lauren N. Rice Caitlin Q. Plowman, Craig Young

The deep sea is an extreme environment with no light, low temperatures, and high pressure. Life is sparse on the abyssal plain, except for hydrothermal vents which are fissures in the ocean crust where chemicals from Earth's interior are brought into contact with seawater. Invertebrates can thrive in this extreme environment thanks to microbes transforming chemicals from the vents into energy. The Lau Back-Arc basin, a series of hydrothermal vents in the western Pacific, is dominated by gastropods including Alviniconcha boucheti, A. kojimai, A. strummeri, and Ifremeria nautilei. Ifremeria nautilei has a unique modified mucosal

gland that is used as a brood pouch for embryonic and larval development. The reproductive biology of all four species remains unknown. Here, we seek to provide the first descriptions of the reproductive structures for Alviniconcha spp and I. nautilei as well as images showing I. nautilei embryonic to larval development. Tissues were viewed and imaged with both light and transmission electron microscopy. Key cellular structures were identified in all micrographs, providing valuable information for how these species reproduce. This research is part of a larger collaborative project that will address multiple research questions relating to larval and symbiont distribution, furthering our understanding of community development, reproduction, and biogeography along a long latitudinal gradient of hydrothermal vents.

**Bordeaux, Leo**
University of Oregon
Mentor(s): Alyssa Herman, Alayna Park
Poster #60

## Examining the Inclusivity of Gender Diversity in Online Mental Health Resources

Co-Author(s): Alyssa Herman, Emily Kondo, Alayna Park

Transgender and gender diverse individuals face a significantly elevated risk of suicide, largely attributable to minority stressors and marginalization. It is imperative that online mental health resources be inclusive and non-offensive to avoid perpetuating stress experienced by this population. This study aimed to assess the gender inclusivity of online suicide and non-suicidal self-injury (NSSI) resources (e.g., crisis hotline website, fact sheet about NSSI). Two undergraduates coded 58 suicide and NSSI resources for six "do's" of developing gender inclusive resources (i.e., use of gender inclusive language, discussion of chosen name, discussion of pronouns, recognition of social stigma, recognition of the uniqueness of identity, and diversity in imagery) and four "don'ts" (i.e., indication that there are only two genders, use of nonspecific terms related to gender, pathologization of gender diversity, and relating gender diversity with confusion). The most common "do" was the use of gender inclusive language (89%; "Has someone you know taken their life?"). The most common "don't" was the indication that there are only two genders (30%; "Guide him or her to additional professional help."). These findings provide a glimpse into the gender inclusivity of online mental health resources while also highlighting opportunities for improvement.

**Borst, Elizabeth**
University of Oregon
Mentor(s): Melanie Kascoutas, Amanda Cook-Sneathen
Poster #120

## Designing a Catalytic System for Alkene Isomerization

Alkene isomerization is a key reaction in chemical synthesis and migrates a double bond along a carbon chain. This reaction constructs building blocks for molecules that are incorporated into fabrics, pharmaceuticals, or plastics. Alkene isomerization is typically mediated by a transition metal catalyst, such as nickel, and requires strict air- and water-free conditions. Recent work in the Cook lab has developed a nickel(0) catalyst that is formed in solution and prepared in normal atmospheric conditions. If reactivity was observed, isolated yields quantified efficiency of the reaction. The majority of tested alkenes responded favorably, resulting in high yields, including those with reactive functional groups. Designing robust catalytic systems that are easily prepared can expand compatible substrates and increase synthetic usability.

**Boyd, Seth**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
KIDD Artistic Echoes

## Short Story Reading: A Man's Life

This work is a short story by Seth Boyd. "A Man's Life" follows the ghost of a man who died at the height of the Great Depression as he possesses the body of a man in modern day. He gains a second chance at existence, but it comes at the expense of another man's life.

The story navigates themes of depression, ownership, control, and belonging. The work drew inspiration from stories by Jhumpa Lahiri and Tobias Wolff, as well as from the history of the Great Depression in America. The author primarily writes literary realism, but incorporated speculative elements in this piece. It was written, workshopped, and revised as part of the Kidd Creative Writing Workshop series.

**Bradley Woods, Amya**
University of Oregon
Mentor(s): Raoul Lievanos
Poster #58
Virtual

## Coping with Racialized Realities: Mental Well-being of Black Portland Residents

Portland, Oregon, is known to be a liberal and inclusive city, embracing individuals from diverse backgrounds. However, this reputation overshadows the history of discriminatory practices that affect Portland's Black community. Today, modern forms of racial stratification permeate the city's social structure. Portland can be classified as a 'White space', where White individuals predominantly occupy roles of authority within institutions. These spaces typically have a high concentration of privilege, resources, and opportunities that primarily benefit White individuals. This study analyzes how Portland creates unique living conditions for Black residents, and identifies the strategies used to navigate the city's racialized conditions. I hypothesize that the conditions of Portland create adverse experiences for Black residents, yielding negative impacts on their mental well-being. To investigate this, I interviewed several Black residents in Portland, asking about their experiences with racism, sense of community, perceptions of the city, and strategies used to maintain their mental well-being. The interviews will be analyzed for common themes and shared experiences among Black Portlanders. The goal of this study is to fill the gap in research that neglects to examine Black experiences in predominantly White contexts. I hope that the findings of this research will spark discussions about providing resources to a community that has been historically marginalized.

**Brahn-Perrot, Aiden**
University of Oregon
Mentor(s): Camille Cioffi
Poster #40

## Understanding Psychological Symptoms in Parents Who Use Fentanyl

The focus of this honors thesis is to understand psychopathological symptoms among parents who use fentanyl compared to those with substance use disorder (SUD) who do not use fentanyl. In a sample of parents (N=350+/-50) with SUD, we aim to find if there is an association between symptoms of psychopathology and fentanyl use. Using NIDA-Modified ASSIST V2.0, this study assesses parents for SUD, lifetime fentanyl use, and fentanyl use in the past three months. We use the PhenX Broadband Psychopathology scale to measure personality disorder symptoms, depressive symptoms, anxiety symptoms, and suicidality. Based on previous research, we expect to find an association between fentanyl use and mental health symptoms.

**Brandon, Evan**
University of Oregon
Mentor(s): Adam Glass
Poster #123

## Color Tunability of Benzofulvenes

Benzofulvenes and their derivatives have implications as synthetic precursors, molecular materials, and in medicinal applications. The interesting conjugation-based properties of benzofulvenes raises the possibility of color tunability and other optical properties. Our work focuses on the synthesis of various benzofulvenes and investigations into their optical effects through absorbance and fluorescence spectrometry. We are specifically looking to explore push/pull dynamics related to different substituents on our title compounds with regard to conjugation and optical effects. This will allow us to determine HOMO-LUMO energy gaps that may become tunable based on which substituents are involved. Overall, our goal is to increase the reproducibility of benzofulvene synthesis, optimize yield, and manipulate the compounds with varying substituents in order to gain a better understanding of their optical properties and implications in applied scenarios.

**Brannen, Alexa**
University of Oregon
Mentor(s): Camille Cioffi, Nicole Dudukovic
Poster #29

## Examining Associations between Gender, Housing, and Types of Substances Used By Injection Drug Users

Substance use disorders are a major public health concern, and individuals facing housing instability are at a higher risk of developing such disorders. Traditional perceptions of homelessness often overlook the fact that individuals experiencing housing instability can engage in cohabitation or shared living arrangements. These informal living situations can provide a semblance of stability and support, challenging the conventional view that homelessness equates to complete isolation. To address the unique needs of this population, it is crucial to explore how different aspects of interpersonal relationships, including gender, influence substance use patterns. This study utilizes survey data collected from people who inject drugs over the course of the COVID-19 pandemic, and analyses were conducted on demographics, housing status, cohabitants, and substance use. The findings of this study highlight the importance of evidence-based interventions to confront substance use among individuals facing housing instability. It also sheds light on the underlying factors contributing to substance use within this population. By addressing these factors, society can better prevent and treat substance use disorders. This study serves as a crucial step toward creating long-term solutions that promote the well-being of this population.

**Brehl, Helene**
University of Oregon
Mentor(s): Dylan Wood, Erica Fischer
Poster #2

## Tubular Veneer Timber - A high performance, deployable, wood building component

Co-Author(s): Julianne Burdis

This study explores Tubular Veneer Timber (TVT), a deployable, cylindrical, wood building component that is ultra-lightweight, has a thin cross-section, and a high strength-to-weight ratio. This study investigates its unique capabilities to be flat-packed, and self-shaped through drying. Initial structural tests demonstrate its behavior in compression.

While lightweight cylindrical components are common in building structures, they are typically made from more carbon-intensive materials such as steel or concrete. Comparably, Tubular Veneer Timber is lighter, made from wood materials, and can be flat-packed for ease of transport. TVT is manufactured by laminating two layers of maple wood with increased moisture content, cross-grain to one dry, restrictive layer. When air-dried, the flat, laminated sheet of veneer self-shapes into a cylindrical geometry. TVT was then structurally tested in compression using a standardized cylindrical test. The results of this study show that TVT can be actuated through drying and re-flattened through wetting. Initial structural testing showed failure in buckling at a maximum load of 5,229 lb/in$^2$ in a tube with a diameter of 4" and a wall thickness of 5/32".

This research contributes to the development of new high-performance building components constructed sustainably using renewable materials, reducing emissions in manufacturing and transport.

**Brennan, Blaine**
University of Oregon
Mentor(s): Esther Hagenlocher
Creative Work & Poster #7

## The Balancing Act

Furniture design teaches us to recognize and analyze the unique relationships between function and form, formal and tectonic considerations, and detail and material surface qualities. We look at practical applications and theoretical considerations to explore the process of furniture design.

In Hang Time Studio run by Esther Hagenlocher, we were tasked to design a piece of furniture inspired by movement. With an extensive background in ballet, I chose to study how tension, line, and cooperation create elegant movement. With a beautiful birchwood donation from Western Hardwood Association, the brainstorming began with three simple lines.

Dancers require strong lower bodies in order for their upper body to move freely. I took inspiration from William Forsyth's contemporary ballet "In the Middle, Somewhat Elevated" which focuses on shifts of

alignment and emphasizes fluid but strong directional changes. The design in itself mirrors this idea as each of the three pieces play with the others to create a balancing act.

Continuing the process of furniture design, I now can apply different material choices to the design itself. What would be the implications of this design being used as an outdoor piece, and how would using steel, concrete, or other species of wood affect the overall design concept?

**Brennan, Megan**
University of Oregon
Mentor(s): Carolyn Bergquist, Corbett Upton
Oral Panel Voices and Visions: Identity and Culture in Transition

## Time and Loss in Joan Didion's Writing: Syntax as Style

The central research question I will be attempting to answer is "How do themes of time and loss change the syntax of a strategic sample of Joan Didion's work?" This project closely examines how the inevitable feelings of grief and loss affect the way we communicate and convey our ideas to others by looking at Didion's "The Year of Magical Thinking" as well as "Goodbye to All That." My research consisted of a combination of processes including close reading, pattern identification, synthesization, and comparison. I used a functionalist perspective in order to determine structure as well as performed a thematic textual analysis of Didion's relationship to herself. Heavy use of polysyndeton, indefinite pronouns, repetition, and corrective couplets reveal differences in Didion's writing that match up with life events she experienced. Communication is one of the most important aspects of humanism, and furthering comprehension of the intricacies surrounding natural, universal experiences is vital to expanding our understanding of one another, and looking at Didion's writing takes us one step closer to recognizing how life effect our syntax which, in turn, affects the way we communicate.

**Breslin, Sophia**
University of Oregon
Mentor(s): Thomas Desvignes, John Postlehwait
Gallery Room

## What controls sex development in fish? - a graphic novel

Co-Author(s): Thomas Desvignes, John Postlehwait

"What controls sex development in fish?" is a collaborative graphic novel composed by Thomas Desvignes, John, and myself that explores the many ways sex is determined in fishes. My contribution focused on translating scientific concepts into an accessible visual formats for new readers who might be unfamiliar with the biological mechanisms contributing to sex development in fish. For example, this comic could

become learning material for middle school and high school biology classes.

Before this project, I had limited experience with drawing animals, let alone fish. This project thus challenged me, forcing me out of my comfort zone to represent genes and fishes in ways that any reader would understand. For that I met with Thomas weekly to ensure I understood key scientific concepts such as Genetic Sex Determination and sex chromosomes. I started by drafting the first pages onto paper using colored pencils, but later switched to a completely digital format for a more streamlined process. Every fish began as a simple geometric shape to which I layered on limbs and various textures to make each creature leap out of the page. I used Procreate to make this comic, a proprietary software available on iPads. It was important to make this comic accessible, so we used the font OpenDyslexic-Alta, that's designed for readers with dyslexia. Our comic is freely available to read and download in eight languages–English, Danish, French, German, Italian, Norwegian, Portuguese, and Spanish.

**Brinson, Jurnee**
University of Oregon
Mentor(s): Rori Rohlfs
Poster #19

## Optimizing Crisis Response: Anonymized CAHOOTS Case Narratives for Effective Resource Allocation

In today's data-driven world, safeguarding personal information is crucial. This research project focuses on developing an anonymizer script using Microsoft Presidio to protect personally identifiable information (PII) in case narratives. By anonymizing data sourced from CAHOOTS (Crisis Assistance Helping Out On The Streets), a city-funded service, we aim to train a machine learning model to categorize narratives into 4 assistance categories: behavioral, medical, both, or neither. This classification will encourage effective resource allocation.

CAHOOTS provides timely stabilization and assistance during psychological crises, operating on a hybrid model with both behavioral assistants and EMTs. Our collaboration with CAHOOTS aims to assess the efficacy of this model using natural language processing (NLP) and machine learning techniques. By analyzing anonymized case narratives, we intend to provide insights to enhance CAHOOTS' service efficiency and crisis response protocols. Once anonymized, the case narratives will serve as valuable training data for the machine learning model, enabling it to accurately categorize cases and support timely and effective crisis assistance. Through this research collaboration, we seek to contribute to the advancement of crisis response strategies by using data-driven insights. By enhancing the efficiency of services like CAHOOTS, we can better support individuals experiencing psychological crises and promote safer communities.

**Brooks, Sam**
University of Oregon
Mentor(s): Daniel Quintero Plata
Works in Progress: Lightning Rounds

## Unraveling Historical Determinism: Examining Weimar Political Structure

The intent of this research is to address the unique political climate of postwar Germany between the years of 1918-1933, following the overthrow of House Hohenzollern and the establishment of a German postwar republic, through the passage of the Enabling Act of 1933 that solidified a dictatorship under newly-elected Chancellor Hitler. This research will utilize the political framework and events within the "Weimar Republic" as an example for analysis regarding political philosophy, and to be contextualized within a larger social analysis of democratic and populist ideals in early modern government.

Additionally, this project will showcase innovative democratic principles and social reforms pursued by the Weimar Republic, such as gender equality, civil liberties, and social welfare, while also addressing the complexities and challenges that compromised its ability to withstand the rise of authoritarianism. It will examine how external factors like the Treaty of Versailles and the global economic downturn, as well as internal conflicts and political polarization, weakened the republic's foundations. In contextualizing the Weimar Republic's political framework within a larger social analysis of democratic and populist ideals, I hope to demonstrate that this ill-fated early German republic pursued unique values in institutions that were ahead of its time, but were soured by the circumstances of postwar Europe and weakened by domestic instability and political infighting.

**Brown, Corinthia**
University of Oregon
Mentor(s): Mike Harms, Kona Orlandi
Poster #88

## Analyzing Ligand Specificity to Assess the Evolution of TLR4

Inflammation is a vital process our bodies use to remove foreign entities and help restore function to damaged tissue. However, when inflammation excessively activates it can lead to arthritis, neurodegeneration, and sepsis, which contributes to 11 million deaths a year. Inflammation results from inflammatory cytokines produced by the NF-kB pathway, activated by Toll-Like Receptor 4 (TLR4). We know that certain lipopolysaccharides (LPS) present on gram-negative bacteria drive the dimerization of TLR4 and activate inflammatory cytokine production.However, we do not completely understand the rules which govern TLR4 activation, making it difficult to control this regulator of inflammation, particularly in clinical applications.

To understand how TLR4 activates, the Harms lab studies the alterations in function throughout this protein's evolutionary history. However, when the TLR4 in question is far from humans on the phylogenetic tree we experience difficulties observing the protein's activation. To observe distant species' TLR4 activities we developed a method which allows the outer portion(ectodomain) of the protein to bind to its specific ligand yet have an inner portion(transmembrane and TIR domain) which allows for interactions with the human proteins which bridge the connection between TLR4 and the inflammatory pathway. Further this project examined the effects of single point mutations on TLR4 and co-factor MD-2 on inflammatory activity.

**Brugnara, Thomas**
University of Oregon
Mentor(s): Carmen Watkins
Poster #78

## Soil microbes are key to legume-grass facilitation under high water availability

Species interactions vary from competitive to facilitative, often changing with environmental conditions and biotic partners (i.e. microbes). Historically research focused largely on competitive interactions, while facilitation remains underexplored. My project examines how soil microbes and water availability shape the facilitative interaction between a legume, Acmispon americanus (ACAM) and grass, Bromus hordeaceus (BRHO). I hypothesize that the presence of the soil microbes will increase facilitation, while sterilized soil will lead to a competitive or neutral interaction. Further, I expect microbial activity will be low in low water conditions, and thus the difference in interactions between sterilized and inoculated pots will be lower than high water conditions. I also expect to see more facilitation in low-water inoculated pots. To test my hypotheses, I grew BRHO in a greenhouse in sterilized or live field soil, in four densities of ACAM, and two water levels (low, high). I measured aboveground biomass at 3, 28, and 56 days post germination. I found that BRHO experienced competitive or neutral interactions in sterilized soil, and was facilitated only in live soil with high water at low densities. Contrary to my hypotheses, low water pots experienced neutral to competitive interactions while interactions became more competitive as plants matured. My work shows how microbial communities mediate interactions between seedlings and are key to legume facilitation of grasses.

**Brunelle, Megan**
University of Oregon
Mentor(s): Adam Miller, Anne Martin
Poster #147

## Determination of Scaffold Protein Binding Interactions in the Zebrafish Mauthner Circuit

Co-Author(s): Jane Kissinger

Asymmetric localization of synaptic machinery is the foundation of synaptogenesis. However, the mechanisms that guide proteins to specified subcellular regions of the synapse are unknown. The autism-implicated protein Neurobeachin (Nbea) traffics proteins to synaptic sites, mediating organization of the postsynaptic membrane at chemical and electrical synapses. Membrane-associated guanylate kinase (MAGUK) scaffold proteins, such as SAP102 and ZO1b, contain PDZ domains that provide binding specificity for Nbea. We observe that Nbea is required in zebrafish for the localization of ZO1b to electrical synapses, where ZO1b localizes gap-junction forming Connexins to the membrane. Further, ZO1b shows binding potential in vitro via specific interactions with Nbea's C-terminal domains; mammalian SAP102 interacts under the same conditions. Exactly how Nbea interacts with zebrafish SAP102 and ZO1b during synaptogenesis is largely unknown. To interrogate the binding potentials between zebrafish Nbea and SAP102 or ZO1b, we utilize co-immunoprecipitation assays and Western blot analyses to test whether these MAGUKS bind mVenus-tagged fragments of Nbea. We show Nbea's pH and BEACH domains bind with ZO1b and SAP102; a point mutation within the BEACH domain disrupts this binding capacity. These results illustrate a regulatory proteomic link between electrical and chemical synaptogenesis. Continuing work will determine which domains of the MAGUK scaffolds are necessary for Nbea interaction.

**Bryner, Zac**
University of Oregon
Mentor(s): Josh Skov
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Hot Spots Project: Connecting Extreme Heat, Worker Exposure, and Corporate Supply Chains

The Hot Spots Project is creating a searchable database for identifying worker exposure to extreme heat risk in wide range of corporate supply chains, along with action items for companies, policymakers, and civil society organizations. The database is a collaborative student research effort among the project partners: the Center for Sustainable Business Practices (in LCB) and the student organization Net Impact. The effort also receives technical support from staff in the Sustainability, Energy and Climate Change practice of WSP,

a global consulting firm. The Hot Spots team team has accumulated a handful of reports on a plethora of industries such as rice in Thailand, dairy in California, and cobalt mining in the DRC. These industry reports contain aim to raise awareness about the increasingly important environmental justice issue of extreme heat, and to inform adaptation strategies to improve worker health and wellbeing outcomes internationally. Each report focuses on workers in a particular industry and geography, with information on labor force composition, extreme heat details, and features of the relevant policy environment.

**Buckingham, Lilia**
University of Oregon
Mentor(s): Jessica Vasquez-Tokos
Poster #204

## The Power of a Meal: Using an Intersectional Lens to Discuss Identity Formation Through Food

Food is an integral part of one's life, and more importantly one's identity. Identity is also influenced by various other factors, such as socioeconomic status, ethnicity, etc. This research aims to explore the connection between food and identity formation, and how that relationship is influenced by socioeconomic status and ethnicity. While there is bountiful research to show that socioeconomic status, in tandem with ethnicity, influences what kind of food you can purchase, and related health outcomes, there is not much research that also involves symbolism and identity formation, giving the research a unique take on this connection. The research was conducted using in-depth interviews across various ages, socioeconomic statuses, genders, and ethnicities.

Most college level students expressed not being able to partake in their ethnic culture through food as much as they would like due to college constraints, such as time, money, and overall access. Older participants with a higher socioeconomic status expressed making a more conscious effort to partake in their ethnic culture through food, as well as having the resources to partake in these foods more often. These findings are significant, as they show a desire for young adults to partake in their ethnic culture through food. The results can therefore give a more holistic understanding and greater meaning to many food communities, especially organizations whose aim is to support people through food resources.

**Bunce, Audrey**
University of Oregon
Mentor(s): Stephen Wooten
Oral Panel Voices and Visions: Identity and Culture in Transition

## Same Ingredients, Different Dish: Identity and Belonging in the Local Food Movement

From organic to fair trade to local food, alternative food movements are increasingly popular among U.S. consumers. Such practices are labeled as "alternative" because they diverge from the conventional agricultural system, dominated by corporations and characterized by mass production and global markets. The local food movement (LFM) promotes the consumption of locally grown, raised, and produced food items. Followers believe that local food tastes superior, minimizes environmental impact, supports small businesses, and preserves culture. The LFM juxtaposes the local and the global, drawing upon agrarian ideals (and fictions) to portray itself as an antidote to globalization.

Through theoretical research and interpretive text analysis, I examine organizations such as Slow Food International to demonstrate that identity and belonging are shaped by narratives about the movement's origin and purpose. I highlight contradictions within these narratives, revealing that, despite the strict binary upon which it was founded, the LFM instead exists in a murkier tension between the local and the global. This ambiguity allows the movement to be adapted to fit a variety of political agendas, making it a powerful tool for community development and regeneration, or an instrument to perpetuate exclusivity. I provide the context to reflect on food-related values, illustrating the implications of the most mundane yet intimate question of our daily lives – what to eat?

**Burger, Anna**
University of Oregon
Mentor(s): Samuel Lester, Robert Guldberg
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering
Poster #98

## Rehabilitative Assessment of Cyclic Tensile Strain on Angiogenesis In Vitro

Muscle strains constitute nearly half of sports injuries, producing pain, dysfunction, and loss of play. Microvascular circulation and the extracellular matrix (ECM) are the first structures restored post-injury to facilitate delivery of inflammatory factors, muscle progenitor cells, and nutrients. Vasculature and ECM have demonstrated robust growth and alignment in response to compressive strain cues. However, limited work has examined effects of tensile strains, which more reflect the mechanical environment of muscle. Leveraging cellular responses to tensile strain may be crucial for alignment and functional repair of tissues post-injury. Recently, rehabilitation protocols have begun to incorporate loading into early stages of healing

despite lack of consensus on which loading timings and intensities produce beneficial tissue-specific effects. This thesis's objective is to examine effects of varying initiation of cyclic tensile strain intensities in a novel in vitro angiogenesis model of collagen seeded rat derived microvascular fragments (MVF's). Vasculature will be assessed on vessel network length, branching, and alignment along strain axis via AMIRA. We expect that loading intensity and onset of cyclic tensile strain can be tuned to enhance vascular growth compared to static controls in a 3D in vitro angiogenesis model. From these data we aim to identify an optimal intensity and timepoint for initiating loading to inform muscle strain rehabilitation protocols.

**Burns, Nico**
University of Oregon
Mentor(s): Jasmin Albert, Lauren Hallett
Works in Progress: Lightning Rounds

## Flowering Plant Species Fitness in Response to Neighboring Competition & Pollination

Co-Author(s): Jasmin Albert

Pollination is imperative for the success of flowering plant species. As pollinator populations dwindle, restoration of not only pollinator populations but flowering plant populations as well is essential. Since different species of plants are visited by differing pollinators, and pollinator restoration involves planting different species of plants than plant restoration efforts, there is a disconnect between the two. I aim to optimize seed mixes that include a diverse combination of plants with differing pollination strategies for community restoration, in which I hypothesize that plants surrounded by a diverse community of both generalist and specialist plants will experience less competition for pollination, leading to better restoration outcomes for both plants and pollinators. My experiment takes place at White Water Ranch in Leaburg Oregon, where salvage-logged burn piles provide a great environment to study post-fire community restoration. I focus on two species, one specialist and one generalist, which are seeded in different plots containing a larger community of specialist plants only, generalist plants only, and combinations of the two. Half of the blooms of randomly selected focals will be covered in mesh bagging to isolate the effect of competition for pollinators. I will count seed production from each focal, bagged and unbagged and use these values to parametrize a plant competition model and subsequently predict coexistence trajectories and niche overlap.

**Butler, Anouk**
University of Oregon
Mentor(s): Rachel Weissler, Zachary Wallmark
Oral Panel Voices of Resilience: Lessons in Race & Culture

## Policing Kānaka Sound: Colonial Dominance & Indigenous Resistance

Hawai'i possess countless, rich, threads of cultural histories that, when woven together, construct the bountiful tapestry of the sonic landscape. By examining these fibers, one may begin to understand Hawai'i's auditory dimensions, how antique sonic occurrences shape the contemporary, and the numerous destructive acts of settler colonialism that Kānaka Maoli [Native Hawaiians] have been subjected to in the process. The vast majority of these auditory phenomena have been decimated by settler-colonial practices and the current illegal occupation of the islands, resulting in the prolonged erasure of the Kānaka Maoli sonic existence. Through the auditory outcomes of everyday sound, ʻŌlelo Hawai'i [Hawaiian language], and music, this sociolinguistic thesis provides an analysis of the ways that the overall policing of Kānaka Maoli sound serves as a form of colonial dominance, and conversely, how the perseverant auditory presence of Kānaka Maoli opposes settler colonialism by signifying Indigenous existence.

**Byrne, Cass**
University of Oregon
Mentor(s): Mariah Kornbluh, Sherry Bell
Poster #28
Virtual

## Determining Identity-Specific Needs in Lane County's LGBTQ Youth Population

Understanding youth's unique challenges and needs is essential for fostering inclusivity and promoting well-being within communities. This study aims to encompass these identity-based need factors through a community-based needs assessment for the LGBTQ youth of Lane County, specifically observing the differences in sexual orientation- and gender-diverse-based needs. Identity-based needs are deeply intertwined with lived experiences, including discrimination, stigma, and lack of community resources. These adverse environments significantly impact the mental and emotional health of adolescents, a pivotal time for social-emotional development. Through qualitative sampling, researchers conducted focus groups encouraging adolescents to share access to and interest in local resources. Using thematic analysis, six themes were identified: activities, youth needs, macro-level influences (policy and politics), social support, accessibility (facilitators and barriers), and online (advantages and disadvantages). These findings were presented to community partner, TransPonder, to navigate future accommodations. The current study allows for future directions to focus on developing targeted interventions and resources that address the identified themes, such as expanding inclusive activities and enhancing social support networks.

**Calceta, Junah**
University of Oregon
Mentor(s): Mariah Kornbluh, Raquel Amador
Oral Panel Exploring Educational Environments

## Neighborhood Characteristics as Influences on Perceived STEM Opportunities for Underserved Youth

Co-Author(s): Sherry Bell

The fields of Science, Technology, Engineering and Math (STEM) have historical racial inequalities; only 9% of STEM workers in the country are Black, and only 8% are Hispanic/Latinx (PEW Research 2021). Partnering with the Alliance for Educational Solutions (AES), this mixed-methods study examined six focus groups (n=55) and survey responses (n=220) from underserved youth in the greater Sacramento, CA area. Participants reported their perception of career-building opportunities within the community, and barriers to STEM occupations were analyzed. Youth hopes, dreams, career goals, and opportunities to succeed in their field of choice were explored within the context of their demographics, neighborhood characteristics, and educational experiences. The findings of this study highlight the numerous challenges faced by youth entering adulthood and pursuing their desired careers. Barriers that were particularly concerning for youth include transportation, finances, lack of mentorship, and accessibility to programs providing experience. With these findings, youth-generated recommendations to local governments are made to improve these outcomes in future outreach and program development. These include: increased skill-building programs, networking and certification opportunities, earlier exposure to diverse STEM occupations, and focusing energy on under-resourced areas.

**Calhoon, Quinn**
University of Oregon
Mentor(s): Judith Raiskins, Linda Long
Poster #211

## Understanding Social Organization in Lesbian Communities in Southern Oregon

We are a part of the Women and Gender Studies Archive class. As a part of the course we are researching the SO CLAP! Lesbian Lands Manuscripts collection to investigate how the historical communities of women were organized and how they established and upheld social dynamics, self-sufficiency, outreach programs, and developed their political structure. The SO CLAP! collections encompasses records, first person accounts, and other such primary sources preserved by the non-profit corporation SO CLAP! established in 1989. The summary of our research seeks to understand their origin and what has become of these lands and communities today.

**Callie, Bryn**
University of Oregon
Mentor(s): Jeff Diez, Sarah Erskine
Poster #75

## In the Neighborhood: Phenology, Species Interactions, and Public Engagement in Ecological Research

Phenology, the timing of biological life cycles, is a key indicator of global environmental change, and numerous studies have shown that plant species are shifting their phenology in response to climate and land-use change. Although general trends exist, research indicates that the effects of phenological changes (e.g., on fitness) tend to be species specific and that phenology may also be mediated by species interactions (e.g., competition). Nonetheless, the complex feedbacks between phenology, competition, and fitness remain poorly understood. As such, we sowed ten species in experimental restoration plots to test how variation in the diversity, identity, and density of competitors affected the flowering phenology and fitness of an annual prairie wildflower, Clarkia purpurea. We found that C. purpurea's phenology varied with competitor species richness and identity and that its fecundity was correlated with density but not species richness. We also found that the strength of competition varied by competitor identity but was unrelated to species' phenological differences. Our research offers unique evidence that species interactions may impact plant phenology and fitness in complex ways and also that understanding species' persistence and coexistence in our changing global environment requires taking these relationships into account. Further, our research design demonstrates how ecological research can be successfully paired with restoration and education in public settings.

**Camacho, Ian**
University of Oregon
Mentor(s): Mattias Vogel
Poster #241

## Resonance of South Asian Pop Culture in America

This research project explores the multifaceted influence of South Asian pop culture on various aspects of American media. Beginning with examining historical events such as the 1947 partition and extending to the post-9/11 era, the study delves into how South Asian creatives have woven their narratives into the fabric of American pop culture. From the diverse styles of South Asian music, cuisine, fashion, and cinema, to the representation of cultural values, the project navigates through the nuanced intersections of these two vibrant cultural spheres. Multicultural societies allow for more heritages to thrive and fusions between cultures are created for a more rich and accepting environment. Additionally, the research scrutinizes

instances of cultural appropriation, revealing the challenges and controversies that arise when elements of South Asian cultures are adopted without due acknowledgment. By drawing on academic sources and real-world examples, the project aims to provide a comprehensive understanding of South Asia's profound impact on shaping the American cultural landscape.

**Campbell, Maggie**
University of Oregon
Mentor(s): Sarah Wald
Poster #202

## Little Colonizer on Indigenous Lands: Exploring the Myth of the Ecological Indian

In this research project, I offer a critical examination of the portrayal of Indigenous people in the popular children's historical fiction series Little House on the Prairie. This historical fiction children's series is written by and features Laura Ingalls Wilder, a young girl traveling the frontier with her family. Despite thrilling and educating children for decades, the Little House on the Prairie perpetuates the myth of the ecological Indian through juxtaposition between the wildness of nature and Indigenous portrayals. By comparing several peer-reviewed articles, I was able to analyze Indigenous portrayals in the Little House on the Prairie series through the lens of descriptive concepts such as primal purity and the Noble Savage. In this series, Indigenous people are relegated to natural features and dehumanized through degrading descriptions. While these descriptions are a product of their time, it is important to understand that they can be harmful if taken at face value. My research highlights the importance of looking at beloved children's novels through a critical, adult perspective with the aim of providing historical context, alternate historical texts from other communities, and explanations of questionable scenes instead of banning books outright.

**Cannan, Caitlyn**
University of Oregon
Mentor(s): Paul Kempler, Shannon Boettcher
Poster #119

## Influence of Temperature on the Nucleation and Adsorption Kinetic Mechanisms for Copper Corrosion

Co-Author(s): Kira Thurman

Copper is a valuable catalyst that is widely used in electrochemical devices, particularly in the generation of clean, renewable energy and the CO2 reduction reaction (CO2RR). Gaining insight into the fundamentals of corrosion/deposition of Cu in an electrochemical cell can aid in the design of more durable and efficient devices. To comprehend the broader capabilities of Cu, it is crucial to understand the kinetics of nucleation

and adsorption mechanisms and conduct a thorough investigation of the underlying principles. Here, we utilize a model system with Cu underpotential deposition (UPD) on an Au(111) electrode surface in sulfuric acid electrolyte and investigate the impact of temperature change on the kinetics of Cu corrosion/deposition. The Transient technique, chronoamperometry, is employed to illustrate the effects of the nucleation process and adsorption of ions. At temperatures below 20°C, peaks indicate the nucleation and adsorption processes individually. At temperatures 20°C and above, more adsorption characteristics are seen which may be due to the interactions between less-ordered monolayers at the interface, further demonstrated by the loss of nucleation characteristics. Electrochemical devices operate across a wider temperature range in practical uses. The aim of this study is to examine and quantify the influence of temperature on the nucleation and adsorption mechanisms in order to optimize the durability of Cu-containing electrochemical devices.

**Carney, Sue**
University of Oregon
Mentor(s): Melissa Brunkan
Poster #219
Virtual

## Silent Spring: The compounded losses suffered by singers during and after the COVID pandemic.

The COVID-19 pandemic has significantly impacted respiratory health, with patients experiencing dysphonia, laryngeal complications, and persistent symptoms post-recovery. This literature review emphasizes the high prevalence of these issues, especially in patients who underwent intubation and mechanical ventilation. The severity of COVID-19 appears to be linked to an increased risk of long-term vocal and laryngeal dysfunction. This loss of vocal function has been especially difficult for both professional and amateur singers, who suffer additional losses of self-expression, identity, and pride in a skill, in addition to social and economic adversity.

**Carrillo, Aileen**
University of Oregon
Mentor(s): Esther Hagenlocher
Poster #12

## The iLEAN Chair

Inspired by athletes' comfortability, the iLEAN Chair is an experimental rocking chair where the flexibility of movement is prioritized. By interviewing various UO athletes on their preferred comfortability, the idea of legs extended upwards reoccurred, and it was this position that influenced the concept of the iLEAN. An aesthetic yet structural piece was achieved through heavy design transformations, experimenting with the radius

of the rockers, seat curvature, and form of frames. Thought of as a long rocking chair with an integrated footrest, the iLEAN is a chair meant to support several positions and encourage flexibility. Inspired by movement, it's a continuous and organic piece with an interplay of negative space created by unique gaps in the frame. Construction of the frame and seat was made of birch plywood while supportive stretchers of the piece were done with stronger hardwood. Methods of CNC Router cutting, domino joints, and curve bending were performed to produce the final piece.

**Cervantes, Adrian**
University of Oregon
Mentor(s): Juan Eduardo Wolf
Oral Panel Voices of Resilience: Lessons in Race & Culture

## Pineros y Campesinos Unidos del Noroeste and Music in the Oregon Labor Movement

Pineros y Campesinos Unidos del Noroeste (PCUN), is a farmworker labor union in Woodburn, Oregon, that amplifies the voices of marginalized workers. The union focuses on advocating for Latinx populations throughout the state and has been instrumental in reinforcing Oregon's cultural networks. Because of historical events like the Braceros program as well as U.S. involvement in regime change throughout Latin America, the population of people that PCUN represents is particularly diverse in terms of cultural representation. This project sets out to document musical events organized by PCUN using primary source audio materials that were donated to the University of Oregon's special collection in 2011. I also present an analysis of the musical ephemera contained within the cassettes, together with information gained through interviews I conducted with musicians, activists, and organizational staff of PCUN. Primary results include some of the ways PCUN unified a diverse population of labor union members. Including utilizing music as an information storage technology, as a way to lobby for social justice, and seeding economic growth through benefit performances. Through this project, I contribute to the reinforcement of Latinx history as an important part of Oregon's history. As well as, providing a new perspective by looking at Oregon Labor History through the lens of music, which may provide useful insight to other labor organizations on music's capacity for social change.

**Cheatham, Zackary**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Four different coding models simulating oscillatory and rotational motion through VPython

In this presentation, we will show to the audience four different physics simulations/animations including damped oscillation, 2D transverse waves, inelastic collisions, and angular momentum. We will explain our code to the audience, then answer questions and accept input suggestions for our simulations/animations from the audience.

Luke: A simulation of a mass and spring system that oscillates in air under the forces of gravity and drag using a numerical/incremental method of solving the differential equation that would model the system.

Zack: An animation that shows how a transverse wave propagates outwards on an array of spheres using selected amplitudes and wave speeds to calculate each sphere's position over time.

Rhett: A simulation of oscillatory motion of a mass connected to a spring affected by a friction coefficient due to the surface the mass moves on. A graph of velocity shows the movement of the mass, and the affect friction has on its velocity.

Jazmin: A simulation of off-axis impact between a sphere and a rectangular shape to demonstrate conservation of momentum. Observers will be able to change different variables, such as mass and intel speed, to investigate the resulting collision.

**Chee, Yazzie**
University of Oregon
Mentor(s): Kirby Brown
Oral Panel Voices of Resilience: Lessons in Race & Culture

## Honoring Indigenous Perspectives: Reimagining Resources and Programs at the University of Oregon

This abstract introduces the pressing need for Indigenous research methodologies in evaluating the effectiveness of initiatives supporting Indigenous students at the University of Oregon (UO). Despite increasing efforts to enhance Indigenous student experiences, there remains a gap in research assessing the impact of these initiatives. Drawing from Indigenous scholars, this study advocates for the active involvement of Indigenous students in research processes to uphold their right to self-determination. Through qualitative analysis, it will explore the challenges Indigenous students encounter nationally, statewide, and at UO, emphasizing the importance of Indigenous voices in shaping policies and practices.

By centering Indigenous perspectives, this research aims to provide a comprehensive understanding of the effectiveness of UO's initiatives and promote collaborative approaches between the university and Indigenous communities.

**Cheechov, Michaela**
University of Oregon
Mentor(s): Marina Guenza, Jesse Hall
Poster #125

## Simulation and Coarse-Graining of Alanine Dipeptide

In recent years, Molecular Dynamics (MD) simulations have become increasingly relevant in the natural sciences, and are a powerful resource for investigating complex systems when combined with traditional laboratory experiments. The goal of my simulation work was to help further the Langevin equation for protein dynamics (LE4PD) through conducting and coarse-graining simulations. Coarse-graining is a computational method in which complex systems are reduced to more simple representations, and is of significance because it allows considerable computational speedup, allowing simulations to reach previously unattainable time scales at the expense of detail. The simulations I ran were of alanine dipeptide using the University of Oregon's HPC cluster, Talapas, then coarse-grained those simulations by manually modifying files used by the simulations. Alanine dipeptide was an ideal candidate to further this project due its small size and well studied behavior, as well as its simplicity to coarse-grain. Successful analysis of these simulations will allow this project to continue to larger and more complex molecules that hold significance in areas such as medicine and biophysics, therefore allowing investigations into important systems involving proteins.

**Chesak, Maya**
University of Oregon
Mentor(s): Sara Cotton, Frances White
Poster #182

## The Malinow Howlers: Identifying a Historic Primate Osteological Collection

This project examines an unidentified primate specimen from the UO Primate Collection in order to determine the species, sex, and age of the primate skeletal remains. This project hypothesizes that the unidentified specimen is a subadult male black howler monkey (Alouatta caraya). Through the utilization of both a comparative analysis of specimens within the UO primate osteology collection and Tim D. White's (2012) work in human osteology, our research resulted in positive matches in morphologic features in comparison to adult male black howler monkeys (A. caraya). The specimen was compared against the remains of two male howler specimens, two female howler monkey specimens, one unsexed howler monkey specimen, and two

unsexed woolly monkey specimens. Further investigation and comparison of these specimens support the conclusion that the unidentified primate is a subadult male black howler monkey (A. caraya) and highlight the importance of comparative collections. The current findings raise further questions regarding the life history of the specimen and its possible relation to field studies led by Malinow et al. (1960s). Further studies could include hair sample analysis to determine the diet of the animal when alive. With information on diet, we could connect this to a geographic location or common diet of howler monkeys to determine where the specimen came from.

**Choi, Hye Lynn**
University of Oregon
Mentor(s): Damien Callahan
Poster #156

## Investigating the Effect of Age and Sex on Musculotendinous Stiffness at the Vastus Lateralis Muscle

Co-Author(s): Austin Ricci, Damien Callahan

The purpose of this study was to investigate how biological sex and chronological age influence mechanical stiffness in muscle tissue. Stiffness in the vastus lateralis (VL) muscle was measured in young (18-35 years) and older (65-80 years) males and females. This project hypothesized that older individuals will have lower stiffness than younger individuals, and females will have lower stiffness values than males. Participants were young females (n=6) and males (n=4), and older females (n=5) and males (n=3). Dynamometry was used to measure rate of torque development and other voluntary contractile performance metrics. Shear wave elastography (SWE) ultrasonography was used to measure stiffness in VL muscle tissue, complemented by B-mode ultrasound measures of stiffness and morphology (echogenicity). SWE measures were used during passive and active contraction of the VL. B-mode ultrasound was applied during the increasing VL contraction intensities. Age-related reductions in VL stiffness were limited to males measured with SWE. The female group didn't report a similar result, suggesting that the age-interaction effect may be specific to a certain sex. Echogenicity was significantly correlated with peak power, absolute and relative rate of torque development (p<0.05). The finding suggests that the age-effect on the stiffness at the vastus lateralis muscle may be sex-specific to males. Muscle composition as defined by echogenicity may be a more highly relevant clinical measure

**Chowdhury, Ananya**
University of Oregon
Mentor(s): Patrick Phillips
Oral Panel From Mind to Molecule

## Investigating the Epigenetic Impact of Stress on Accelerated Aging: A Comprehensive Analysis

Co-Author(s): Amy Webster, Anastasia Teterina

In this experimental proposal, I aim to investigate the hypothesis that heightened stress levels among college students induce epigenetic alterations associated with accelerated aging compared to age-matched peers. I outline a meticulous experimental setup, utilizing the Perceived Stress Scale for stress assessment and stratifying participants by sex to explore potential sex-specific effects. My methodology includes stringent controls for confounding factors, such as cortisol levels, time of day, and recent food intake. Blood samples will be collected and processed using standardized techniques, with subsequent cortisol analysis and DNA extraction. Bisulfite conversion will facilitate methylation assessment of specific AgeCGs, employing sustainable practices throughout sample preparation. Primer design and PCR amplification will target these regions, followed by library preparation and sequencing using a DNA methylation array. Epigenetic age will be calculated using established algorithms, with deviation from chronological age serving as a metric for aging acceleration or deceleration. Statistical analyses will account for covariates including demographic and lifestyle factors, enabling accurate assessment of stress-induced epigenetic changes associated with aging. This proposed experiment offers a comprehensive approach to elucidate the intricate interplay between stress, epigenetics, and aging.

**Chu, Kristopher**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
KIDD Creative Chronicles

## Starlight Dreams

The medium for this work is written word. It was typed on a laptop and it will be presented via spoken word. Its subject matter concerns reality. In current times, despair lurks at odd corners and mundanity becomes tedium. “Starlight Dreams” is a short story about the light of a dead star coming to Earth and spending an evening with a human. It has been said that, given the time starlight takes to travel, the light that reaches from us comes from stars long destroyed. It seems like a lonely idea. My vision for the story is a gentle reconciliation with the grief of a passing reality and the wonder of the present.

**Clair, Kenji**
University of Oregon
Mentor(s): Josh Skov
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Hot Spots Project: Connecting Extreme Heat, Worker Exposure, and Corporate Supply Chains

Co-Author(s): Vincent Williams, Justin Nolasco, Liam Cuevas Ullibarry Ella Harrington, Bella Fuller

The Hot Spots Project is creating a searchable database for identifying worker exposure to extreme heat risk in wide range of corporate supply chains, along with action items for companies, policymakers, and civil society organizations. The database is a collaborative student research effort among the project partners: the Center for Sustainable Business Practices (in LCB) and the student organization Net Impact. The effort also receives technical support from staff in the Sustainability, Energy and Climate Change practice of WSP, a global consulting firm. The Hot Spots team team has accumulated a handful of reports on a plethora of industries such as rice in Thailand, dairy in California, and cobalt mining in the DRC. These industry reports contain aim to raise awareness about the increasingly important environmental justice issue of extreme heat, and to inform adaptation strategies to improve worker health and wellbeing outcomes internationally. Each report focuses on workers in a particular industry and geography, with information on labor force composition, extreme heat details, and features of the relevant policy environment.

**Clark, Dylan**
University of Oregon
Mentor(s): Mariah Kornbluh, Sherry Bell
Oral Panel Exploring Educational Environments

## Defining Civics

Co-Author(s): Angie Sherer

Civic education plays a crucial role in shaping individuals' understanding of their rights, responsibilities, and participation within society. This nationwide study delves into the multifaceted dimensions of civic education, drawing insights from interviews (n=75) conducted across politically diverse stakeholders, including educators (administrators, n=16; teachers, n=26) and brokers (n=33). Qualitative findings demonstrated that among teachers, there is a recognized emphasis on educating youth about the different branches of government, with attention to education regarding their roles and responsibilities as citizens and future voters. Administrators contribute to this discourse by emphasizing the government's role and function within civic education while also recognizing the significance of being an active and responsible

citizen in their local communities. While brokers emphasize the role of citizenship as a central theme of civic education, they also advocate for a culturally relevant curriculum that incorporates the history of marginalized communities. The current study underscores the diverse perspectives of defining civics and how these definitions inform curriculum development. Understanding the diverse perspectives about a nationwide definition of civics will aid in creating a tool to help educators develop more inclusive and effective strategies when implementing civics into their curricula.

**Clayton, Theodore**
University of Oregon
Mentor(s): Rebecca Lewis, Ian McNeely
Poster #205

## Planning for a Meal on the Table: Using Planning and Policy to Support Community-Led Groceries

City planning and public policy have been vital tools in the creation of food apartheid in the US, especially through the structural violence of economic disinvestment and redlining. In finding meaningful solutions to combat food apartheid, utilizing city planning and policy to instead support community-led food justice solutions and prevent future harm is essential. In this project, food system plans across the US have been studied for their unique positionalities and contributions to the burgeoning field, especially in supporting community-led groceries. To further ground this analysis, two community-owned and operated groceries have been utilized as case studies to both illustrate the food justice significance of community-led groceries and to examine their potential support needs from the planning and policy field. In completing this research, recommendations for how municipalities can utilize food systems planning and policy to support community-led groceries will be provided, primarily through the use of mixed-use spatial planning, incentive zoning, and small business financing programs. The intentions of this research are to bridge the gap between the planning and policy field and the communities it serves, as well as to provide actionable solutions to the crisis of food apartheid in the US.

**Cockcroft, Tiare**
University of Oregon
Mentor(s): Cory Olsen
Poster #5

## Riley Hall Revamp | Returning to the 60's

Riley Hall was constructed in 1964. The original use was as an educational building and now is an off campus dormitory. As it is off campus, it is mostly overlooked by incoming students. This should not be the case as

it is in between both worlds of Eugene, downtown and campus. The location also makes it close to many restaurants and other off campus activities.

This project tries to bring Riley back to its former glory. Rejuvenating this older building will make it more appealing to students and faculty alike. Highlighting its most important features and utilising the exterior space to create a balance between the indoor-outdoor spaces. Overall, returning Riley back to its original self, the way in which it was meant to be.

**Colucci, Michael**
University of Oregon
Mentor(s): Dylan Wood
Poster #10

## Waste Utilization Panels–An upcycling strategy for high performance point supported timber slabs

The Waste Utilization Panel (WUP) aims to innovate the mass timber industry by taking Mass Plywood Panels (MPP) and its existing process and creating a new product through structural optimization and aesthetic enhancement. As the mass timber industry continues to grow, trends show us that resources and energy for manufacturing are becoming less bioavailable and more costly. Previous findings showed us that 13-30% of highly engineered MPPs end up as offcuts that are discarded or burned for energy. To combat the issue of material resources, we've sought to incorporate these offcuts back into our product, the WUP. A WUP is constructed by organizing MPP waste material along lines of deformation on top of a standard 3" thick MPP. By intentionally placing material, it is estimated that the WUP could carry the load of a standard 8" panel using 50% less material. The WUP can span in 2 directions without increasing the total thickness, making it an ideal solution as a point-supported building component. The final geometry is derived from structural analysis and is dependent on the structural system being employed. In creating this new product, we hope to confront issues of material usage and demand as the mass timber industry grows. Reintegrating offcuts into a product while meeting structural and design requirements within the industry is our team's way of addressing concerns of the advancement of the mass timber while reducing the environmental impact of construction.

**Combs, Maggie**
University of Oregon
Mentor(s): Kathryn Lynch
Oral Panel Pathways to Environmental Empowerment

## A Bilingual Environmental Education Project Linking Culture and Ecology Through Migratory Birds

Migratory birds are an invaluable link between ecology and culture. In the Environmental Leadership Program at the University of Oregon, Aves Compartidas provides elementary aged students with a framework to connect with nature and culture through shared migratory birds. With our partner, the Willamette-Laja Twinning Project, we ignite the spark of science and awaken ecological awareness. Fostering students' educational outcomes in bilingual lessons prepares the next generation of environmental stewards. Nature-based education contributes to the improved mental and physical well-being of students. Our curriculum is guided by the Next Generation Science Standards, which help our students become well-rounded scientists. We prepared to lead environmental education by drawing on resources that promote children's curiosity for the natural world to guide their learning. When this program ends, the team will have served over 300 El Camino del Rio students via five classroom lessons and a field trip at Mount Pisgah Arboretum. This allows students to recognize their place in ecological systems and provide them with tools to become involved. Aves Compartidas' goal is to encourage lasting gratitude for nature by connecting with our shared bird species in Oregon and Guanajuato. We not only focused on scientific curriculum but inspired students' genuine connection and brought awareness of environmental issues, resulting in lifelong appreciation of nature– the cornerstone of stewardship.

**Conrad, Percy**
University of Oregon
Mentor(s): Mariah Kornbluh, Raquel Amador
Oral Panel Exploring Educational Environments

## Neighborhood Characteristics as Influences on Perceived STEM Opportunities for Underserved Youth

The fields of Science, Technology, Engineering and Math (STEM) have historical racial inequalities; only 9% of STEM workers in the country are Black, and only 8% are Hispanic/Latinx (PEW Research 2021). Partnering with the Alliance for Educational Solutions (AES), this mixed-methods study examined six focus groups (n=55) and survey responses (n=220) from underserved youth in the greater Sacramento, CA area. Participants reported their perception of career-building opportunities within the community, and barriers to STEM occupations were analyzed. Youth hopes, dreams, career goals, and opportunities to succeed in their field of choice

were explored within the context of their demographics, neighborhood characteristics, and educational experiences. The findings of this study highlight the numerous challenges faced by youth entering adulthood and pursuing their desired careers. Barriers that were particularly concerning for youth include transportation, finances, lack of mentorship, and accessibility to programs providing experience. With these findings, youth-generated recommendations to local governments are made to improve these outcomes in future outreach and program development. These include: increased skill-building programs, networking and certification opportunities, earlier exposure to diverse STEM occupations, and focusing energy on under-resourced areas.

**Cooper, Evelyn**
University of Oregon
Mentor(s): Matthias Vogel
Poster #231

## The Black Market in Argentina

In our research project we explore Argentina's black market. We specifically focus on how it is intertwined with the Argentinian economy, politics, along with impact on low income families in recent years. To answer our questions; we turned to scholarly articles and news stories covering Argentina's black market, as well as some first hand accounts from those who have been impacted. The economy is on the brink of recession, and inflation has skyrocketed prices for citizens, whose wages have not been able to keep up. All these issues are causing political tensions to run high, as many are turning to the government to fix the issues with their once blossoming economy. We were able to conclude that Argentina's continual social and political instability has contributed to not only the creation of the black market in Argentina but also its continual prevalence. Through our research we discovered some of the challenges that the Black Market has inspired in Argentina.

**Cortes, Vincent**
University of Oregon
Mentor(s): Thomas Desvignes, John H. Postlethwait
Poster #71

## Evolution of sex determination systems in Antarctic notothenioid fishes

Co-Author(s): John H. Postlethwait, Thomas Desvignes

In vertebrates, sex is generally determined by a sex-determining gene (SDG). In all mammals, the SDG is SRY and in all birds it is DMRT1. In contrast, fish have different SDGs, even among related species, including in Antarctic notothenioid fishes, which form an adaptive radiation known for its ability to survive frigid temperatures due to the innovation of antifreeze glycoproteins. We hypothesize that the evolution of new

SDGs and sex chromosomes contributed to species diversification by preventing diverging species from interbreeding. To test this notion, we obtained DNA samples from over 15 notothenioid species with up to 30 individuals of each sex for each species. To confirm the sex of immature specimens, we viewed their gonads under a microscope. Next, we extracted DNA from each sample using the Qiagen DNeasy kit. The concentration of DNA extracts was then quantified with a Qubit fluorometer to provide standardized DNA quantities for Illumina sequencing by low-coverage Whole Genome Sequencing (lcWGS). We will finally conduct genome-wide analyses of genetic differences between males and females using bioinformatics software. We have extracted DNA for 14 species and analyzed two of them. These comparisons should reveal regions of the genomes that are sexually different and likely to have the species' SDG. Plotting the various SDGs on a notothenioid species tree will reveal if changes in SDGs were likely to have contributed to the diversity of these Antarctic fishes.

**Cortes-Montesinos, Daniela**
University of Oregon
Mentor(s): Lynn Stephen, Gabriela Martínez
URS Film Screening

## Growing Roots

Jocelyn Martinez, a 23 year old, self-defining hispanic, and a resident of Albany, Oregon, is a very bright and joyous person with several interest. What is noteworthy about Jocelyn is her strong connection and admiration for all that is considered agriculture. Before working and being involved in agriculture, Jocelyn was dispassionate about the topic of agriculture despite her parents and family being farmworkers themselves for a great majority of their lives. Not too long ago, Jocelyn's father, Paulo, and uncle, Floriberto, have become farm owners and built their own farming business together. As well, approximately 2-3 years ago, Jocelyn picked up a keen fascination for this field and is now studying agriculture at Linn-Benton Community College. When asked about who/what her biggest inspiration is, Jocelyn shares,

"My dad. My dad is a hardworking man and he... sets goals for himself that might seem impossible to accomplish, but he always finds a way to accomplish them, hence his farm. He's such a kind man and is not ever really angry. He doesn't hold remorse, and I really aspire to be like him." This goes to show a strong connection between a father and daughter, but as well as the character of farm owner Paulo.

Therefore, this film will speak on themes of family and farm labor aiming to garner further representation and acknowledgement for under-appreciated/underrepresented farmworkers within Oregon and overall, in the US.

**Costa, Lainey**
University of Oregon
Mentor(s): Dasa Zeithamova, Troy Houser
Poster #50

## Memory Effect of Event Boundaries Caused by Spatial Change

Life is experienced continuously, but our memories are separated into distinct events, likely due to spatial and temporal changes within our environment, or event boundaries. Past research has shown increased errors in temporal order memory when two objects span an event boundary compared to two objects within an event. People are also shown to perceive objects as further when spanning a boundary compared to within. This study investigated event boundary effects and memory. Subjects watched a controlled video of a person encountering objects with intermittent background spatial changes. Afterward, temporal order memory was probed by presenting a pair and asking which appeared first. Subjective temporal distance ratings were also obtained for each pair by asking how far apart participants believed the objects were from each other. In addition to these typical measures, an associative memory test was administered. While substantial research has investigated temporal memory effects, less attention has been paid to how event boundaries influence associative memory. Subjects were shown an object and asked to pair it with the background they recalled the object being displayed in front of. Results found no boundary effect on temporal order memory and a distance effect on perceived distance. Most notably, there was a significant boundary effect on associative memory performance. These results further support the idea that context shifts may affect the fragmentations of experiences.

**Coultrap, Madison**
University of Oregon
Mentor(s): Tom Hahn, Blayne Burnside
Poster #11

## UNBE-LEAF-ABLE AIR!

The paper aims to investigate the effect of indoor plants on carbon dioxide levels by testing the air quality levels in two rooms. From prior research and knowledge, it is known that plants absorb carbon dioxide and release oxygen during photosynthesis, (during daylight hours).Therefore, we decided to measure carbon dioxide levels in our areas of study every day at sunset as effects of photosynthesis were maximized. The areas of study were two isolated bedroom environments with multiple controlled variables. The study took place in downtown Eugene's Titan Court apartment complex. Two bedrooms within the same unit were used as the area of study. Both rooms are approximately 100 square feet and have one operable South-facing window. One bedroom was devoid of plants, while the other housed 12 plants of various species.

Carbon dioxide levels were measured once a day at sunset with a carbon dioxide meter and were compared quantitatively over a one-week period. This research will help determine the effect indoor plants have on reducing carbon dioxide levels and therefore increasing air quality. With the common individual having plants in their home, quantifying these benefits to air quality may give reason to introduce plants to their living spaces, if they do not already have them.

**Crandall, Chase**
University of Oregon
Mentor(s): Sedona Epstein, Frances White
Poster #183

## Identifying Bonobos (Pan paniscus)in a Captive Population at the Columbus Zoo

Co-Author(s): Sedona Epstein, Frances White, Sara Cotton

Identifying individuals (IDs) is an essential part of primate research, both in zoos and the field, because it allows researchers to distinguish between individuals to observe and record their behavior. Methods traditionally used for IDs include fur shaving or dying, tattoos, tags or microchips, and collars, but these require capture. The Behavioral Ecology Lab has a database of over fifty hours of videos of bonobo behavior collected over three months at the Columbus Zoo in 2011. Given the difficulty in acquiring primate behavioral data in the U.S., videos like these are an important resource to increase accessibility of primate research, allowing students to participate in research without needing to observe behavior in-person. To properly study behavior from these videos, students need to reliably identify individuals. Using the intermittent narration from the videos, we created a guide for identifying individuals in this database through detailed descriptions and images of individuals. This guide includes information on body shape/size, hair growth pattern, hairline, and sexual swellings. We also identified areas for improvement in the initial recording of the videos that, if implemented in future video collection, could make the task of identifying individuals much easier for future students. These areas include consistent positioning of cameras to cover the entire range of habitat and clear narration of who each individual is in every video.

**Crowther, Carlie**
University of Oregon
Mentor(s): Ahmar Zaman
Poster #36

## Behind Bars: Incarcerated Youth with Diagnosed Depression and the Prevalence of Staff Grooming

Prior research shows that both incarcerated youth and those diagnosed with depression are more vulnerable to being groomed and experiencing sexual assault (Resett et al., 2022; Kubiak et al., 2018). The present study aims to capture if youth with prior depression diagnoses are more likely to experience grooming while incarcerated. Data from a public archival data set, National Survey of Youth in Custody (2018), reporting sexual victimization among incarcerated youth (N=6049) was analyzed to look for correlations between depression and grooming by staff. Preliminary results of a Chi-square analysis showed that youth with prior depression diagnoses (N=2985) reported significantly higher rates than expected of verbal sexual harassment X2 (1, N=5972) =78.7, p < .001 and receiving pictures or letters from staff X2 (1, N=5979) =15.6, p < .001. Based on these results, those who are diagnosed with depression report grooming more frequently than expected. Previous research shows that these individuals can be more susceptible to being groomed because they are displaying symptoms of depression (Resett et al., 2022). This matters because both incarcerated youth and those with depression are vulnerable populations. The data implies that more education and prevention are needed for these institutions to seek rehabilitation for youth long-term.

**Cubias, Will**
University of Oregon
Mentor(s): Annelise Heinz
Oral Panel Voices and Visions: Identity and Culture in Transition

## Mapping Lesbian Communities: A Study of Demographic Bias in Gaia's Guide 1975-1989

This project aims to investigate demographic biases in Gaia's Guide, a lesbian travel guide published from 1975 to 1989. It will analyze the editorial decisions of Sandy Horn, the editor, regarding the inclusion of businesses, particularly focusing on biases related to race and class. The study will utilize secondary sources to contextualize Gaia's Guide within the broader landscape of lesbian community building. By comparing Gaia's Guide entries with other publications and archival sources, the research will uncover potential biases and omissions based on race and class. The methodology involves source analysis of four publications on lesbian community building, examining the presence of businesses listed in Gaia's Guide. Alongside this, I will analyze two archival collections of feminist publications from predominately black cities in the 1980s. The project will deliver persuasive visuals from the quantitative source analysis. This sample of secondary

sources for my analysis will be sufficient to argue for the existence of lesbian spaces outside of Gaia's Guide. It will accurately make determinations as to whether excluded lesbian spaces were done so based on race or class. Transforming these conclusions into visuals will ground my argument in quantitative conclusions. The study aims to provide insights into the reliability of Gaia's Guide as a historical source for mapping lesbian communities from 1975 to 1989.

**Cursetjee, Hope**
University of Oregon
Mentor(s): Brandon Gibson, John Hallwill
Poster #174

## Recovery of Heart Rate Variability Following Exercise: Impact of Exercise Performance and Preference

Co-Author(s): Brandon Gibson, Kieran Abbotts, Karen Wiedenfeld Needham Christopher Minson, John Halliwill

It has been reported that reduced heart rate variability (HRV) following resistance (RE), compared to aerobic (AE) exercise, indicates greater cardiovascular strain. However, modality performance and preference are not commonly considered as determinants of this response. Therefore, we assessed the impact of RE and AE on HRV and further examined responses based on performance and preference. Twelve young, healthy individuals (11M, 1F) performed separated bouts of RE, 6x10 reps at 70% of 1-repetition maximum (1-RM) and AE, 30min at 70% of their peak oxygen consumption (VO2peak). HRV was assessed at baseline (BL), immediately following (IP), and at 30min intervals for 2 hours after exercise. All variables were assessed via 2-way repeated measures ANOVA and results reported as mean±SD. When exercise conditions were examined separately, HF was significantly reduced IP in AE only, despite R-R interval returning to baseline values by 60 minutes ($p=0.13$). Although not statistically significant following RE ($p=0.13$), lower trends may have influenced a slower return of R-R interval at 60 ($p=0.05$). These data suggest an earlier restoration of vagal tone following AE, compared to RE. However, when performance and preference are considered, HF was reduced at IP ($p=0.03$; $p=0.05$) and tended to remain lower at 30 ($p=0.051$; $p=0.09$). Relative exercise workloads achieved during exercises that are favored/preferred may influence HRV following exercise regardless of modality.

**Dagley, Valerie**
University of Oregon
Mentor(s): Hank Childs
Virtual

## Viability of a Web Based Data Visualization Software

Co-Author(s): Meghanto Majumder, Manish Mathai

Web Applications are a rapidly growing sector of the software market. However, the web-based format tends to add significant computational overhead preventing high performance use cases. The novel WebGPU standard, released in April of 2023, allows for Web Applications to make use of the GPU, a high performance parallel processing unit common in modern computers. This work sought to determine if the WebGPU standard actually allowed proper high performance parallel computations (specifically in the domain of Data Visualization) to be done in a web format. We created a portable testing application using the Rust programming language, WASM, and the WebGPU standard. This allowed us to compare the performance of a native ("desktop") application and a web-based application easily. This choice of technology also prevents inaccurate results due to code differences, as both applications are compiled from the same source. The application we created calculated the performance of particle advection, a simple and easily parallelizable data visualization task. Using this software, we found that the WebGPU standard shows extreme promise for allowing high performance parallel computation on the web.

**Daniels, Emma**
University of Oregon
Mentor(s): Cory Olsen
Poster #4

## Riley Revamp–Configuring a new design for student housing

Riley Hall is a hidden gem on the outskirts of the University of Oregon Campus. It is only a short walk from the heart of downtown Eugene and the campus.

At the heart of the redesign was the belief that thriving within a supportive community of fellow students enlivens the college experience. My main objective was to create a space that beckons social interaction, fosters communal activities, and exhibits the warmth of home–a place to retreat to after a long day of classes and studying. I wanted to transform the living quarters into a vibrant community hub that creates a sense of belonging and camaraderie among residents.

Spatial design holds the power to shape emotions and experiences within a setting. For Riley Hall, I envisioned an ambiance that soothes and encourages connection, introducing touches of green to evoke school spirit and grounding the off-campus location. Preserving the charm of exposed brick walls and walnut-

framed windows acknowledges its heritage, infusing the space with a timeless charm that resonates with both past and present.

**David, Alana**
University of Oregon
Mentor(s): Jessica Campbell, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Effects of Students' Active Engagement in Religious Communities on Belonging, Community, and Purpose

Our research is looking into the relationship between involvement in religious groups and students' sense of belonging, community, and purpose and how that affects students at UO. Since there is limited data specific to the UO, we are looking more broadly at data from other colleges. We hypothesize that community involvement and support from a religious group can benefit students in these domains. We are investigating this hypothesis to understand how to better support students at the University of Oregon. All four members of our group interviewed professionals involved with and educated in religion. Through the research we have conducted we found a general trend of an increased sense of belonging, community and purpose with involvement in a religious group; however, this is not specific to students or the University of Oregon. Our primary conclusion is that religious engagement supports students' sense of belonging, community, and purpose. This research is significant because students have varying opinions and involvement in religion, so understanding the possible impacts on wellness and possible causes could help to find ways to support students' well-being.

**Davis, Bree**
University of Oregon
Mentor(s): Jessica Campbell, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Effects of Students' Active Engagement in Religious Communities on Belonging, Community, and Purpose

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have conducted we found a general trend of an increased sense of belonging, community and purpose with involvement in a religious group; however, this is not specific to students or the University of Oregon. Our primary conclusion is that religious engagement supports students' sense of belonging, community, and purpose. This research is significant because students have varying opinions and involvement in religion, so understanding the possible impacts on wellness and possible causes could help to find ways to support students' well-being.

**Davis, Kimberley**
University of Oregon
Mentor(s): David Garcia, Emily Dennis
Poster #89

## Phosphorylation of the Pus4 Protein in the [BIG+] Prion in Budding Yeast

Prions are proteins that can adopt alternative conformations, changing cellular activities based on their folding state rather than genetic code. The [BIG+] prion in yeast, formed by the pseudouridine synthase Pus4, confers positive phenotypes such as enhanced growth and translation. While the cellular and molecular phenotypes of [BIG+] have been well-characterized, the mechanism by which the prion grants these properties is still unknown.

One potential mechanism for regulating the [BIG+] state is protein phosphorylation, which has been shown to play a role in maintaining the prion state and initiating interactions in other well-characterized proteins.

To investigate the role of protein phosphorylation in the [BIG+] prion state, I have generated mutants of Pus4 by mutating reported phosphorylation sites to alanine, preventing phosphorylation at specific residues, and will compare the effects via growth assays.

As the research progresses, I hope to see clear defects in cell growth in the prion state to indicate the importance of phosphorylation.

Understanding the mechanisms underlying prion regulation has implications for diverse biological processes, including epigenetic inheritance, protein misfolding disorders, and stress response pathways. By investigating the role of phosphorylation in the [BIG+] prion state, this research may provide insights into cell regulation and potentially reveal new targets for therapeutic intervention or biotechnological applications.

**Davis, Laurel**
University of Oregon
Mentor(s): Frost Stephen
Poster #188

## Primate taxa discrimination using Morphometric analysis of fragmented Landmark Data.

Co-Author(s): Michelle Singleton

Geometric morphometric (GM) analysis has been successful at distinguishing mandibular shapes of Cercopithecid monkeys. However, complete mandibles are scarce in the fossil record. To evaluate how well GM distinguishes fragments, we began with a sample of 34 3-D landmarks on 495 Cercopithecid mandibles from 30 species within 13 genera. We then artificially reduced landmarks to represent only regions of the mandible commonly recovered in fossils: the corpus, the right side of the corpus, and 6 molar points in the right quadrant. Generalized Procrustes Analysis was performed in Morpheus, and Principal Components Analysis (PCA), Linear Discriminant Analysis (LDA), MANOVA and ANOVA were performed in PAST. The corpus showed that different genera were distinct according to MANOVA (P < 0.0001), with a jackknifed classification rate of 88% for the LDA. For smaller areas, like just the right or posterior quadrant, the rate decreased to 85% and 50%, respectively. Accuracy increased with the inclusion of the natural log of centroid size, especially for smaller fragments like the molar quadrant which increased accuracy to 65%. While fragmentary specimens are distinguished more accurately when they provide a broader range of features, GM shows potential for distinguishing Cercopithecid taxa. Also, including size improves resolution for distinguishing species. We predict that future research on sliding semilandmarks along the inferior corpus will improve these rates even further.

**de Jonge, Abraham**
University of Oregon
Mentor(s): Tom Hahn, Anupam Satumane
Poster #3

## Bread beyond the crust: insulating with yeast-y beasties

The purpose of this case study was to further understand a variety of materials and their insulative capabilities. The driving hypothesis was that slices of bread could be used, as an alternative insulation material, to decrease the heat loss through car windows after the active heating systems have been shut off, at night by 20%. The study involved sets of insulation panels, made from bread, cardboard, and foamboard, being installed into the windows of a car. Temperatures were taken periodically, every 1 minute for an hour, throughout each of the four tests using a HOBO. The temperatures were then used to compare the heat

losses, which were calculated using the change in temperature of the car during each test. The study found that the bread was not the most effective insulator, but the cardboard was. The cardboard decreased heat loss by almost 21% more than the bread. Overall, the study found that a lot more could be studied about using bread as insulation, and it'd like to be acknowledged that a lot of modifications would be needed to actually use bread effectively in practice.

**De Leenheer, Merel**
University of Oregon
Mentor(s): Emma Reed, Christopher Minson
Poster #172

## How Far Can Infrared Saunas Go for Arterial Stiffness in Adults With Obesity?

Co-Author(s): Emma Reed, John Halliwill, Christopher Minson

Introduction: Obesity is associated with elevated cardiovascular disease risk due to increased arterial stiffness. Passive heat therapy has been shown to reduce arterial stiffness, which can be determined by pulse wave velocity (PWV). However, it is unknown whether repeated far-infrared sauna bathing is also effective at targeting arterial stiffness in individuals with obesity. Purpose: To test the hypothesis that repeated far-infrared sauna bathing would reduce PWV in individuals with obesity. Methods: We recruited 6 individuals (5 men, 1 woman, age: 35±9 years) with obesity (BMI 35.8±3.2 kg/m2) who were randomly assigned to the heat therapy (n=4) or time control (n=2) groups. The heat therapy group completed 30 far-infrared sauna sessions (54±2°C) for 43±4 minutes within 9 weeks. The time control group maintained activities of daily living. Arterial stiffness as quantified by carotid-femoral PWV via applanation tonometry (SphygmoCor® XCEL). PWV was measured before heating (PRE) and after 30 sauna sessions or 9-10 weeks of time control (POST). Results: There was no effect of time (p = 0.9123), group (p = 0.5487), or group x time interaction (p = 0.1535) for pulse wave velocity at PRE vs. POST for Control (6.7±0.9 vs. 6.3±0.8 m/s) or Heat (7.2±1.5 vs. 7.5±1.9 m/s). Conclusions: These data indicate that 30 sessions of far-infrared sauna sessions did not reduce arterial stiffness in individuals with obesity.

**Dean, Gideon**
University of Oregon
Mentor(s): Leah Middlebrook
Oral Panel Voices and Visions: Identity and Culture in Transition

## Footing the Bill: investing in gender equity in women's football in Latin America

This project examines the potential relationship between contemporary investment in gender equity projects and historical investment in women's and girl's football in Latin America. Focusing primarily on two case

studies of Argentina and Colombia, this project asks: what do differential investments in developing the women's game tell us about the role(s) these two nations imagine for girls and women in the social landscape of their countries? What does women's football mean for conceptions of gender in both countries, and Latin American societies in the broader sense?

Football is often studied as a site of nation-building and state-building. While race and class have been central themes in this literature, considerably less attention has been paid to football as a gendered issue. Governments have invested in the men's game, mobilizing football-loving macho national identities to divert attention from entrenched socio-economic and racial inequalities. Scholarly works have drawn attention to the football stadium as a theater for racial and class struggles across the continent. However, insufficient attention has been paid to how football's development reproduces strict gendered visions of nation and culture. What does it mean for nation-building processes through sport when women are simply regarded as adoring fans rather than players?

**Deas, Keane**
**University of Oregon**
**Mentor(s): Calin Plesa, Sayandeep Gupta**
**Poster #94**

## Large scale expression and mapping of antibodies in Escherichia coli

**Co-Author(s): Calin Plesa, Sayandeep Gupta**

Antibodies are a class of proteins produced by the immune system in response to foreign invaders such as bacteria, viruses, and cancer cells. The enormous binding variability of these proteins has made them essential tools in medicine, with applications ranging from diagnostics to disease treatments to autoimmune disorders. However, the production of antibodies is a costly and time-consuming process with limited throughput, creating a bottleneck in therapeutic advances. We aim to enable a multiplexed antibody generation method using scalable technologies for gene synthesis, library-on-library screening, antibody generation, and in vivo protein-protein interaction(PPI) assays. To reach this goal, we created a heterologous, high throughput expression system, conducting proteome-scale tests of cross-reactivity and affinity using a split version of the dihydrofolate reductase (DHFR) enzyme to allow the generation of antibodies against all potential antigen targets in a target proteome. This construct utilizes two complementary fragments of the DHFR enzyme fused to a pair of candidate proteins. If PPI occurs, the DHFR fragments associate, reconstituting their function and conferring resistance to Trimethoprim. Combined with efficient assembly sites and inducibility, this platform offers high throughput when integrated with large-scale library-on-library Trimethoprim selection screens, coupling cell growth to protein-protein interactions.

**deCalesta, Rogan**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
KIDD Creative Chronicles

## Saint Elijah

"Saint Elijah" is a twenty-page work of creative fiction written for the Kidd Creative Writing Undergraduate Workshop program. It was written in my second quarter with the program and explores themes of homosexuality and Catholicism, subjects that feature prominently in my creative fiction work. Being raised Catholic as a gay man inspires me to write the kind of exploratory fiction that I would have loved to read as a younger person, and "Saint Elijah" is a reflection of my interest in the joys and sorrows that LGBTQIA+ people feel, especially in relation to religion. The story is set in the Shenandoah mountains and follows the budding relationship between Elijah, a lonesome farmer whose father has shipped off to Vietnam, and a stranger who appears on his property lost and lacking a name. It is my goal that this piece evokes introspection on the interconnected nature of religious trauma and queer love for those who are a part of both of those worlds.

**Deibele, Charlotte**
University of Oregon
Mentor(s): Ari Purnama
Poster #222

## Literature Review of the American Cinematic Portrayal of Asian Male/White Female Relationships

Asian men in media are often portrayed as undesirable, which reflects and perpetuates real world racism. This leads to interracial romances in cinema between Asian men and White women (AMWF) to be historically low in terms of representation in the number of films and studies. These studies have often not been updated for several decades or focus only on a handful of films. Thus, in order to widely examine these portrayals, this article conducts a literature review of scholarly writing on the history and depictions of primarily American AMWF cinematic portrayals from the 1910s up to the present day. The studies concern both films and television shows, as well as both individual films and categories such as martial arts films. The article found that these relationships are often defined by absence, in that Asian men are often portrayed as undesirable or threats to be eliminated instead of true lovers. This portrayal is grounded in historical socioeconomic fears and relationships to white masculinity. Some other key trends include the depiction of contradictory traits such as being asexual and rapists, or desiring and being unable to achieve assimilation, and the containment framework that advocates for the policing of racial-national boundaries and the impossibility of interracial relationships. This article helps better understand how various negative aspects of AMWF relationship portrayals have continued, and how this continues reflecting real world attitudes.

**Deivanayagam, Nithi**
University of Oregon
Mentor(s): Judith Raiskin
Poster #213

## Women's Empowerment on Lesbian Lands: Challenging Gender Norms

Women throughout history have stood in the face of inequality, usually due to gender stereotyping and biases. This research goes into the women's experiences at WomanShare, a lesbian land community in Southern Oregon, to understand how their diverse skills, commitment to education, and mentorship dynamics contribute to their success in communal living and foster a culture of empowerment. By working together to learn, teach, and carry out roles that were traditionally held by men, women at WomanShare were able to create a space of individuality and feminism. The research draws on primary sources, including interviews and writings from community members, portraits, and academic sources that contextualize the feminist movements of the 1960s and 1970s.

**Depasquale, Jessica**
University of Oregon
Mentor(s): Judith Raiskin
Poster #210

## Joan Acker's Work in Gender Equality

This project is meant to reflect not only Joan Acker's past work on the strive for equality within the workforce and paid wages but also present how little our society has made progress. Reflecting on the fact that women were not allowed to open personal bank accounts until 1974 but were allowed to work, this means their money would go to their husbands or the males in their family. However, even if these women wanted the funds to live alone and support themselves, were they truly making enough to be sustained? Additionally, could they receive the jobs they were qualified for, even if it was in a male-dominated field?

**Der, Camilla**
University of Oregon
Mentor(s): Kaylee Meyers, Keat Ghee Ong
Poster #99

## Development of a Pediatric Breathing Model System for Stimulating Tracheostomy Tube Emergencies

Co-Author(s): Kaylee Meyers, Keat Ghee Ong

Infants and children who require a tracheostomy tube for prolonged breathing support experience a wide range of complications that can lead to detrimental and even fatal effects. Since tracheostomy tubes prevent patients from verbally communicating, oftentimes caregivers are unaware when there is a problem. Consequently, this leads to accidental emergency events. To better indicate emergency events, we are developing a sensor that will be incorporated into a universal tracheostomy tube that can detect when there is an issue such as an obstruction or accidental decannulation. In order to test the sensor, a breathing model system is required to mimic breathing rates and measure various stimuli. This specific project aims to design a sensor accessory device and conduct research to aid in the development of a pediatric breathing model. By configuring sensing circuitry, designing circuitry housing, and testing the device for data collection, a sensing device can be developed to validate the breathing model system. Data collection is ongoing for this project, but we expect that the sensing device will be able to verify the correct carbon dioxide, thermal, humidity, breathing rate, and breathing volume output from the breathing model. Tracheostomy in children is a global issue and continues to be an ongoing field of study. This project will contribute to this continuous research and make strides in mitigating the detrimental effects of tracheostomy emergency events in children.

**DeRego, Elliana**
University of Oregon
Mentor(s): Sarah Ebert
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Music's Impact on Workouts; Mental Benefits

Listening to music while working out has benefits to improving how you feel while exercising. Being involved in the gym and our love for being active is what has inspired us to learn about effective ways to workout in a healthy form. In the research we conducted over the span of a month, we have achieved our goal to gain a deeper insight and find reasoning in how music is capable of enhancing our mental performance when it comes to being active. We hope that our project will provide a new sense of knowledge when it comes to listening to music and why we feel as though listening to music is a barrier for a safe workout environment as

well as a motivator. Working out or being active is a big part of our discourse community here at the U of O so bringing awareness as well as a new profound love for physical activity is a big accomplishment. Our primary findings consist of how different genres of music have the ability to impact many unrecognizable concepts such as positive association, distraction from discomfort, increased enjoyment, and reduced perception of effort. These effects prove how music is a great thing to incorporate in any physical activity, and anyone's preference can make a difference. We have known and had the opportunity to learn more about why music makes our workouts better and much more motivating. Listening to music is a healthy way to find natural motivation and improvements when it comes to physical exercise.

**DiFini, Chelsea**
**Lane Community College**
**Mentor(s): Robert Schofield**
**Works in Progress: Lightning Rounds**

## Precision in Ant Dissection and Measurement: Insights for Bio-Physics and Medical Applications

This research explores the effects of mandible wear on the behavior of leafcutter ants. As the mandibles of these ants dull with use, a noticeable shift in behavior is observed from cutting leaves to roles in transportation and colony defense. This adaptive strategy highlights the critical role of tool condition in animal behavior and has broader implications for understanding the evolution of material use and behavioral flexibility in response to physical wear. By examining the shift in behavior from leaf cutting to alternative tasks such as material transport and colony defense as their mandibles dull, this study not only highlights the ants' remarkable adaptability but also their contribution to the ecosystem's dynamics

This research uses precise measurements of various ant components using ImageJ software, mirroring the precision required in surgical practices and medical image analysis. My time in the lab, preparing me for a future in medicine. Each dissection and measurement have not only revealed insights into the resilience and adaptability of these small creatures, but has also honed my skills in precision, attention to detail, and analytical thinking. This research sheds light on the complex survival strategies of leafcutter ants, specifically how mandible wear–a seemingly minute aspect of their existence–fundamentally alters their roles within the colony.

**Dobson, Maggie**
University of Oregon
Mentor(s): Hannah Cutting-Jones, Gantt Gurley
Poster #206

## Coffee and Culture in the Ottoman Empire

Have you ever wondered why we drink coffee? The historical answer to that question lies in the coffeehouses of the Ottoman Empire. Coffee, native to Ethiopia, spread throughout the Ottoman Empire in the 16th century and quickly became a mainstay of Ottoman culture. Recent scholarship on the topic has blown open traditional stereotypes and European metrics for understanding modernity in the Ottoman Empire. This project continues that trend by raising awareness and arguing for a shift away from Eurocentrism when studying this topic. This project, an Honors College thesis, explores the complexities of Ottoman coffee culture through research represented by a digital exhibit. The online exhibit, built on extensive historiographical research, challenges the traditional thesis format by being both educational and accessible to a wider audience. Public perception of the Ottoman Empire is often limited, but public history projects like this one can help us connect with history and learn more about ourselves. Viewers will be able to learn and connect with the history of Ottoman coffeehouses in a curated and self-guided digital environment. They can learn more about the history of the Ottoman Empire and how religion, politics, and leisure combined in a new way in these coffeehouses.

**Dorofeev, Christina**
University of Oregon
Mentor(s): Laura Jeanty, Kehang Bai
Poster #126

## Examining Electronic Configurations in ATLAS Pixel Detector for Phase-II ITk Pixel Upgrade

Co-Author(s): Laura Jeanty

The Pixel Detector is a critical component of the ATLAS experiment, providing precise tracking information for charged particles produced in high-energy proton-proton collisions. To increase the potential of rare processes occurring and the precision of measurements of these interactions, the Large Hadron Collider (LHC) will undergo a Phase-II upgrade to increase the machine luminosity and improve detector performance. As part of this upgrade, the current Pixel Detector will be replaced with an all-silicon tracking system to address the expected increase in particle rate, hit occupancy, and radiation exposure. Unlike the current Pixel Detector, the front-end electronics for the new ATLAS ITk detector will not have the capability to disable the readout of individual, isolated, low charge hits not consistent with primary Minimum Ionizing Particles

(MIPs). To analyze these isolated hits, a unique run was taken at the start of LHC Run 3 with altered Hit Disc Configuration (HDC) settings. This electronic setting affected the registration of small hits, causing them to be either clustered with large neighboring hits or recorded individually and not accounted for in bunch crossings containing large hits. Results indicate a slight increase in occupancy with the altered setting, but overall, the increase is minimal, suggesting that these hits do not significantly contribute to the detector readout, particularly if the measured occupancy represents an upper bound on the expected value.

**Dougherty, Alisa**
University of Oregon
Mentor(s): Sarah Wald
Poster #223

## The Racism Hidden Behind Love and Lust in The Twilight Saga

The racism embedded in The Twilight Series is masked by its love story, and teenage obsession with werewolves, vampires, and shirtless men. The portrayal of Indigenous people in the Twilight series reinforces negative stereotypes through white supremacy, and popular myths surrounding Indigenous peoples such as the frontier myth, and the myth of primal purity. By analyzing the ways in which Indigenous people are portrayed in the series through these lenses, especially in comparison to the portrayal of those character's white counterparts, one can evaluate how these myths and stereotypes drive the narratives of the story. The portrayal of the Indigenous people of Twilight paints them as animalistic and uncontrollable, placing them in a cultural zoo in which they are ostracized physically and socially. White supremacy places them as the inferior group of the story, and idealizes the white vampires to be the image of perfection. This portrayal not only has impacts within the scope of the story, but perpetuates these negative stereotypes for real life Indigenous people, leading to continuous racism and oppression as a result. This is just one example of the ways in which Indigenous people are portrayed and misrepresented in popular media as a driver for the continuation of systemic racism against their communities.

**Dougherty, Caitlin**
University of Oregon
Mentor(s): Jonathan Davis
Poster #33

## The Impact of Early Childhood Education and Care on Labor Market Participation and Gender Equality

This study examines the impact of early childhood education and care (ECEC) policies, such as universal preschool, on labor market participation and gender equality in the United States. Prior research on Denmark

and other countries with a more focus on universal welfare has suggested that improving access to affordable, high-quality ECEC can boost maternal employment, particularly among disadvantaged populations, and help reduce gender gaps in the labor force.

Using data from the IPUMS CPS, this study will conduct a literature review and regression analysis to investigate the relationship between ECEC through the preschool for all proxy and outcomes like labor force participation, poverty status, hours worked weekly, hourly wage, and overall income. The goal is to provide empirical evidence on whether ECEC policies can serve as an effective tool for decreasing economic inequality and promoting greater gender equality in the labor market.

While the main findings are still in progress, this research is expected to contribute to the policy debate around the societal benefits of investing in early childhood education and care infrastructure. The results could help inform decisions about the design and targeting of ECEC programs to maximize their impact on improving labor market outcomes and reducing disparities.

**Dougherty, Luke**
**Umpqua Community College**
**Mentor(s): Mick Davis**
**Oral Panel SiMuLaTiON: Discussions on simulations and chemistry**

## Four different coding models simulating oscillatory and rotational motion through VPython

In this presentation, we will show to the audience four different physics simulations/animations including damped oscillation, 2D transverse waves, inelastic collisions, and angular momentum. We will explain our code to the audience, then answer questions and accept input suggestions for our simulations/animations from the audience.

Luke: A simulation of a mass and spring system that oscillates in air under the forces of gravity and drag using a numerical/incremental method of solving the differential equation that would model the system.

Zack: An animation that shows how a transverse wave propagates outwards on an array of spheres using selected amplitudes and wave speeds to calculate each sphere's position over time.

Rhett: A simulation of oscillatory motion of a mass connected to a spring affected by a friction coefficient due to the surface the mass moves on. A graph of velocity shows the movement of the mass, and the affect friction has on its velocity.

Jazmin: A simulation of off-axis impact between a sphere and a rectangular shape to demonstrate conservation of momentum. Observers will be able to change different variables, such as mass and intel speed, to investigate the resulting collision.

**Downing, Jo**
University of Oregon
Mentor(s): Emily Larson
Poster #173

## Systemic Cardiovascular Support of Blood Pressure During Recovery from Passive Heat Stress

Co-Author(s): EA Larson, BW Kaiser, EL Reed, KSS Abotts

Passive heat stress may promote a valuable post-heating recovery period marked by sustained reductions in blood pressure. The mechanisms supporting blood pressure regulation during the post-heating recovery window are still poorly understood. PURPOSE: The purpose of this study was to characterize and compare the blood pressure and systemic cardiovascular responses which accompany recovery from a single session of whole-body, passive heat stress in young and older individuals. METHODS: Mean body temperature, blood pressure, cardiac output (open circuit acetylene wash in), and heart rate were assessed in 16 young (8F, 22±4 yrs) and 9 older individuals (6F, 65±4 yrs) at baseline, at the end of 60 min of passive heating, and for 120 min of normothermic recovery. RESULTS: Passive heating promoted similar elevations in mean body temperature, systemic vascular conductance, and cardiac output between age groups. Contrary to our hypothesis, a single session of passive heat stress did not promote a sustained reduction in blood pressure in young or older individuals. Furthermore, the systemic cardiovascular responses which accompanied acute heat stress were transient and did not persist beyond 1 h of post-heating recovery in young or older individuals despite continued elevations in core temperature. CONCLUSIONS: Future research should evaluate alternate avenues by which acute heat exposure might contribute to the beneficial cardiovascular adaptations which accompany heat therapy.

**Durazo-Garcia, Lilieauna**
University of Oregon
Mentor(s): Ben Hutchinson
Poster #138

## Analyzing fMRI Evidence of Vertical Memory Patterns in the Brain

This thesis aims to fill holes in the neuroscientific evidence and validate the hypothesis that by using fMRI we may be able to track activation in our ROI in which our brains respond differently to previously encountered stimuli and novel stimuli, independent of the stimulus's true mnemonic history. Leveraging a large-scale fMRI dataset and employing multivariate data analysis techniques, we seek to determine whether individual memories can be identified based on brain activity patterns. Through univariate analysis, we anticipate observing significant differences in brain activity corresponding to the perception of

previously experienced stimuli, independent of the stimulus's true mnemonic history. The emergence of such differences would signify a promising method for memory detection. Additionally, we predict an accumulation of activity in specific brain regions associated with vertical memory rather than subjective memory. Notably, the ventral temporal and angular gyrus are identified as potential focal points for detecting vertical memory. The implications of our findings extend to forensic and legal domains, where the application of fMRI-based memory detection methods is increasingly contentious. By empirically evaluating the merits and limitations of this approach, our study contributes to the ongoing discourse surrounding the use of neuroscientific evidence in legal proceedings.

**Easton, Anna**
University of Oregon
Mentor(s): Jeff Diez, Sarah Erskine
Poster #80

## Effects of Warming on Seed and Early Life Traits of Two Prairie Annuals Across Variable Environments

Co-Author(s): Sarah Erskine, Jeff Diez

A species' ability to reproduce is directly impacted by climate warming but effects may carry over to the next generation via seeds produced during warming events. Building on growing evidence that warming affects seed traits, we investigate if such effects vary between species, throughout the timing of seed production (phenology), and along abiotic gradients.

We planted 2 annual forbs, Clarkia purpurea and Collinsia grandiflora, at 8 sites along an abiotic gradient in paired warmed and ambient plots and collected early and late produced fruits from each species at all plots. We measured seed mass and number of seed per fruit and then planted seeds to measure germination rate and seedling root:shoot ratio.

When averaged across sites, warming did not impact any of our measured traits except for C. purpurea's number of seeds per fruit. Likewise, seed phenology only affected the number of seeds per fruit and seed mass for C. purpurea. However, warming and phenology had strong variable effects on seed traits among sites for both species. Germination was unaffected by either treatment while both treatments impacted the seedling root:shoot ratio of C. grandiflora.

Our results highlight how the effect of warming on seeds can be extremely variable across small abiotic gradients and phenology. This variability suggests that future studies investigate climate effects at local levels particularly when trying to predict population dynamics of annuals and to inform restoration.

**Ereso, Carlyn**
University of Oregon
Mentor(s): Katie Lucernoni
Poster #179

## Gut permeability as a potential modifier of iron regulation in female athletes

Co-Author(s): Katie Lucernoni, Samantha Chacon, Christopher Minson John Halliwill

**Introduction.** Iron deficiency is common in endurance athletes and can be detrimental to athletic performance. However, limited research has investigated iron regulation specific to female athletes. Females tend to have increased gut permeability issues, and to date, no study has investigated how this may impact iron regulation. This study investigates the iron regulatory response to altered gut permeability during exercise. METHODS. Eight healthy, non-anemic females (age: 30.43 ± 11.2 years; BMI 23.32 ± 2.52 kg/m2; VO2max 56.24 ± 9.33 mL/kg·min-1) completed three exercising visits: a VO2max test; two visits of 45-minutes running at 70% VO2max in a hot (35 ºC at 40% humidity) and cool (11 ºC at 40% humidity) environment. Core body temperature was monitored throughout exercise. Serum blood samples were collected pre-, immediately-, 1hr-, 2hr-, and 3hr-post exercise for future analysis of endotoxins and iron regulatory hormone. **Results.** Our preliminary findings demonstrate that our exercise model resulted in elevated core temperatures to our target threshold (Δ2.1 ± 0.27 ºC in hot; Δ0.95 ± 0.38 ºC in cool). Planned analyses will be done to determine gut permeability and the relationship to iron signaling. **Conclusion.** Initial data suggests elevated core body temperature in the hot condition will result in presence of endotoxins. Endotoxins in circulation could lead to a negatively augmented iron regulatory response. We plan to assess the iron regulatory profiles in the future.

**Escorcia-Nuñez, Angel Saul**
University of Oregon
Mentor(s): Gabriela Martinez, Lynn Stephen
URS Film Screening

## Raices Latinas / Latino Roots

Co-Author(s): Gabriela Martinez, Lynn Stephen, Sonia De La Cruz Lodi Castillo

Sharing my story was a fundamental part of being the first person in my family to be accepted into higher education. Both of my parents came to this country from Mexico in search of a better life and I became the only child to be born in the United States. As a mixed status family, we always lived with the fear of being deported and separated. This resulted in consciously keeping a low profile and trying to blend in. I realized how negatively portrayed Latinos are in this country and I want to change the inaccurate images of my people. Now that I am graduating from the SOJC at UO, I want to use my storytelling skills to create platforms

and uplift the voices of Latinos and share authentic stories de nuestra gente. Having participated in the Latino Roots course myself, I know the value and impact it has on students land our community. I want to inspire others to be proud of their story and have the confidence to share it.

**Espino-Marquez, Isabela**
University of Oregon
Mentor(s): Hayami Nishio, Ian Greenhouse
Works in Progress: Lightning Rounds

## Inhibitory Insights: Exploring the Dynamics of Motor Control

The Action Control Lab continues to explore the motor system, focusing on the motor systems associated with action preparation and inhibition via the motor cortex and other brain regions involved in movement inhibition. This research enhances our understanding of human motor control, especially how motor activity is suppressed during both unintentional and intentional movements. Currently, the lab is investigating motor inhibition on an individual basis using Transcranial Magnetic Stimulation (TMS) and Magnetic Resonance Spectroscopy (MRS), in both resting states and during tasks that engage specific and non-specific muscle groups. This approach allows for a detailed examination of neuronal behavior within the primary motor cortex (M1) during the preparation and cessation of actions. Overall, the lab aims to better understand how individuals can suppress planned actions after they have been planned, assessing this capability through the excitability measured across the corticospinal pathway.

**Esterling, Zachary**
University of Oregon
Mentor(s): Matthias Vogel
Poster #232

## Nagorno-Karabakh Border Conflict

At this time, both nations of Armenia and Azerbaijan are in conflict both politically and militarily regarding a region called Nagorno-Karabakh. The two nations are fighting for various reasons, including historical claims and ethnic presences. These skirmishes make the territory extremely volatile and difficult to enter or leave, creating a unique issue. Because the region's borders lie entirely within Azerbaijan, a nation that stands in opposition of it's existence, the only way for Armenian aid to reach Nagorno-Karabakh is through designated corridors, of which there is only one. So how did this territory come to be, and why are it's borders the way that they are?

**Estes, Olivia**
University of Oregon
Mentor(s): Michael Wehr, Aldis Weible
Poster #52

## Sex Differences in Alzheimer's Pathology in the 5XFAD Mouse Model

Co-Author(s): Alexa Wright

Alzheimer's disease (AD) is the most prevalent cause of dementia in older populations, with women exhibiting a significantly higher prevalence of AD around the world. One approach to understanding the mechanisms contributing to these sex differences is to ask whether they occur in mouse models of AD, and if so, if they share key properties with sex differences in human AD. Our central research question is whether there is a significant sex difference in the amyloid-beta-42 (Aβ-42) plaque load and gap detection performance in 5XFAD Alzheimer's model mice. We hypothesized that female AD model mice would have a greater Aβ-42 plaque load compared to males. We also hypothesized that female AD model mice would show greater deficits in gap detection compared to males. In the first filial (F1) generation of 5XFAD mice, our preliminary data suggests a sex difference in AD pathology in which females had higher Aβ-42 plaque load than males. In the preliminary data for the second filial (F2) generation mice, this sex difference does not appear to be reproduced. Preliminary data for gap detection suggests that the male and female F1 generation 5XFADs had significant differences in detecting certain gaps compared to their sex-matched wild type controls. We are not sure what may have caused the possible difference in results between the generations of the 5XFAD mice, and further investigation could help develop a stronger understanding of the sex differences present in AD pathology.

**Fale-Olsen, Ashley**
University of Oregon
Mentor(s): Ulrick Casimir
Oral Panel Voices and Visions: Identity and Culture in Transition

## L'Homme Fatal: Redefining Gendered Archetypes In Noir Cinema and Writing

The purpose of my research is to define and demonstrate instances in noir literature and films when the archetype of the homme fatal is used. The femme fatale is a well-known character archetype, specifically within the Noir genre, however, there is a male version, l'homme fatal. The femme fatale is often characterized by being the object of male attention, a seductress, and is detrimental to the male character who becomes ensnared by her.

This character trope is dependent on gender, it relies on the dangerousness of female sexuality. This presents a very heteronormative and misogynistic character that has been perpetuated throughout many

types of art, including noir. The male version of this archetype is not often brought up, but the trope of a dangerous man is present in noir writing and films. L'homme fatal shares some of the same characteristics as the femme fatale, but also has various differences. This dangerous and seductive man is found more often in cases where the characters have homosexual tendencies, or with female main characters.

Through certain primary texts and films, the character of l'homme fatal will be defined and gain more specifics to the pattern of this character type. Secondary texts about these primary sources will be used to find critical analysis and add to the central point of research around the archetype. The conclusion of the research will provide a clear definition of the character traits of l'homme fatal in the noir genre and the

**Farrow, Caleb**
University of Oregon
Mentor(s): Peter Ralph, Victoria Caudill
Poster #76

The Story of Rough-Skinned Newts and Garter Snakes: Coexistence in a Coevolutionary Arms Race?
Coevolution can result in strikingly specialized and extreme traits. Across the Pacific Coast of North America, rough-skinned newts can carry lethal levels of tetrodotoxin. A predator of the newts, the common garter snake, has evolved resistance to this toxin. We study the interactions between these two species from an eco-evolutionary perspective to explore how species with constantly changing and antagonistic traits can coexist with one another, using spatial simulations and mathematical modeling. Specifically, we used simulations to explore the effects that the frequency at which the species interact and the overall levels of toxicity and resistance have on coexistence. We observed coexistence without coevolution when the species interacted less and when toxicity and resistance were low, and coexistence with coevolution when the species interacted at a moderate frequency and toxicity and resistance were high. To better understand these overarching patterns seen in our simulations, we developed a deterministic mathematical model, which yielded patterns similar to those we observed in our simulations. This work clarifies the values of ecological parameters under which newts and snakes can coexist, and highlights the role of coevolution as an intermediary between indifference and mutual annihilation.

**Field, Sarah**
University of Oregon
Mentor(s): Robert Mauro
Poster #26

## The Decision-Making Process Underlying Expatriate Experience Acceptance

This exploratory study examines the decision-making process used when people consider moving abroad. We explore the following questions: (1) Do those with prior expatriate experience value different factors than

those without experience? (2) Which factors are most important in the decision-making process? (3) Does the process change when considering a partner or children? We employed two surveys with a combined 66 participants. The first asked people with expatriate experience to recall the decision process they used when moving abroad for the first time. The second survey asked full-time employees without experience living abroad to consider a hypothetical situation in which they are asked to move to another country. Participants were recruited through Facebook groups for expatriates and professionals, and through personal contacts. We anticipate that participants with expatriate experience will value similar factors to those without experience; personal factors will rank higher in importance than other factors; and those with partners or children will consider additional factors compared to those without. This topic has real-world implications in professional settings where employees are sent abroad, as many reject these experiences. We hope that employees will feel more comfortable accepting these experiences if they have a better idea of what they entail and the factors to consider.

**Finke, Maxwell**
University of Oregon
Mentor(s): Alexander Dracobly
Poster #236

## The Experience of World War One

Our research project is based on the book "The Beauty and the Sorrow" by Peter Englund. Englund's novel takes personal narratives of twenty individuals who were impacted by the first world war, all from many different backgrounds and all impacted in very unique and different ways, and allows the reader to imagine what it was like to exist day to day during this global conflict. As a class, we took on the task of finding even more of these narratives to emulate Englund, and to put ourselves in the shoes of these very real people who experienced such a momentous, life-altering historical event.

**Fischer, Mariam**
University of Oregon
Mentor(s): Sedona Epstein, Frances White
Poster #184

## Captive Audiences: Evaluating the Effects of Zoos on Bonobos

Co-Author(s): Sedona Epstein

The ethics of captive environments is a prominent and debated topic in animal science. Bonobos (Pan paniscus) are a species of hominid closely related to humans and have a unique social structure. They form fission-fusion matriarchal groups in which social currency is gained through coalitions. The field research

for this project was conducted at the Milwaukee County Zoo in Wisconsin, home to a captive population of 18 bonobos– making it one of the only institutions with a group this large. Conducting focal observations on individuals and using software to record the behaviors allowed for comparison and a better understanding of social dynamics. Captivity, while trying to effectively mimic the wild, is still artificial, and social groups are handpicked by staff members of the zoo. This is intended to discourage conflict within groups, but due to the nature of exhibits, there is no escape from conflicts that do arise. We found that intragroup conflict was low in intensity and less frequent indoors, while intergroup conflict was more common, especially in connecting exhibits where groups had visible access to each other. Aggression towards the public also occurred moderately, especially indoors. Analyzing data collected showed instances of conflict or agitation that would likely not have occurred in the wild due to natural fission-fusion without enclosures reinforcing group dynamics. This project aims to compare results found in the data to known instances of behaviors in zoos.

**Fisher, Logan**
University of Oregon
Mentor(s): Keli Yerian, Bibi Halima
Poster #226

## Is a student-authored textbook possible? Open Pedagogy says yes!

The Open Educational Resources movement is pushing faculty to adopt free, open-source course materials to reduce the cost of materials for students. This project addresses this call by engaging students to write an open-source course textbook themselves! This student-centered, grant funded project includes five undergraduates who are creating ten multimedia, interactive chapters for LING 144, Learning How to Learn Languages. All of the students recently took this course, which focuses on theory, research, and strategies for learning languages, including languages that are less commonly taught, heritage languages, and indigenous languages that are in danger of disappearing. With the help of a Graduate Employee as a project manager, students are creating the book over a period of six months (January-June) as a team in the platform Pressbooks, which hosts open-access materials. They have completed five chapters so far, with team members dividing up work on writing, illustration, case studies, and multimedia elements that showcase key concepts in the book. This book will become the main text for future offerings of LING 144 (which enrolls about 200 students per year) and will be a living document that future cohorts of students can annotate and update themselves for course credit. Team members will design and present a poster that highlights the purpose of the project, its platform, the content, and the processes of the teamwork.

**Fisher, Sophie**
University of Oregon
Mentor(s): Daniel Grimes, Beth Bearce
Oral Panel From Mind to Molecule

## Properties of Reissner Fiber Assembly and Signaling During Body Axis Straightening

Spinal conditions like scoliosis are highly prevalent. However, not much is known about how the spine develops its symmetrical shape or maintains its shape over time. Therefore, I used zebrafish to study early body straightening. In particular, I investigated the Reissner fiber, a proteinaceous fiber that sits in the zebrafish central canal of the spinal cord. It is primarily composed of the glycoprotein SCOspondin. However, other potential components of the Reissner fiber may act in axial straightening. Two of these candidates are Sponla and Sponlb. To test if these proteins are important in early axial straightening, I generated somatic mutants using CRISPR/Cas9 to knock out the genes that encode Sponla and Sponlb. I found that neither Sponla nor Sponlb were required for axial straightening, so they are not likely major players in body straightening. After examining Sponla and Sponlb, I further investigated the Reissner fiber by looking at the dynamics of Reissner fiber assembly, a largely unknown topic. To investigate this, I generated SCOspondin mosaic mutants using CRISPR/Cas9. In these mutants, the central canal of the zebrafish had some cells that could produce SCOspondin while some that couldn't. I found that Reissner fiber assembly relied on two factors. First, there had to be enough SCOspondin in the central canal above a threshold. I also found that the fiber could form in areas that lacked SCOspondin secretion, supporting a model of distributed assembly.

**Fleming, Catharine**
University of Oregon
Mentor(s): Sarah Cooley
Poster #198

## Analyzing Lake Variability in a Highly Dynamic Area of the Yukon Flats, Alaska Using Remote Sensing

This project seeks to identify patterns in lake variability in a highly dynamic area of the Yukon Flats in Alaska using remotely sensed satellite imagery. In the past decade, the launches of multiple satellites (such as the Copernicus Sentinel-2 mission used here) with high spatial and temporal resolution have provided a new avenue for remote sensing analysis. This allows for analysis of subseasonal variation in lake areas. Specific questions of this research include: how spatially consistent is the variability in water area? Why are certain lakes far less seasonally variable than others? How consistent is the temporal and spatial variability in the water area from year to year? What climatic and physiographic factors control the spatial and temporal variability in water area? To carry out this analysis, contrasts between the spectral responses of water and

surrounding vegetation were enhanced through a Normalized Difference Water Index. Water fraction maps are generated based on the values of the index. These water fraction maps are used to answer research questions. Previous work has limited analysis capacity due satellite coverage and computing ability, involving a small number of images from year to year. This project is part of the work that leverages higher temporal and spatial resolution imagery to analyze lake area dynamics with more detail.

**Ford, Madeleine**
University of Oregon
Mentor(s): Justin Svendsen
Poster #100

## Characterization of VEGF Controlled Delivery Systems for Use in Complex Wound Healing

Co-Author(s): Justin Svendsen, Marian Hettiaratchi

Angiogenesis, regeneration of the vascular network, is critical for restoring nutrient delivery and waste removal at the site of injury. Immediately after injury onset, a variety of cell signaling proteins, including vascular endothelial growth factor (VEGF), stimulate the growth of new blood vessels in the site of injury. However, extreme injuries can alter or completely inhibit the secretion of VEGF in the wound, resulting in poor vascularization. To address this, I aim to develop a biomaterial delivery vehicle that can control the dosage and rate of delivery of VEGF at a wound site. By applying small, bioengineered protein domains–called affibodies–which reversibly bind to VEGF with variable affinity strengths (low, medium, and high), we can regulate the release rate of VEGF from a hydrogel delivery vehicle. I have used biolayer interferometry to determine the affinity strengths between VEGF and VEGF affibodies, and conjugated these affibodies to PEG-maleimide hydrogels to test how affibody affinity strength modulates VEGF release rates. I have demonstrated the controlled release of VEGF from hydrogels conjugated with affibodies over 7 days, which is a therapeutically relevant timeframe for angiogenesis. Moving forward we plan to use our platform to deliver VEGF to human cell models and rat vascular micro fragments. The proposed work will develop a therapeutic platform for temporally regulating VEGF delivery, providing new tools for the treatment of damaged vasculature.

**Foster-Green, Aidan**
University of Oregon
Mentor(s): Carmen Watkins
Poster #81

## Facilitative Interactions in Plant Community Ecology

Co-Author(s): Carmen Watkins, Lauren Hallet

Interactions between plant species are traditionally viewed as static and competitive. However, recent research suggests that facilitative interactions are also prevalent, contingent on environmental and biotic conditions. I investigated how a facilitative interaction varies based on facilitator density and water availability. I hypothesized that facilitation would be maximized at an intermediate facilitator density under high water availability, and at a lower density under low water availability. I grew two plant species: Bromus hordeaceus (BRHO) and Acmispon americanus (ACAM) in a greenhouse at four densities and two water levels (low, high). I measured BRHO biomass 1- and 2-months post germination and measured leaf tissue CN content of the 2-month-old seedlings. I found that the interaction changed with water level, where at low water BRHO experienced a neutral interaction from ACAM regardless of density, and at high water facilitation peaked at an intermediate ACAM density and became competitive at the highest density.

This research should improve our understanding of dynamics between BRHO and ACAM in early life stages and under the effects of drought stress. Since BRHO is invasive in North America and grows in proximity to ACAM in the wild, this knowledge may be important for conservation/restoration work. My results suggest that in dry years, ACAM may not have any effect on BRHO, but in wet years intermediate ACAM presence may provide a boost to BRHO populations.

**Fox, Sof**
University of Oregon
Mentor(s): Richard Emlet
Poster #67

## One Nudibranch One Sponge? Using Genetic Barcoding to Analyze the Rostanga pulchra Species Complex

The sea slug Rostanga pulchra, known as the Red Sponge Dorid, is commonly found in the intertidal of the Northeast Pacific, including along the Oregon Coast, though its range extends from Alaska to Panama. Rostanga can be found on orange sponges on which it feeds and lays its eggs. These sponges provide habitat, protection, and food, and have been shown to induce settlement of the planktonic larvae of Rostanga. Previous unpublished work has found that the species known as Rostanga pulchra is a species complex, and likely has three or more individual species on the Oregon Coast. Specimens were collected in Washington,

Oregon, and California and their DNA sequenced using the cytochrome c oxidase subunit 1 (COI) gene. Through this genetic barcoding, further evidence supporting the cryptic species complex has been found, with new specimens for the three operational taxonomic units previously identified. Further, sponge spicules were used to identify the sponge that individual nudibranchs were collected on, indicating that Rostanga spp. are found on multiple species of sponge. This study furthers our understanding of the species profile of Rostanga pulchra in the Northeast Pacific, and specifically in Oregon, as well as examines their connection to sponges, contributing to our understanding of the biodiversity of sea slugs and their behavior.

**Frainey, Nick**
University of Oregon
Mentor(s): Zachary Walbrun, Cathy Wong
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Aggregation and Excited-State Dynamics During Deposition of Copper Phthalocyanine Thin Films

Co-Author(s): Zachary Walbrun, Cathy Wong

Thin films of copper phthalocyanine (CuPc) show promise for use in organic photovoltaics (OPVs) due to their strong electron-donating abilities coupled with high degrees of thermal and chemical stability. CuPc is an inexpensive and commercially available dye which forms pyramidal nanoribbon meshes when solubilized in trifluoroacetic acid and cast as a thin film. This pyramidal morphology is ideal for application in OPVs as it allows for the intercalation of electron acceptor materials into the nanomesh void spaces. The resultant increased donor-acceptor interfacial area induces facile charge transfer. Traditional spectroscopic techniques have been able to measure the optoelectronic properties of static samples of CuPc in solution and as a thin film; we employ various time-resolved spectroscopies to measure electronic structure and excited-state dynamics during molecular aggregation. My in situ absorption measurements reveal a novel intermediate phase during thin film deposition with unique optical properties, and concurrent solvent mass measurements show a drastic slowing of the evaporation rate during this intermediate phase. We use single-shot transient absorption (SSTA), a novel spectroscopic technique, to probe excited-state dynamics of rapidly evolving systems. SSTA data collected during CuPc thin film deposition shows mysteriously high TA signal during the intermediate phase. These measurements reveal a molecular-level picture of what occurs during thin film formation.

**Frederick, Sonoma**
University of Oregon
Mentor(s): Shannon Peake, Tobin Hansen
Works in Progress: Lightning Rounds

## A Cultural Analysis of Puerto Rican Parenting Values

Parenting practices and values are essential in understanding children's developmental outcomes. During the first few years of life, a child's brain adapts as they are exposed to new stimuli, interactions, and environments. To achieve prosocial child outcomes, parents strive to create an environment that fosters learning and success. However, positive outcomes vary cross-culturally. Our cultural environment determines how we perceive the world and engage with others. Parenting questionnaires established in the United States are rooted in cultural values of independence and individuality. The existing literature that informs parenting theories and interventions comes from empirical data of primarily white American families (Donovick & Domenech Rodríguez, 2008). This is a problem because parenting strategies that yield positive child outcomes for white American families may not be universally applicable. Norms and belief systems can vary both within and between cultures. My research explores how cultural construct influence parenting values and behaviors by comparing how the results for Puerto Rican-identifying families differ from results generalized to all Latino families. I intend for this project to fill the existing gap in the literature by providing research focused on Puerto Rico's rich culture and unique familial structure. The data gathered in this study can contribute to future research on cultural adaptations of early intervention programs for Puerto Rican families.

**Frerichs, Bess**
University of Oregon
Mentor(s): Lisa Redford
Poster #181

## The function of um: An analysis of filled pauses in kindergarten-age children

Co-Author(s): Lisa Redford

Filled pauses (FPs), one-syllable words that convey no lexical meaning (such as uh and um), mark either high-level conceptual structure in speech (i.e., discourse) or floor-holding behavior related to word-retrieval problems. Previous research on adult speech has found that FP placement and duration within a silent pause interval correlate with their function–listeners use systematicities such as these to facilitate comprehension. This study compares FP duration and placement across 2 genres of speech produced by 10 adults and 10 children. The aims are (1) to replicate the pattern described in the literature around adult usage, and (2) to determine the extent to which children's speech follows this pattern. Preliminary results

indicate that children use FPs much less than adults, the linguistic context in which FPs appear in children's speech suggests planning or retrieval problems rather than discourse marking, and FP placement during speaking is less systematic than in adult speech. The study adds to an understanding of the interplay between cognitive processing in the speaker and linguistic marking for the listener in the acquisition of spoken language with implications for an egoistic-driven view of language development.

**Frerichs, Rose**
University of Oregon
Mentor(s): Sara Cotton, Frances White
Poster #44

## A new field method of collecting bonobo urine for estradiol hormonal analysis

We tested new methodology for non-invasive hormone analysis of primate urine samples. Collection of urine samples in the field is challenging when access to temperature-controlled storage is not available. We tested if urine can be dried onto filter paper and stored at room temperature for future analysis without a loss of information. This study used frozen urine samples previously collected from bonobos at the Columbus Zoo. We compared creatinine and estradiol measurements taken from our dried and rehydrated filter paper samples to previously collected hormonal data from the thawed frozen samples. We pipetted urine onto a 5mm piece of filter paper, dried completely, rehydrated the samples, and followed standard Arbor Assays kit protocols. We found that there is both a minimum quantity of urine needed to be dried on filter paper and a minimum hormonal concentration that can be detected. Linear regressions showed that the original estradiol and creatinine values were highly predictive of values collected from filter paper (F=49.49, p<.001; F=30.41, p<0.001). These results show that filter paper is a promising, convenient field methodology for urine sample collection. Our future research on this topic will be focused on further refining the methodology and ascertaining the effect of time on the dried samples with the hopes of being able to use this methodology to study urinary estradiol in future field studies.

**Frost, Amara**
University of Oregon
Mentor(s): Rachel Weissler, Michael Stern
Poster #233
Virtual

## Afro-Nording Raciolinguistic Landscapes

The Nordic countries, starting in the 2000s, began to shift away from using the term "race" and focused on other identifiers such as ethnicity, which has led to a disconnect between racialized terminologies and

their implications. This research examines racial language use in Nordic countries and explores key themes through a raciolinguistic approach to define race and how the ideas of race may influence language and use within this locale. Additionally, this research focuses on the Afro-Nordic experiences around racial language use in Nordic countries. Key themes that were found as a part of the research using academic texts were racial terminology, racial naïveté, and the denial of race. Using these themes, we explore sociolinguistic aspects around race, ethnicity, and identity and the implications of race.

**Fujimura, Finn**
University of Oregon
Mentor(s): Rori Rohlfs
Poster #19

## Optimizing Crisis Response: Anonymized CAHOOTS Case Narratives for Effective Resource Allocation

In today's data-driven world, safeguarding personal information is crucial. This research project focuses on developing an anonymizer script using Microsoft Presidio to protect personally identifiable information (PII) in case narratives. By anonymizing data sourced from CAHOOTS (Crisis Assistance Helping Out On The Streets), a city-funded service, we aim to train a machine learning model to categorize narratives into 4 assistance categories: behavioral, medical, both, or neither. This classification will encourage effective resource allocation.

CAHOOTS provides timely stabilization and assistance during psychological crises, operating on a hybrid model with both behavioral assistants and EMTs. Our collaboration with CAHOOTS aims to assess the efficacy of this model using natural language processing (NLP) and machine learning techniques. By analyzing anonymized case narratives, we intend to provide insights to enhance CAHOOTS' service efficiency and crisis response protocols. Once anonymized, the case narratives will serve as valuable training data for the machine learning model, enabling it to accurately categorize cases and support timely and effective crisis assistance.

Through this research collaboration, we seek to contribute to the advancement of crisis response strategies by using data-driven insights. By enhancing the efficiency of services like CAHOOTS, we can better support individuals experiencing psychological crises and promote safer communities.

**Fulton, Amiya**
University of Oregon
Mentor(s): Jessica Winders, Sara Bowman
Oral Panel Exploring Educational Environments

## A Comparative Review of the Evolving Resident Assistant Role at the University of Oregon

The role of a Resident Assistant (RA) is unlike any other student position in the university setting. It is complicated, nuanced, and increasingly complex as the needs and expectations of residents and RAs rapidly change in a post-pandemic era of residence life. To address these changing needs, the role itself has been forced to evolve. This thesis project is a comparative review of the Resident Assistant position at the University of Oregon (UO) and a further investigation into the role, its challenges, and its potential for improvement. This research explores how different institutions across the nation are implementing the RA role and how successful these various interpretations of the role could be executed at the UO.

This project seeks to contribute to a disparity in the existing literature surrounding the Resident Assistant role in the higher education and student affairs discipline. In a more specified sense, this research will provide an institution-specific review of the RA experience at the University of Oregon. By reviewing the existing literature, identifying current challenges and potential solutions, assessing the UO's current curriculum, reviewing other institutions' curricula, and collecting interview feedback, the research aims to provide evidence-based and institution-specific recommendations to the University Housing Department for improving the RA program.

**Gaash, Nitai**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #153

## EAA+BFR Therapy to Stimulate Pax7 Cell Proliferation and Promote Muscle Memory

Muscle memory refers to the phenomenon where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. Mechanistically, this is theorized to be due to myonuclei gained during training being retained with atrophy/disuse, enabling initiation of protein synthesis and muscle regeneration without waiting for new nuclei to form. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells; Pax7+) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will persist following four weeks of no treatment. Muscle biopsy cross-sections (7 μm) were

immunostained with antibodies directed at Pax7+ cells (satellite cells), laminin (for cell/fiber boundaries), and slow-type muscle fibers (MyHC I). Nuclei were labeled with DAPI. Images were captured with a Leica fluorescence microscope (DM4000B) equipped with a Leica DFC 360FX camera using a 20x/0.50 objective. We are currently analyzing tissue cross-sections to quantify Pax7 cell proliferation and central nuclei numbers, and degree of myonuclear accretion.

**Gach, Mary**
University of Oregon
Mentor(s): Rubi Ruopp, Ian Greenhouse
Poster #166

## Relationship of M1 GABA content to late-stage motor learning

Co-Author(s): Rubi Ruopp, Ian Greenhouse

Motor skills are cognitively controlled chunks of motor output strung into behavioral sequences with specific movements learned over time. Studies have emphasized early-stage learning, neglecting late-stage learning processes important for long-term performance improvement. Moreover, it's unclear how new actions are learned in the context of well-learned behaviors. Inhibition in the primary motor cortex (M1) may assist early motor learning by preventing interference with competing motor output. Additionally, higher M1 Gamma-aminobutyric acid (GABA) levels are associated with increased motor learning (King et al, 2020). We hypothesized M1 GABA assists learning novel motor sequences, even in developed skills that rely on well-learned processes. To investigate, we compared individual differences in the motor learning of novel sequences during a keyboard typing task with M1 GABA levels measured using magnetic resonance spectroscopy. Typing is a skill we learn later in development and is a good way to see if M1 GABA levels relate to previously developed motor skills. We predicted individuals with more M1 GABA would have fewer errors, increased movement speed, and faster movement initiation when typing sequences across repeated trials. This research will give insight into late-stage motor learning, can help optimize learning methods and improve the performance of individuals across various populations and contexts.

**Gano, Leah**
University of Oregon
Mentor(s): Jennifer Ablow, Jeffrey Measelle
Poster #41
Virtual

## From Womb to World: The Impact of Prenatal Maternal Stress on Executive Functions in Early Childhood

Co-Author(s): Jennifer Ablow, Jeffrey Measelle

Previous research has linked prenatal maternal stress with both positive and negative early life socioemotional outcomes. This study explores how prenatal maternal stress affects child executive functions–specifically inhibitory control, working memory, and cognitive flexibility, which are crucial for school success. From a larger longitudinal study, (N = 110) pregnant women were assessed using the Recent Life Events questionnaire, Beck Anxiety Inventory, and the Center for Epidemiologic Studies Depression Scale. Assessments of postnatal maternal stress and infant temperament were conducted at 5 and 18 months postpartum, using similar stress measures and the Infant Behavior Questionnaire and Early Childhood Behavior Questionnaire. Mental development was measured using the Bayley Scales of Infant Development II. At 5 years, children performed seven executive function tasks while mothers completed the Children's Behavior Questionnaire Short Form. In addition to postnatal maternal stress and infant mental development, child gender, family income, and race served as control variables. We anticipate that higher levels of prenatal maternal stress will significantly predict lower executive functions during early childhood, but will be moderated by child gender. Confirming these hypotheses could emphasize the need for interventions to mitigate prenatal stress, thereby shaping public health policies that support pregnant women and enhance developmental outcomes for children.

**Garcia, Gene**
University of Oregon
Mentor(s): Juan Eduardo Wolf
Oral Panel Voices of Resilience: Lessons in Race & Culture

## Recollections on the Historical and Current State of Mexican Ballet Folklórico in Oregon

"Recollections on the Historical and Current State of Mexican Ballet Folklórico in Oregon" came to be in response to my experiences in the Eugene/Springfield area as my quest for involvement extended past the superficial black/white racial dynamic of Oregon to an immensely rich Latinx culture and community. A black/white view of the state of Oregon works to erase and overlook the Mexican, and increasingly Latinx, experience within the state with some familial roots dating back to early 20th century seasonal and

permanent workers, the Bracero Program, and to the immigration wave of the 1990s that saw expanded family and women networks as Oregon presented an alternative to California as a place for settlement in the US that continues to this day. In short, Mexico and Mexican history has become ingrained into the history and communities of Oregon.

Yet, much of these social, cultural, and professional networks in Oregon have not received the same attention as these same networks in California. This report aims to remedy this gap and reflect on that continued and passionate work of folkloristas in Oregon through a holistic review of existing literature of Mexican ballet folklórico and mexicanos in Oregon, interviews with maestras/os within the state, as well as personal anecdotes, when appropriate. These recollections work to highlight the academic, cultural, and personal pillars of ballet folklórico dance as it relates to a Mexican American experience and education in Oregon.

**Garcia, Juan**
University of Oregon
Mentor(s): Yan Pacheco, Marian Hettiaratchi
Poster #101
Virtual

## Hydrogel-Mediated Sequestration of Cell-Secreted Granulocyte Macrophage Colony Stimulating Factor

Co-Author(s): Henry Hochstatter

This study provides an in-depth analysis of affibodies, affinity protein binders, specifically designed to target the cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF), with the goal of sequestering GM-CSF to modulate the inflammatory response during bone regeneration. We aimed to explore the effectiveness of employing high-affinity affibodies targeting GM-CSF within a PEG hydrogel system to sequester GM-CSF secreted by human mesenchymal stromal cell (hMSC) secretome, to reduce chronic inflammation during bone injuries. Structural analysis of GM-CSF specific affibodies, via circular dichroism, confirmed the expected alpha-helical folding of affibodies. Affibodies were conjugated to 4-arm poly(ethylene glycol) maleimide hydrogels at varying molar excess concentrations (0-5000x molar excess) and characterized for their ability to sequester GM-CSF secreted by hMSCs stimulated with the proinflammatory cytokine interleukin-1β. We observed an increase sequestration of GM-CSF, with the 2000x molar excess affibody hydrogels demonstrating the highest percent of GM-CSF encapsulated (28%). Affibody-conjugated PEG hydrogels hold promise as a versatile platform for modulating inflammatory signaling and promoting tissue repair in regenerative medicine applications.

**Garcia, Natalie**
University of Oregon
Mentor(s): Katherine Kelp-Stebbins
Works in Progress: Lightning Rounds

## A Framework in Panels: How "Julio's Day" Offers Latine Readers Scaffolding to Unpack Trauma

My project offers an analysis of Gilbert Hernandez's graphic novel, Julio's Day, and a creative production of my findings through a Chicana feminist lens. My analysis and creative production takes a decolonial approach to dissecting and undoing heteropatriarchal norms. Reframing "Julio's Day," under this lens, I seek to understand how Hernandez's depiction of community replicates heteropatriarchal standards/expectations in Latine communities, and how the characters' reaction to these expectations can offer readers a framework of dialogue for first-generation Latine communities.

Contrasting "Julio's Day" with another work of Hernandez's, "Human Diastrophism," I explore how the different depictions of community reveal patterns of solidarity and isolation. These differences, analyzed under the lens of Chicana feminism, demonstrate how individuals navigate systems of oppression, therefore offering the reader critical reflection. Building a framework from the characters' experiences within their communities, I aim to create a graphic novel that offers first-generation Latine communities accessible scaffolding into generating dialogue surrounding trauma and decolonizing one's mentality.

**Gardner-O'Kearny, Aidan**
University of Oregon
Mentor(s): Laura Jeanty, Nathan Young
Poster #127

## Understanding background behavior in preparation for combined dE/dx and disappearing track analysis

Co-Author(s): Alec Howard

The Standard Model of particle physics describes the matter that we interact with on a daily basis, as well as three of the four fundamental forces that mediate interactions between them. Despite the Standard Model's accuracy, numerous observation and theoretical considerations indicate that it is incomplete. In order to probe a potential supersymmetric extension to the Standard Model, we are investigating the background composition of a planned analysis based on ionization energy loss and particles in the detector suddenly disappearing due to decay. To this end, we studied the distribution and behavior of a number of kinematic variables as a function of various selection criteria in simulated background and signal. This work will result in a rigorous understanding of the makeup of the background, as well as what selections best bias against

background. These results will aid in producing a background estimate as the analysis continues. This will help contribute to the search for new elementary particles, increasing our understanding of the fundamental building blocks of the universe.

**Gates, Ciara**
University of Oregon
Mentor(s): Emily Simnitt
Poster #225

## From Subculture to Subgenre: How Zines have Evolved over the Last Century

Zines (pronounced 'ZEEN') are small-batch, self-published miniature magazines that have served as powerful platforms for marginalized voices, offering alternative narratives and fostering community cohesion. Zines have served as a means of communication for subcultures and social movements over the last century. Often intending to develop community and move away from traditional profit-driven means of publication. Through a comprehensive review of zine collections, this research uncovers how zines have evolved through each decade since the early 20th century. This study employs a multidisciplinary approach, combining archival analysis with cultural and sociological perspectives to explore the factors contributing to the popularity and longevity of zines as a genre. Key themes identified include DIY ethos, authenticity, and resistance to mainstream media and culture.

**Gentry-Lear, Zealon**
University of Oregon
Mentor(s): Melanie Spero
Oral Panel The Little Things in Life Science

## Hijacking anaerobic metabolism to restore antibiotic efficacy in Pseudomonas aeruginosa

Co-Author(s): Celine Lopez Padilla

Antibiotic treatment often fails to resolve chronic wound infections. Most antibiotics target fast-growing bacteria, however, pathogens like Pseudomonas aeruginosa grow slowly in the chronic wound environment because of oxygen limitation. Thus, antibiotic treatment failure occurs in hypoxic environments because slow bacterial growth facilitates tolerance to antibiotics and because many bacteria have intrinsic antibiotic resistance. The goal of my research is to identify new therapeutic strategies that kill pathogens under hypoxic conditions like those in chronic wounds. Chlorate is a prodrug that kills P. aeruginosa under anoxic conditions by hijacking anaerobic nitrate respiration, where this pathway converts nontoxic chlorate into toxic chlorite, which kills P. aeruginosa. Chlorate and antibiotic treatment are most effective against P.

aeruginosa growing in anoxic and oxic conditions, respectively, but neither is effective at killing P. aeruginosa cells under hypoxic conditions. We found that chlorate interacts synergistically with different classes of antibiotics to eliminate hypoxic P. aeruginosa populations, overcoming both antibiotic tolerance and resistance. Future work will focus on understanding the mechanism of chlorate-antibiotic synergy and why antibiotic-antibiotic combinations are not synergistic. Identifying synergistic drug combinations holds promise for curing recalcitrant chronic wound infections, where current antibiotic-only treatments often fail patients.

**Getz, Madeleine**
University of Oregon
Mentor(s): Josh Snodgrass
Poster #190

## Body Mass Index (BMI) correlations with chronic disease risk indicators among Shuar adults

Co-Author(s): Melissa Liebert, Felicia Madimenos, Sam Urlacher Josh Schrock, Theresa Gildner

Body Mass Index (BMI) is a commonly used indicator of chronic disease risk in human biology projects. This paper examines the utility of BMI in population-level settings as a chronic disease risk indicator when compared to alternative body composition measures: waist circumference (WC), waist-to-stature ratio (WSR), bioelectrical impedance analysis (BIA), and sum of four skinfolds (SoS). We used data from the Shuar Health and Life History Project (n=1169, 20–91 years) to compare these body composition measures with accepted metabolic and cardiovascular disease biomarkers, including glucose, total cholesterol, HDL and LDL cholesterol, and blood pressure. We used an r2 pairwise correlation model to assess correlation significance (p < 0.01) and strength between each body composition measure and each biomarker. Our results show that BMI is similarly or better correlated with health biomarkers than other measures of adiposity. For example, BMI's r2 correlation with systolic blood pressure was 0.18, while SoS, WC, and WSR were 0.13, 0.12, and 0.13 respectively, and BIA showed no significant correlation. Given these results, our analyses suggest BMI may be useful as a population-level risk indicator of chronic disease, but that correlation strength and significance may vary depending on the study population. We discuss these results within growing literature that recognizes adiposity as a stigmatized health measure and address future avenues for adiposity research.

**Gibson, Hanna**
University of Oregon
Mentor(s): Tom Hahn, Blayne Burnside
Poster #11

## UNBE-LEAF-ABLE AIR!

The paper aims to investigate the effect of indoor plants on carbon dioxide levels by testing the air quality levels in two rooms. From prior research and knowledge, it is known that plants absorb carbon dioxide and release oxygen during photosynthesis, (during daylight hours).Therefore, we decided to measure carbon dioxide levels in our areas of study every day at sunset as effects of photosynthesis were maximized. The areas of study were two isolated bedroom environments with multiple controlled variables. The study took place in downtown Eugene's Titan Court apartment complex. Two bedrooms within the same unit were used as the area of study. Both rooms are approximately 100 square feet and have one operable South-facing window. One bedroom was devoid of plants, while the other housed 12 plants of various species. Carbon dioxide levels were measured once a day at sunset with a carbon dioxide meter and were compared quantitatively over a one-week period. This research will help determine the effect indoor plants have on reducing carbon dioxide levels and therefore increasing air quality. With the common individual having plants in their home, quantifying these benefits to air quality may give reason to introduce plants to their living spaces, if they do not already have them.

**Godino, Lia**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #154

## EAA+BFR Therapy to Stimulate Myonuclear Accretion as Quantified from Single Muscle Fibers

Co-Author(s): Mahathi Sridhar, Gabriel Mancuso, Emily Wolf Esben Schroeder, Kaitlyn Augienello

Muscle memory refers to the occurrence where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. This is attributed to retained myonuclei gained during training, enabling quicker initiation of protein synthesis and muscle regeneration. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will remain elevated 4 weeks post-treatment. Fiber bundles were fixed in 4% PFA/PBS for 48 hours, moved to PBS, and separated in 40% NaOH with agitation for 2 hours to shed single

fibers from the bundle. We immunostained nuclei using DAPI, 1nM, by fiber type using anti-MyHC I for 90 minutes. Single fibers were imaged using a Leica Thunder widefield microscope equipped with a HC PL APO CS2 40x/1.10 N.A. water immersion objective. Lasers with emission wavelength 390 nm were used at 27% intensity at 100 msec, captured with a Ki8 camera with x-y resolution of 300 nm x 300 nm with a z-step of 0.39 μm. Images were deconvolved using Huygens Essential software package followed by 3D reconstruction and quantification using Imaris. This work is ongoing.

**Gonce, Grace**
University of Oregon
Mentor(s): Adam Glass
Poster #123

## Color Tunability of Benzofulvenes

Benzofulvenes and their derivatives have implications as synthetic precursors, molecular materials, and in medicinal applications. The interesting conjugation-based properties of benzofulvenes raises the possibility of color tunability and other optical properties. Our work focuses on the synthesis of various benzofulvenes and investigations into their optical effects through absorbance and fluorescence spectrometry. We are specifically looking to explore push/pull dynamics related to different substituents on our title compounds with regard to conjugation and optical effects. This will allow us to determine HOMO-LUMO energy gaps that may become tunable based on which substituents are involved. Overall, our goal is to increase the reproducibility of benzofulvene synthesis, optimize yield, and manipulate the compounds with varying substituents in order to gain a better understanding of their optical properties and implications in applied scenarios.

**Gordon, Paige**
University of Oregon
Mentor(s): Dylan Wood
Poster #10

## Waste Utilization Panels -An upcycling strategy for high performance point supported timber slabs

The Waste Utilization Panel (WUP) aims to innovate the mass timber industry by taking Mass Plywood Panels (MPP) and its existing process and creating a new product through structural optimization and aesthetic enhancement. As the mass timber industry continues to grow, trends show us that resources and energy for manufacturing are becoming less bioavailable and more costly. Previous findings showed us that 13-30% of highly engineered MPPs end up as offcuts that are discarded or burned for energy. To combat the issue

of material resources, we've sought to incorporate these offcuts back into our product, the WUP. A WUP is constructed by organizing MPP waste material along lines of deformation on top of a standard 3" thick MPP. By intentionally placing material, it is estimated that the WUP could carry the load of a standard 8" panel using 50% less material. The WUP can span in 2 directions without increasing the total thickness, making it an ideal solution as a point-supported building component. The final geometry is derived from structural analysis and is dependent on the structural system being employed. In creating this new product, we hope to confront issues of material usage and demand as the mass timber industry grows. Reintegrating offcuts into a product while meeting structural and design requirements within the industry is our team's way of addressing concerns of the advancement of the mass timber while reducing the environmental impact of construction.

**Goyal, Vithika**
University of Oregon
Mentor(s): Bill Cresko, Hope Healey
Poster #69

## Population Structure of the Bay Pipefish from Coos Bay, Oregon, and Conservation Implications

Co-Author(s): Mark Currey, Micah Woods, Susie Bassham Shon Schooler

Global changes to marine ecosystems can impact the species that depend on them, including via changes to genetic diversity and population structure. One such species is the Bay Pipefish (Syngnathus leptorhynchus), which depends on eelgrass habitats along the West Coast of North America. We conducted a study to provide a baseline estimate of genetic diversity and population structure for Bay Pipefish in the Coos Bay watershed in Oregon for the first time. To achieve our goal, we sampled 115 fish from two locations 17 km apart via water routes in the Coos Bay estuary to estimate genetic diversity and determine if any genetic divergence exists between these sampling locations. Using restriction site-associated DNA sequencing (RAD-seq), we created a genome-wide set of over 9,000 genetic markers and found similar genome-wide levels of genetic diversity in both populations when compared to each other and Bay Pipefish populations found outside Coos Bay. We also found little to no population structure between the populations, indicating that the Bay Pipefish in the Coos Bay estuary likely represents a single large population. Our findings provide important conservation implications for threatened habitats and organisms as a foundation for future research on the genetic variation of Bay Pipefish in Oregon's estuary systems, including Coos Bay, as well as comparisons with other organisms that call eelgrass beds their home.

**Graber, Jessica**
University of Oregon
Mentor(s): Dr. Allison McGuffie
Oral Panel The Trans*formative Power of Cinema

## Southern Comfort– Aligning the Spectator's Gaze

Transgender people have long been marginalized within the confines of white patriarchal subjectivity on film, where trans* visibility is often used as a problematic metaphor for transformation and secrecy. For example, the "reveal" trope aligns the camera with a cisgender person's perspective as a trans* character shows their body and exposes the "truth", thereby reaffirming cisgender assumptions about sex and gender and dehumanizing the trans* character. A new wave of filmmakers are working to recenter the focus of the camera's gaze to a subjective trans* point of view that disrupts cisheteronormative logic. This project aims to dissect how various films construct a subjective, transgender gaze through film narrative, mise-en-scene, sound, cinematography, and editing. "Southern Comfort – Aligning the Spectator's Gaze" investigates how the camera aligns the spectator's perspective with characters on screen to see and hear through a trans* gaze.

**Graciani, Josmarie**
University of Oregon
Mentor(s): Chris Doe, Kristen Lee
Poster #149

## Elucidating the molecular mechanisms underlying the development of neuronal identity in Drosophila

Across numerous species, damage to the brain can incur in atrocious illnesses, many of which are degenerative and irreversible. To understand what is wrong, we must understand how this system works. Using Drosophila melanogaster, the fruit fly, we ask how the morphology of the Moonwalker Descending Neuron (MDN) is affected by transcription factors (TFs) , which control gene expression. MDN is a circuit that activates the backward locomotion of the fly. During adulthood, the MDN morphology consists of one cluster of four cell bodies where the neuron converges at a midline and two neurites descend. First, I found that the TFs Hunchback (Hb), Engrailed (En), and Pdm2 maintain this morphology. Second, I asked how these TFs are cross regulating each other in MDN during adulthood. I found that En regulates Hb and Pdm2; Pdm2 regulates Hb; and Hb regulates Pdm2. Then, I hypothesized that midline cues may be activated by the TFs, so I screened genes related to midline guidance. To do this, I used the UAS-Gal4 expression system to produce an RNAi knockdown, decreasing the expression of the candidates to confirm their expression in the MDN. I found that the cell bodies no longer met at the midline when the cues Robo2, Commissureless, PTP10D, and PTP69D are knocked down. Neurite morphology also relied on the cues Dek, Lar, Drl and PTP69D. Using these tools, we

support the hypothesis that the morphology of the adult MDN is directed by transcription factors activating midline cues.

**Graf, Paul**
University of Oregon
Mentor(s): Alice Barkan, Margarita Rojas
Poster #82

## Designer RNA Binding Proteins as Switches to Modulate Chloroplast Gene Expression in Plants

Mechanistic understanding of gene expression in plants has enabled the ability to engineer synthetic biological systems to produce valuable molecules, enhance crop resilience, and more. Plants hold promise for synthetic biology because they have chloroplasts which support their growth by solar power and which harbor a small genome that is particularly amenable to engineering. The chloroplast genome has the capacity for extraordinarily high protein production and is well suited to the expression of synthetic metabolic pathways involving multiple transgenes because its genes are naturally expressed in operon-like multigene units. However, methods to precisely control the expression of these transgenes under particular conditions will be needed to fully realize this potential. We take advantage of pentatricopeptide repeat (PPR) proteins, a family of nuclear-encoded RNA binding proteins which act in chloroplasts to activate the expression of specific RNAs. PPR sequence specificity can be engineered by a well-established amino acid “code” for ribonucleotide recognition. We are testing whether we can use engineered PPR proteins to repress the translation of specific chloroplast genes by targeting them to ribosome binding sites. If successful, the regulated expression of such proteins will allow us to inactivate the expression of specific endogenous and introduced chloroplast genes under specific stimuli.

**Granados, Lilliana**
University of Oregon
Mentor(s): Melanie Kascoutas, Amanda Cook-Sneathen
Poster #120

## Designing a Catalytic System for Alkene Isomerization

Co-Author(s): Melanie Kascoutas, Alison Sy-min Chang, Amanda Cook

Alkene isomerization is a key reaction in chemical synthesis and migrates a double bond along a carbon chain. This reaction constructs building blocks for molecules that are incorporated into fabrics, pharmaceuticals, or plastics. Alkene isomerization is typically mediated by a transition metal catalyst, such as nickel, and requires strict air- and water-free conditions. Recent work in the Cook lab has developed a

nickel(0) catalyst that is formed in solution and prepared in normal atmospheric conditions. If reactivity was observed, isolated yields quantified efficiency of the reaction. The majority of tested alkenes responded favorably, resulting in high yields, including those with reactive functional groups. Designing robust catalytic systems that are easily prepared can expand compatible substrates and increase synthetic usability.

**Gravning, Rachel**
University of Oregon
Mentor(s): Alexander Dracobly
Poster #236

## The Experience of World War One

Our research project is based on the book "The Beauty and the Sorrow" by Peter Englund. Englund's novel takes personal narratives of twenty individuals who were impacted by the first world war, all from many different backgrounds and all impacted in very unique and different ways, and allows the reader to imagine what it was like to exist day to day during this global conflict. As a class, we took on the task of finding even more of these narratives to emulate Englund, and to put ourselves in the shoes of these very real people who experienced such a momentous, life-altering historical event.

**Green, Nora**
University of Oregon
Mentor(s): Thomas Pedroza
KIDD Creative Chronicles

## Amor Alien

The story revolves around the narrator, Shira, who is a young martian in a symbiotic relationship with a much older Terran named Demosthenese. Martians perform a monthly ritual where they molt their skin and transfer it to Terrans in order to protect them from the harsh Martian atmosphere. This ritual is crucial for Terrans survival on Mars, as their bodies cannot withstand life on Mars otherwise. However, the ritual takes a toll on Shira and the other Martians. It robs them of their natural beauty and leaves them in discomfort and pain. Shiras' relationship with Demosthenes is complicated. He is old enough to be her father and while he does care for her, Shira cannot ignore the sense of obligation towards him due to their symbiotic bond. Shira spends most of her days sleeping and reminiscing on life before Demosthenes. It is not until the arrival of a Terran woman named Violet that their routine of rituals and slumber is disrupted. Violet demands Shira to perform the ritual on her after accusing Demosthenes of killing her Martian companion with his van.As Shira prepares to perform the ritual on Violet, she has a change of heart. She confronts Violet, refusing to sacrifice her well-being for her survival. Instead, she asserts her own autonomy and urges her to return to Terra,

realizing that she and the other Martians do not owe anything to the Terrans. The story delves into themes of symbiosis, sacrifice, and autonomy while exploring the complex dynamics of a colonized future

**Green, Zoe**
University of Oregon
Mentor(s): Claire Herbert, Carol Stabile
Oral Panel Voices and Visions: Identity and Culture in Transition

## Creating Community in the Library

Community is critical. It provides resources, serves as a social outlet, and creates a sense of belonging, purpose, and togetherness. For youth, most time is spent at home or school. While these spaces can provide community, they are compulsory. Consider: what spaces are accessible and desirable for youth to choose to spend their time at and forge community? And, how can these third places be used to challenge systems of inequality and oppression? My research is a sociological exploration of the importance of third places for youth, with a specific focus on public libraries as that third place. I utilize both a literature review and interviews to develop a deeper, more nuanced understanding of the role libraries play as third places in teens' lives. My conclusions will be discussed through a comparison between my findings and the pre-existing literature. I anticipate this project will expand the understanding of the dynamic between public libraries, youth, and inequality and, ultimately, draw larger conclusions about why having equitable access to third places is vital for youth.

**Greenwalt, Makenna**
University of Oregon
Mentor(s): Motohico Mulase
Poster #136

## Composition of Maps For Curves Defined Over the Algebraic Numbers

Co-Author(s): Tyler Campos, Lisa Liu

Given a Riemann surface C, Belyi's Theorem states that C is defined over the algebraic numbers if and only if there exists a map beta from C to the Riemann sphere P such that all critical values of beta are in the set {0, 1, infinity}. Such a map is called a Belyi map, and if it is "clean," the inverse image beta^{-1}[[0,1]] can be realized as a graph on the original surface C. By composing arbitrary Belyi maps with constructed maps from P to P, we prove that there always exists a Belyi map from a surface C defined over the algebraic numbers that can be realized as a face-bipartite triangulation of C.

**Gregson, Maddis**
University of Oregon
Mentor(s): Chantell Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## How can we make The Rec more welcoming for people who suffer through gym-anxiety?

Gym anxiety, or gym-timidation, is a common experience for many when entering or working out in a gym. Recognizing the various forms of gymtimidation and their causes is crucial for developing effective strategies to manage or alleviate the anxiety. One example of how gym-anxiety may arise is the spotlight effect, a cognitive bias where individuals feel overly conscious of being observed by others. By fostering peer support through initiatives like a gym buddy system, we aim to empower students to feel more comfortable and confident in using The Rec, thereby promoting a healthier and more inclusive fitness environment. We've studied UO students' Rec engagement, comparing freshman to Juniors-Seniors attendance and gender distribution, and tracked class-wise facility usage. Gathering personal anecdotes on gym attendance, preferred workout times, and areas used enriches our grasp of student motivations, enhancing our fitness environment. We propose The Rec buddy system for UO students, accessible online. Students share details like availability and preferences to find like-minded peers for workouts. It fosters social connections, enhances safety, and offers motivation and a fresh gym perspective. Ideal for those seeking workout partners or newcomers wanting support in the gym community.

**Grubb, Skye**
University of Oregon
Mentor(s): Frances White
Poster #185

## Fluctuating Asymmetry of the Crania and Postcrania in Primates

Co-Author(s): Sedona Epstein, Sara Cotton

The symmetry found in the cranium and postcranium can indicate many stressors that occur in the early growth and development of individuals and affect the phenotypic expression of genotypes in the population. Fluctuating asymmetry has been studied in both the crania and postcrania of primates, but research is lacking in connecting fluctuating asymmetry across whole skeletons, as skeletal sections experience different stressors and adaptive constraints in development. Instability in the developmental process of individuals can, therefore, affect the perceived attractiveness of individuals with consequences for mating success. To analyze the consistency of fluctuating asymmetry across the whole body, we combined measurements of the length of 2nd and 4th metacarpals with measurements of overall cranial symmetry for

five primate specimens. The individuals studied are taken from the Museum of Cultural and Natural History Grand Collection, which includes 700 primate skeletons and 200 mostly complete macaque skeletons. Previous results showed that specimens varied significantly in 2D : 4D ratios. New cranial data, collected via microscribe measurements, are then compared to known 2D : 4D measurements to determine if fluctuating asymmetry is a whole body-phenomenon or if it is separately experienced by different parts of the skeleton during development.

**Grubb, Skye**
University of Oregon
Mentor(s): Scott Blumenthal
Poster #186

## Understanding Diet for Conservation: Stable Isotope Analysis of Giraffe Hair and Teeth in Uganda

Co-Author(s): Elizabeth McGuire

Giraffes (Giraffa camelopardalis) are important contributors to savanna ecosystems because they influence vegetation structure and nutrient cycling. However, their populations and habitats are declining. To effectively support the ongoing conservation efforts of the Giraffe Conservation Foundation in Murchison Falls and Kidepo Valley National Parks, Uganda, it is vital to understand how giraffes utilize their environments over time and respond to seasonal variation in resources. To examine these feeding behaviors, we determined the stable isotope composition of hair and tooth enamel collected non-invasively from individuals in both study sites. Stable isotope analysis indirectly monitors the foraging decisions of giraffes through the principle “you are what you eat,” where isotopic signatures of stable carbon (d13C) and nitrogen (d15N) are recorded in body tissues, including hair and tooth enamel. Through the serial analysis of hair segments and bulk sampling of tooth enamel, we have established a longitudinal record of feeding behavior indicating seasonality and prevalence of plant type in diet, differentiating between C4 (grasses) and C3 (woody) plants. In establishing a record of carbon dietary data, we can reconstruct how giraffes are utilizing their environments and adapting feeding behaviors. Ultimately, documenting how giraffes have responded to past resource variation and environmental change is critical in informing management strategies for declining populations.

**Guilliot, Karlie**
University of Oregon
Mentor(s): Michael Najjar, Tricia Rodley
Oral Panel Explorations in Expression

## Radium Girls: A Dramaturgical Analysis

I have spent 3 years attempting to find the intersection of my love for history and theater, and with this project, I found it. The perfect marriage of my two passions was wrapped up in one word, dramaturgy. Dramaturgy, briefly, is using research to provide context for the world of the play and assist in articulating the "rules" of the world the characters live in, as well as what else falls under the period, the genre, and the situation of the plays. For me, this meant delving deep into 1918 in Orange, New Jersey, where "Radium Girls," a play by D. W. Gregory, was set. The nature of this play is rooted in historical context. Based on real people and real events, Real lives that were affected and lost. Actors, directors, and designers for a production of a show such as this need to understand the historical world that they are being placed in. I placed a collection of research on historic individuals, national and local climate, labor rights, and 1910s-era life into a large packet. One to be referred to and understood by those taking part in the play, essentially a historic "cheat sheet." To do this, I dove into national and state archives, scoured newspapers, and talked on the phone with dozens of individuals who knew about these events, ultimately giving justice to this play and the real Radium Girls whose stories deserve to be told.

**Gulka, Quinn**
University of Oregon
Mentor(s): Jane Cramer
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Pathways to a Nuclear-Weapon-Free Zone in the Middle East

The establishment of regional Nuclear-Weapon-Free Zones are widely recognized to be major strides on the path towards global nuclear disarmament. So far, five world regions have signed a treaty banning nuclear weapons in their respective regions, but the Middle East remains to be a missing piece to this disarmament puzzle. The idea for a Nuclear-Weapon-Free Zone in the Middle East was first introduced in 1974, but international efforts have so far failed to establish such a Zone. Thus, my analysis explores the current political possibilities for establishing a Nuclear-Weapons-Free Zone in the Middle East. We could ask, what are the viable pathways for establishing such a Zone in today's world? To answer this question, I conducted a policy review and critical analysis of primary source documents, policy reports and international studies to determine several viable pathways towards establishing a Zone. My findings suggest that current political conditions in the Middle East may be setting the groundwork for opportunities to establish a region-wide

nuclear ban treaty. Establishing a Nuclear-Weapon-Free Zone in the Middle East would greatly strengthen the security of regional states against nuclear terrorism and arms races. Such a measure would represent a significant stride toward global nuclear disarmament, fostering a safer and more secure world.

**Hajarizadeh, Auveen**
University of Oregon
Mentor(s): Kylie Williams, Robert Guldberg
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering

## Characterizing the Temporal Progression of Blood Biomarkers in Response to Severe Bone Trauma

Co-Author(s): Kylie E. Williams, Robert E. Guldberg

The immune system's dynamic response to factors such as injury and exercise necessitates longitudinal characterizations of blood biomarkers. Literature has established a relationship between systemic immune cells and endpoint bone regeneration; however, the immune response to traumatic bone injury has not been characterized in rats that undergo postoperative exercise. After two-weeks of pre-training, 6mm segmental defects were surgically induced in the mid-diaphysis of twelve female Wistar rats, and bone morphogenetic protein 2 (BMP2) was injected at these sites. Rats were granted access to running wheels one week post operation. Blood was collected from the tail artery of rats at designated time points: baseline (prior to surgery), day 4, weeks 2, 4, and 8. Subsequent cell fixation and staining differentiated seven different immune cells: T cells, cytotoxic T cells, helper T cells, regulatory T cells, B cells, monocytes, and myeloid-derived suppressor cells (MDSCs). Longitudinal flow cytometry data revealed a pronounced inflammatory response observed immediately post-injury, followed by a compensatory anti-inflammatory response. These dynamics underscore the complex interplay of immune cells throughout the healing process. Our temporal characterization of the immune response will enable future research to evaluate rehabilitation as a therapeutic treatments and their effects on immune cells, offering insights into intervention efficacy and recovery mechanisms.

**Hall, Peyton**
University of Oregon
Mentor(s): Gretchen Soderlund
Poster #21

## Instagram and Community Organizing: A Case Study in the Fight Against Anti-Transgender Legislation

"Instagram and Community Organizing: A Case Study in the Fight Against Anti-Transgender Legislation" explores the evolving landscape of political activism in the digital age through the ways in which the trans community and their allies utilize social media, specifically Instagram, for community organizing and mobilization against anti-trans legislation. Through a qualitative analysis of three Instagram accounts completed in Spring 2023, the research investigates community-building and organizing strategies by a grassroots campaign, a non-profit, and a prominent activist. Through an analysis of the accounts posted content and interactions in the comments sections, this research contributes to academic scholarship on the community organizing in the digital space by providing insights into the strategies employed to organize and mobilize against anti-trans legislation. Furthermore, the research offers practical conclusions for effective community organizing, empowering future endeavors in the fight for trans rights. By understanding the strategies and successes of community organizing against anti-trans legislation, the research offers valuable insights for future advocacy work by underscoring the power of social media as a platform for building community, disseminating information, and mobilizing collective action.

**Hall, Peyton**
University of Oregon
Mentor(s): Judith Raiskin
Poster #218

## Music and Spirituality in Southern Oregon's Lesbian Land Communities

Through archival research completed in WGS 410: Women, Gender and Sexuality in the Archives, we are exploring the nuanced ways in which Southern Oregon lesbian communities of the past interacted with music and spirituality in their intentional communities. Our research aims to uncover how music and spirituality intersected in shaping the identities and social dynamics within Southern Oregon's Lesbian communities. Our research will include primary documentation found within the University of Oregon Special Collections and Archives; We seek to illuminate the cultural, social and personal significance of these intersections.

**Ham, Jenna**
University of Oregon
Mentor(s): Lisa Munger
Oral Panel Unveiling Nature's Rhythms
Poster #65

## Phonic Richness on a New Artificial Coral Reef in Indonesia

In recent years, coral reefs globally are experiencing increasing impacts due to factors such as warming average temperatures and anthropogenic activities. Reef restoration efforts have found passive acoustic monitoring to be a helpful tool for measuring ecological health during recovery. The purpose of this study was to utilize audio data to investigate reef health within Misool, Raja Ampat, Indonesia, located in a region of high marine biodiversity.

In May 2023, the Kenari, a former pearl aquaculture service ship was situated less than 0.5 miles south of the Misool Eco-Resort to create an artificial reef. A hydrophone was placed on this shipwreck one week after sinking, and 30 second audio files were recorded every 5 minutes over a 3.5 month period. Data were analyzed by 20 students in the Winter 2024 HC301 class, "Coral Reef Acoustic Ecology." We identified more than 20 unique sounds, the majority of which are likely from fish. We measured phonic richness, i.e. the number of distinctive individual biological sounds during an hour at dawn, midday, dusk, and night. We only focused on days that fell as a new, quarter or full moon. Our results will contribute to conservation efforts and inform our understanding of reef growth and biodiversity over time.

**Harris Caceres, Alejandra**
University of Oregon
Mentor(s): Michelle Marneweck
Poster #160

## Neural representational models of reference frame transformation for skilled action

Co-Author(s): Michelle Marneweck, Jolinda Smith

Every time you pick up an object, positional information of the object with reference to one's eye, body, and hand must be transformed into an actionable plan to interact with the object. This process of encoding positional vector differences, reference frames, underlies the foundation of a movement plan. Recent studies have shown that certain regions of the brain represent multiple reference frames, thus challenging the idea that reference frames are translated from a dominant, eye-centered reference frame, as determined by many foundational studies. Nevertheless, it remains unclear what benefit a multi-representation of reference frames within or between regions would serve in motor planning. In this experiment, we addressed this by measuring fMRI activity in human subjects while they engaged in a button-pressing task that dissociates

reference frames between the eye and target (ET), the eye and hand (EH), and the hand and target (HT). There are 8 conditions that isolate spatial activity pattern differences between small and large reference frame distances. We hypothesized that spatial activity of HT and ET small and large would be dependent on the eye or hand being near or far, respectively. We found regions in the dorsomedial stream to rely on the most reliable sources when selecting which reference frame to encode. Understanding the neural encoding of sensory information into an actionable plan could improve neural prosthetics to better serve patients such as amputees.

**Hawes, Robert**
University of Oregon
Mentor(s): David Luebke
Poster #237

## The Influence of the Malleus Maleficarum on the Study of Witches in England

The Malleus Maleficarum is considered one of the most influential pieces of European witchcraft literature, illustrating a powerful viewpoint of witches that defined much of later demonological thought. While the Malleus Maleficarum's overall influence has been well studied, its influence within England has been a lesser focus. This is more notable given England's significant difference from most of Europe in how the country's ideas of witchcraft developed, with many writers taking strong stances against the persecution of witches. This project features discusses how the Malleus Maleficarum was utilized in the discussions of English witchcraft, mainly characterized along religious lines between Puritan theologists and the Anglican Church. My research shows that there was a divide between mainly Puritan theologists, who argued for the existence of witchcraft and utilized the Malleus Maleficarum in that purpose, and Anglican theologists, who argued against the persecution of witches and the utilization of the Malleus Maleficarum, which contradicts previous scholarly understanding of the subject established by Keith Thomas in Religion and the Decline of Magic of the divide occurring between more Calvanist branches and more Roman Catholic branches. By showing this pattern I will explore the nuances of how English religious intellectuals reacted to the assertations of the Malleus Maleficarum and how their beliefs indicate a more complicated debate over witchcraft than is assumed.

**Hawes, Sierra**
University of Oregon
Mentor(s): Matthias Vogel
Poster #234

## Civic Education in Scandinavia

This project explores civic education in Scandinavia, more specifically in Sweden, Norway, and Denmark. While the mental health and literacy rates flourish in these countries, we wanted to explore the ways citizens learn and grow to uphold their democracy. To explore thoroughly we wanted to investigate the government styles in each country as well as their educational systems. A common theme among the Scandinavian countries is the access to free higher education as well as a slower step-by-step of learning civic processes. We used academic journals, articles, and the International Civic and Citizenship Education Study (ICCS). We found that typically student's gain knowledge of civic processes throughout their education to become well-rounded members of society. In essence, our research will help explain the positive effects of learning about civic procedures early in life, consistently, to cause overall positive mental health and active citizenship.

**Hecker, Jacob**
University of Oregon
Mentor(s): Jessica Campbell, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Effects of Students' Active Engagement in Religious Communities on Belonging, Community, and Purpose

Our research is looking into the relationship between involvement in religious groups and students' sense of belonging, community, and purpose and how that affects students at UO. Since there is limited data specific to the UO, we are looking more broadly at data from other colleges. We hypothesize that community involvement and support from a religious group can benefit students in these domains. We are investigating this hypothesis to understand how to better support students at the University of Oregon. All four members of our group interviewed professionals involved with and educated in religion. Through the research we have conducted we found a general trend of an increased sense of belonging, community and purpose with involvement in a religious group; however, this is not specific to students or the University of Oregon. Our primary conclusion is that religious engagement supports students' sense of belonging, community, and purpose. This research is significant because students have varying opinions and involvement in religion, so understanding the possible impacts on wellness and possible causes could help to find ways to support students' well-being.

**Hedman, Katie**
University of Oregon
Mentor(s): Brice Kuhl
Poster #137

## Relating memory distortions to individual differences in visual imagery

Co-Author(s): Brice Kuhl, Anisha Babu

Repeated acts of memory retrieval over time can strengthen memories, but there are also cases in which repeated memory retrieval can increase the likelihood of falsely recognizing an image. However, individuals differ in the way they subjectively experience memories, with some people reporting high visual imagery during memory retrieval and others reporting little to no visual imagery. In this experiment, we tested whether the relationship between repeated retrieval and false memory is related to individual differences in visual imagery. Subjects learned associations between words and scene images, followed by repeated retrieval of half of the images. During retrieval, subjects rated the vividness of their memory. Following retrieval, subjects completed a recognition memory test including learned, lure, and novel images. Here, we can understand how differences in visual mental imagery can affect memory retrieval quality and recognition accuracy.

**Heilenbach, Sam**
University of Oregon
Mentor(s): Dare Baldwin, Avinash Singh Bala
Poster #42

## Assessing Infant Speech Discrimination Using Pupillary Dilation Response

Language acquisition in infancy involves adapting to the complex auditory landscape of human speech. A process central to this adaptation is the phenomenon of perceptual narrowing. Infants' broad sensitivity to the smallest units of speech – phonemes – becomes fine-tuned toward the end of their first year of life to the specific phonemes of their native language(s), enabling them to partition continuous speech into discrete words, essential for acquiring language proficiency. This study investigated the potential of sound-induced pupil response (SIPR) to measure infants' speech-sound discrimination. We hypothesized that SIPR will accurately index auditory discrimination changes as perceptual narrowing unfolds. Using a mixed factorial-design, infants aged 6-12 months were exposed to native and non-native phonetic contrasts while their pupil responses were measured. Our sample of pilot data provides clear evidence validating SIPR as a sensitive measure of infants' response to language. However, the sample is as yet too small to offer conclusive findings regarding perceptual narrowing. In any case, the SIPR holds great promise as a new, highly sensitive

tool for investigating language development in early infancy. Thus, the significance of this research lies in its potential to enhance our understanding of developmental change in early auditory discrimination abilities.

**Helling, Ava**
University of Oregon
Mentor(s): Matthias Vogel
Poster #231

## The Black Market in Argentina

In our research project we explore Argentina's black market. We specifically focus on how it is intertwined with the Argentinian economy, politics, along with impact on low income families in recent years. To answer our questions; we turned to scholarly articles and news stories covering Argentina's black market, as well as some first hand accounts from those who have been impacted. The economy is on the brink of recession, and inflation has skyrocketed prices for citizens, whose wages have not been able to keep up. All these issues are causing political tensions to run high, as many are turning to the government to fix the issues with their once blossoming economy. We were able to conclude that Argentina's continual social and political instability has contributed to not only the creation of the black market in Argentina but also its continual prevalence. Through our research we discovered some of the challenges that the Black Market has inspired in Argentina.

**Henderson, Chandlor**
University of Oregon
Mentor(s): Camilla Mortensen, Ed Madison
Poster #239
Virtual

## 400-Year Nightmare

400-Year Nightmare is a research project centered around my maternal and paternal families and the families in their respective communities. The objective of this research is two-fold: One, to identify the strategies used by Black-American families during reconstruction era and after to survive. And two, to identify the jobs that employed Black-American families during the reconstruction era and after. To find this information two separate research techniques were used. Qualitative interviews were conducted with my grandfather and other elders to gather information about their parents and grandparents. I also conducted historical research in various archives to attempt to validate the information told to me. With this information I was able to find empirical evidence to validate names and birthplaces of many of these people, or at the very least the place of death. I plan on disseminating this information via comic books, and eventually a graphic novel, highlighting the discovery that my mother's family were bootleggers. The men in my father's family

worked largely as carpenters, which is an occupation carried on by the family to this day. The comic book will follow the narrative tale of the researcher, or Griot, in their search for answers about his family's history, to share with future generations. This research may end up taking a lifetime. As I continue my research, more advanced questions will come into focus, any of which can be followed.

**Herron, Seth**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Herron, Seth**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Ho, Dora**
University of Oregon
Mentor(s): Gabriella Lindberg, Malley Gautreaux
Virtual

## Investigating Soluble Joint-Tissue Signaling Between 2D Muscle Cells and 3D Cartilage Spheroids

Co-Author(s): Malley Gautreaux, DeShea Chasko, Gabriella Lindberg

Post-traumatic osteoarthritis (PTOA) is a degenerative disease that leads to cartilage breakdown. However, in vitro PTOA research has traditionally focused on bone and cartilage communication, often overlooking other key tissues. Thus, this project aims to develop an in vitro 3D model for co-culture of cartilage with primary muscle cells from injured patients. The project comprises of designing well plate inserts and optimizing co-culture media components and timepoints to study the effects of muscle presence on PTOA progression. A well plate transwell insert was designed to replicate a physiologically-relevant environment. A stereolithography printer successfully printed the insert using an autoclavable and biocompatible resin. Cartilage spheroids were then fabricated from articular chondrocytes and were subsequently exposed to inflammatory cytokines TNF-α and IL-1β. Biochemical and histological analyses showed decreased glycosaminoglycan production after cytokine exposure, confirming successful degradation of cartilage. To optimize co-culturing protocols, primary muscle cells were exposed to various culturing medias. Metabolic analysis revealed increased cellular activity after exposure to 1:1 myogenic and chondrogenic media when compared to myogenic media alone, indicating cartilage media may not be detrimental to muscle cell metabolism. This model designed to study joint tissue interactions may increase the understanding of PTOA mechanisms for therapeutic targeting.

**Hoban, Aine**
University of Oregon
Mentor(s): Cathy Wong, Zach Walbrun
Poster #121

## Morphological investigation of crystalline domains via polarization-dependent microscopy

Co-Author(s): Cathy Wong, Zach Walbrun

In materials targeted for use in solar cells, probing the morphology of a semiconducting material can predict its charge transport properties, and how it will behave in a photovoltaic device. We consider an optically anisotropic, semiconducting molecule 6, 13-bis(triisopropylsilylethynyl)pentacene (TIPS-Pn), which forms

μm-scale, ordered crystalline domains. We aim to derive a relationship between its polarization-dependent absorption and its morphology, focusing on domain boundaries, where charge transport is impeded most. A home-built polarized microscope is used to image TIPS-Pn crystalline domains with light polarized at specified angles to determine an absorption-polarization relationship. This relation is quantified via a sinusoidal fit, and the phase shift of the sinusoid at each pixel in the image is used to resolve individual crystal grains and determine where the boundaries are. Thus far, individual crystalline domains have been resolved via sinusoidal fitting of polarized absorption data. Darkfield microscopy, which illuminates the edges of sample features, is used to further illuminate domain boundaries and roughness. With this analysis, we can spatially resolve TIPS-Pn domains and characterize morphology at crystalline boundaries.

**Hodgdon, Sophia**
University of Oregon
Mentor(s): Lulu Enkhbaatar
Poster #90

## Studying the dynamics and mechanisms of gp32-gp59 protein assemblies at DNA junctions.

The gp32 and gp59 proteins are a part of the bacteriophage T4 system which is used to investigate DNA replication. The gp32 protein coordinates replication fork proteins and stabilizes ssDNA, processes that are crucial for genome replication. The gp59 protein binds to gp32, facilitating helicase assembly at the single stranded-double stranded (ss-ds) junction. DNA dynamics within the replication complex are influenced by gp32-gp59 assembly. CD/Absorbance excites the (iCy3)2 dimer at the ss-dsDNA junction, providing an average DNA structure during protein assembly. CD/Absorbance experiments have found that gp32 and gp59 affect chirality, inducing a right-handed structure. Polarization-Sweep Single Molecule (PS-SM) Fluorescent Microscopy is used to study dynamics at the microsecond time scale in a single molecule during replication. PS-SM combined with CD/Absorbance reveals how proteins induce confirmational change, slowing DNA dynamics and increasing high visibility state population. Future work with the Kinetic Network Model will use data fitting to analyze interconversion data, providing insights into DNA-protein interaction.

**Hogan, Ainsley**
University of Oregon
Mentor(s): Emily Reeve, Ashley Walker
Poster #164

## Large Artery Stiffness Effects on Neuroinflammation and Cognitive Function

Co-Author(s): Emily Reeve, Ashley Walker

Alzheimer's disease (AD) is the most prevalent form of dementia and the greatest non-genetic risk factors are age and cardiovascular disease. One cardiovascular change that occurs with age is the loss of elastin protein leading to large artery stiffness. To investigate the relationship between neurodegeneration and large artery stiffness, we used a mouse model deficient in elastin protein to mimic the conditions of elastin deficiency with old age. This model enables us to understand how long-term exposure to large artery stiffness contributes to neuroinflammation and cognitive decline. Cognitive impairment was assessed using a behavioral test, Morris Water Maze, which tests spatial learning and memory, a behavior commonly impaired in AD. To examine neuroinflammation, brain slices stained with either Iba1 or vimentin were imaged to investigate the presence of activated microglia or cell integrity, respectively. The behavioral tests revealed there was an age-dependent decrease in spatial learning and memory in the mice deficient in elastin, but not in the wild type mice. Analysis of the stained brain slices revealed no genotypic differences for either Iba1 or vimentin. These results indicate that elastin deficient mice have impaired cognitive function with age and that levels of activated microglia and structural integrity are not impacted by elastin deficiency.

**Holley, Nate**
University of Oregon
Mentor(s): Taylor Guthrie
Poster #144

## ISC Preprocessing: Addressing Naturalistic Stimuli Challenges in Functional MRI Data Acquisition

In our study at the Computational Social Neuroscience Lab, we explored how individuals process their own experiences, those of a close partner, and of strangers by analyzing brain responses. Participants formed dyads, and each was recorded in an interview session, sharing personal stories based on specific prompts. Subjects then underwent fMRI scans while listening to recordings of their own stories, their partner's stories, and stories from strangers. The primary task of this portion of the project was preprocessing the data for use in an intersubject correlation analysis, which brought additional challenges due to the use of the naturalistic stimulus. This involved segmenting the functional MRI data into three categories–self, partner, and stranger–and implementing slice time correction to ensure temporal alignment of the audio with the

corresponding brain imaging data, allowing for each stimulus to be captured entirely while keeping its format consistent. The subsequent analysis focused on correlating voxel time series across subjects to identify brain regions with synchronized activity when exposed to identical audio stimuli. Preliminary results show robust correlations, particularly in the primary auditory cortex, confirming the efficacy of our preprocessing methods and setting the stage for a deeper understanding of social brain functions.

**Holmes, Ava**
University of Oregon
Mentor(s): Christina Karns
Poster #45

## Does attention-deficit hyperactivity disorder correlate with mental health problems? A meta-analysis

Attention-Deficit Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders for children; recently, researchers have been investigating its potential link with mental health problems. This study aimed to further understand this association using a systematic literature review and meta-analysis and qualitatively analyze the role of peer relationships. Three studies (N = 383) met the inclusion criteria for this meta-analysis to examine the correlation of ADHD and mental health problems, specifically anxiety/depression. Limitations of this study included the requirement of a peer relationships factor, which excluded many studies from meta-analysis. Our findings indicate that there is a non-significant correlation (r(381) = .08, p = .064) between ADHD diagnosis and depression and anxiety when studies also included a peer relationships factor.

**Hooft Toomey, John**
University of Oregon
Mentor(s): Ram Durairajan
Poster #16

## A Weak Supervision-based Approach to Detecting Anomalies in Hazard Monitoring Networks.

Our society relies heavily on various Critical Infrastructures (e.g., hazard monitoring networks in the state of Oregon) dedicated to monitoring natural hazards (e.g., wildfires). The hazard monitoring networks comprise sensors and cameras interconnected by wide-area backbones, where failures can result in significant economic loss. Consequently, monitoring of state of health of hazard monitoring networks is paramount. While Machine Learning (ML) stands as one of the most groundbreaking advancements in Computer Science, its application to detecting and predicting anomalies in hazard monitoring networks is fraught with

challenges. For one, each data transfer within hazard monitoring networks represents a distinct relationship, the creation of labeled training datasets for each connection is not feasible. Second, in the absence of labeled data, developing ML models to detect anomalies is impractical.

The main objective of this work is to enhance the robustness of hazard monitoring networks by addressing existing limitations in ML-driven anomaly detection. To this end, we propose weakly supervised learning techniques (such as heuristics and lightweight ML algorithms) to capture the distinct relationships, culminating in weak labels. Subsequently, a Long Short-Term Memory (LSTM) neural network is trained on these weak labels to accurately predict anomalies in hazard monitoring networks. Our research stands to benefit the reliability and security for Critical Infrastructure.

**Horner, Layla**
University of Oregon
Mentor(s): Katie Lynch, Dehlia Wolftail
Oral Panel Pathways to Environmental Empowerment
Environmental Leadership Program

## Inspiring Future Climate Leaders Through Environmental Education

In the face of the looming climate crisis, young people need to be given the tools to take action. Research shows that nature exposure through environmental education (EE) creates a better learning context in which students excel academically, experience personal growth, and practice land stewardship. EE fosters skills that go beyond the classroom, so students have the tools they need to navigate the climate crisis. The scenic old-growth forests of the McKenzie River watershed are an instrumental resource for educating youth. In recognition of this, the University of Oregon Environmental Leadership Program partnered with H.J. Andrews Experimental Forest to create a climate science curriculum for local middle schools.

Following the U.N. Tbilisi Declaration's Awareness to Action framework, our curriculum explores phenology, microclimate, wildfire ecology, and tree identification, employing hands-on, place-based learning aligned with Next Generation Science Standards. We focus on building skills such as observation, critical thinking, and data collection. Each aspect of our program meets the North American Association for Environmental Education guidelines for excellence. Targeting over 400 students in Lane County, our initiative aims to foster a positive learning environment conducive to lifelong learning, leadership, and action. By the end of our program, students will have an increased awareness of climate change, improved scientific thinking, and a sense of personal growth.

**Howard, Max**
University of Oregon
Mentor(s): Benjamín Alemán
Poster #128

## Optimizing the yield of spin-active single photon emitters in hexagonal boron nitride.

Co-Author(s): Rachael Klaiss, Uriel Hernandez, Viva Horowitz Hannah Maxwell

Quantum information technologies promise ultra-precise measurements, secure communication, and high-powered computing. These technologies rely on quantum bits (qubits) to transmit information, which can be generated by defects in 2-D crystals called single photon emitters. Scientists struggle to build qubit generators because of an inability to precisely and reliably engineer crystal defects with the properties necessary for technological applications. We developed an optimized process for producing qubits in the crystal hexagonal boron nitride using a variety of optical laser microscopy and defect engineering techniques, propelling us closer to mastering quantum technologies and redefining what is possible.

**Howell, Marly**
University of Oregon
Mentor(s): Alison Carter
Poster #187

## Investigating the Angkorian ceramic industry: methodology, typology, and field to lab connections

Co-Author(s): Alison Carter, Carmen Sarjeant

This study considers the earthenware ceramics industry during the Pre-Angkor (6-8TH centuries CE) and Angkor (9-15th centuries CE) periods to understand their typology, manufacture, and broader implications of their use to peoples' ways of life. Despite the importance of earthenware ceramics to daily life, little is known regarding their creation. The artifacts in this study were excavated at the provincial village site of Prasat Baset in Battambang province, Cambodia, by the Pteah Project (Dr. Alison Carter, PI and Miriam Stark, co-PI). This project aims to detail the methodology and framework used to examine the ceramic industry through microscopic and compositional analysis. Examining ceramic artifacts allows one to glimpse people's everyday tasks, identify raw materials, consider how ceramics were produced, and how raw materials and finished products were obtained and exchanged. This compositional analysis research using SEM-EDX (Scanning Electron Microscope with energy dispersive X-ray spectroscopy) took place in fall 2023 to present, consisting of 30 artifact samples sourced from Prasat Baset. Findings in the study appear to support the initial ceramic typology and may offer insight into material sourcing as rare elements are detected across a few samples.

Preliminary findings raise questions of where people sourced materials, how they created ceramics, and show how archeological lab work may offer ease of efficiency in the field by corroborating methodologies.

**Howell, Marly**
University of Oregon
Mentor(s): Sara Cotton, Frances White
Poster #44

## A new field method of collecting bonobo urine for estradiol hormonal analysis

We tested new methodology for non-invasive hormone analysis of primate urine samples. Collection of urine samples in the field is challenging when access to temperature-controlled storage is not available. We tested if urine can be dried onto filter paper and stored at room temperature for future analysis without a loss of information. This study used frozen urine samples previously collected from bonobos at the Columbus Zoo. We compared creatinine and estradiol measurements taken from our dried and rehydrated filter paper samples to previously collected hormonal data from the thawed frozen samples. We pipetted urine onto a 5mm piece of filter paper, dried completely, rehydrated the samples, and followed standard Arbor Assays kit protocols. We found that there is both a minimum quantity of urine needed to be dried on filter paper and a minimum hormonal concentration that can be detected. Linear regressions showed that the original estradiol and creatinine values were highly predictive of values collected from filter paper (F=49.49, p<.001; F=30.41, p<0.001). These results show that filter paper is a promising, convenient field methodology for urine sample collection. Our future research on this topic will be focused on further refining the methodology and ascertaining the effect of time on the dried samples with the hopes of being able to use this methodology to study urinary estradiol in future field studies.

**Howery, Hailey**
University of Oregon
Mentor(s): Jessica Campbell, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Effects of Students' Active Engagement in Religious Communities on Belonging, Community, and Purpose

Our research is looking into the relationship between involvement in religious groups and students' sense of belonging, community, and purpose and how that affects students at UO. Since there is limited data specific to the UO, we are looking more broadly at data from other colleges. We hypothesize that community involvement and support from a religious group can benefit students in these domains. We are investigating this hypothesis to understand how to better support students at the University of Oregon. All four members

of our group interviewed professionals involved with and educated in religion. Through the research we have conducted we found a general trend of an increased sense of belonging, community and purpose with involvement in a religious group; however, this is not specific to students or the University of Oregon. Our primary conclusion is that religious engagement supports students' sense of belonging, community, and purpose. This research is significant because students have varying opinions and involvement in religion, so understanding the possible impacts on wellness and possible causes could help to find ways to support students' well-being.

**Huato, Cara**
University of Oregon
Mentor(s): Susan Sokolowski
Poster #13

## Renew: Accessible Low Tech Textile Recycling for Diverting Commonly Discarded Apparel Materials from

The burgeoning issue of textile waste, with millions of tons annually funneling into landfills, demands urgent attention. "Renew" steps forward with a solution: a low-tech recycling method designed to divert discarded apparel materials from their landfill fate. The project's core aim is to democratize textile recycling, offering an accessible and scalable approach that champions sustainability and landfill diversion. Renew employs renewable binders, such as gelatin, vegetable glycerin, water, and peppermint oil, to rejuvenate discarded apparel materials, eliminating the need for laborious fiber identification and sorting. By sidestepping these logistical challenges, Renew unlocks the potential for widespread adoption, both at the individual and industrial levels.

Through practical experimentation, Renew showcases its efficacy in transforming discarded textiles into new, usable forms, ranging from rigid plastics to flexible textiles. This innovative approach not only addresses the immediate problem of textile waste but also underscores the broader imperative of embracing sustainable practices in the apparel industry. By offering a viable solution to a pressing environmental challenge, Renew presents a pathway towards a more circular economy, where waste is minimized, resources are conserved, and sustainability is priori.

**Hulett-Quinones, Jordan**
University of Oregon
Mentor(s): Tom Hahn, Anupam Satumane
Poster #3

## Bread beyond the crust: insulating with yeast-y beasties

The purpose of this case study was to further understand a variety of materials and their insulative capabilities. The driving hypothesis was that slices of bread could be used, as an alternative insulation material, to decrease the heat loss through car windows after the active heating systems have been shut off, at night by 20%. The study involved sets of insulation panels, made from bread, cardboard, and foamboard, being installed into the windows of a car. Temperatures were taken periodically, every 1 minute for an hour, throughout each of the four tests using a HOBO. The temperatures were then used to compare the heat losses, which were calculated using the change in temperature of the car during each test. The study found that the bread was not the most effective insulator, but the cardboard was. The cardboard decreased heat loss by almost 21% more than the bread. Overall, the study found that a lot more could be studied about using bread as insulation, and it'd like to be acknowledged that a lot of modifications would be needed to actually use bread effectively in practice.

**Huston, Annika**
University of Oregon
Mentor(s): Ram Durairajan, Reza Rejaie
Poster #17

## Alternative Methods of Detecting Volumetric DDoS Attack Signatures with Programmable Switches

This study enhances the ASSURED framework, which detects volumetric DDoS attacks at the prefix level in edge networks, by integrating advanced machine learning techniques to reduce overhead and improve scalability. The original system used a data-fusion method to monitor traffic, significantly lowering false positives and negatives. Our improvements optimize machine learning algorithms to reduce computational demands and enhance real-time applicability in resource-constrained environments.

We refined the models to maintain high accuracy and adapt swiftly to dynamic attack patterns, demonstrating robust defense capabilities against complex DDoS scenarios. The enhanced system offers a scalable, efficient solution for network security, particularly suitable for small to medium-sized ISPs. This research highlights the potential of machine learning in strengthening network defenses, suggesting a path forward for more adaptive, efficient security frameworks against DDoS attacks.

**Iascau, Joshua**
University of Oregon
Mentor(s): Jaxen Godfrey
Poster #129

## Hierarchical Bayesian Inference for Compact Binary Black Holes

Co-Author(s): Jaxen Godfrey

Recent measurements at LIGO-Virgo-KAGRA (LVK) involving compact Binary(two) Black Holes suggest evidence for the phenomenon of Black-Hole formation as understood from the radiation emitted from merging compact binaries. To understand the formation history of said mergers, one may carry out data-driven mixture models using Hierarchal Bayesian Inference; a sort of, "analysis of analyses," in which one considers a set of already analyzed events (presented in the form of strain-data) that individually carry information about mass, spin, redshift, etc. Our analysis revealed that a significant majority of the events, 76%, of 55M$\odot$ range share a similar spin distribution with a 10M$\odot$ peak; with less than 1% of these mergers carrying primary mass less than 57M$\odot$; thus demonstrating a mass gap in which instability ought to occur. Our analysis not only offers the promise of discovering new, empirically motivated, evidence for characteristics of Black-Hole formation and evolution but also provides a robust evaluation of Hierarchical Bayesian Inference within the context of gravitational wave astrophysics.

**Ibanez Sanhueza, Sebastian**
University of Oregon
Mentor(s): Elizabeth (Birdie) Shirtcliff
Works in Progress: Lightning Rounds

## Cortisol as a Biomarker for Long COVID

The COVID-19 pandemic created a public health crisis that, years later, is ongoing yet contained. A new condition, termed long-COVID, is present in patients who continue to have COVID-19-related symptoms months to years after infection. The latest research shows that patients with long-COVID present very low cortisol concentrations–a stress biomarker important in various physiological functions and measured in a range of non-invasive and minimally-invasive biospecimens. This project proposes to examine archival cortisol biospecimens collected before, during, and after the COVID-19 pandemic. We will analyze data from the Early Growth and Development Study, an ongoing longitudinal study of ~600 youth, which includes hair cortisol, a burst of assessments throughout the pandemic, reports of health symptoms, and medical records. We hypothesize that a subset of youth with low cortisol levels will express long-COVID symptoms more than youth with normal-range cortisol levels, that youth diagnosed with long-COVID will have lower cortisol levels than youth without symptoms or diagnosis of long-COVID, and explore if longitudinally cortisol levels drop

pre- to post-pandemic, as would be expected if long-COVID is introducing spurious concerns stemming from high prevalence and low detection. If successful, this study will demonstrate the value of (low) cortisol as a biomarker for long-COVID in adolescents and serve as a template for archived biospecimen projects to inform about long-COVID.

**Ibendahl, Keaton**
University of Oregon
Mentor(s): Harper Keeler, Casey Shoop
Poster #207

## Proposed Solutions to the Effects of Food Insecurity Among College Students

The trope of the 'starving college student' is widespread among college students, so much so that it has come to be an expected and celebrated part of the college experience. This standard of living–never having enough money to buy food, or rarely eating enough or eating nutritionally beneficial foods–is actually food insecurity. This pattern, which is talked about lightly and jokingly, has serious academic, physical, mental, and social repercussions. College students are in a particularly vulnerable position; many have never been required to be self-reliant previously, which can lead to unhealthy eating habits out of convenience and a lack of knowledge. This project asks: How do college students perceive food security–or lack thereof–as an expected part of the student experience? What socioeconomic and personal factors influence food choice; are students lacking a personal knowledge of food security, systems, and management that impacts their food security status; and what changes need to be made to current on-campus food security resources to work towards establishing food security? I am to demonstrate the food insecurity is a salient issue on college campuses that is not addressed with urgency or impact due to the 'starving student' narrative that has normalized food insecurity. Being a starving student is equivalent to being food insecure, just by a different name; it is imperative that this narrative is changed on all levels to ensure that students no longer go hungry.

**Ingraham, Ellie**
University of Oregon
Mentor(s): Lauren Hallett, Marissa Lane-Massee
Oral Panel Unveiling Nature's Rhythms

## Monitoring Insect Population Dynamics in Willamette Valley Hazelnut Orchards Through Novel IPM

The Willamette Valley cultivates 99% of the United State's hazelnut crop, encompassing more than 80,000 acres, and faces a crucial need for more sustainable practices as the industry expands. Insufficient

knowledge of Cydia latiferreana (Filbertworm) management leads many land managers failing to acknowledge the importance of insect diversity and pest-predator dynamics in orchards. By integrating new methods for pest management, I studied the prevalence of insects by status (beneficial, neutral, or pest) through two simultaneous treatments: the conjunct use of native conservation cover to enhance pest-predator dynamics and the use of Isomate filbertworm pheromone rings to disrupt mating patterns. Filbertworms are a key pest in hazelnut orchards as they pose the greatest threat to crop production. My work hopes to fill this knowledge gap between conventional and alternative methods. Adoption of these strategies benefits farmers and public health while preserving ecosystem diversity.

**Inman, Grace**
University of Oregon
Mentor(s): Amanda Cook, Melanie Kascoutas
Poster #122

## Exploring Palladium-Catalyzed Decarbonylation of Carboxylic Acids

Co-Author(s): Melanie Kascoutas

Transition metal catalysis is an expanding field within the chemical community. Of specific interest is the identification of a renewable synthesis of alkenes for the retirement of fossil fuel consumption. Current procedures, with this end goal in mind, focus on Palladium (Pd) for its catalytic properties. A d-block transition metal, Pd, is grouped with other transition metals that have been widely incorporated into industrial syntheses and is well supported in its catalytic capacity from relevant literature. The focus of this research is to develop a Pd catalyst for the decarbonylative dehydration of carboxylic acids to form alkene precursors for synthetic molecules on an industrial level. PdCl2 with attached ϖ-allyl ligands has been shown to efficiently convert 4-phenylbutyric acid into allyl benzene (AB) with partial isomerization to ß-methyl styrene (bMS). Within this study, the identity of the catalyst has been expanded to include PdBr2 and further ϖ-allyl ligands based on literature precedent for increased efficacy of Br- catalysts. Within this study, PdBr2 has been shown to produce the highest product yields in comparison with other Pd-based catalysts. It is hypothesized that the increased electronegativity and size of Br- add further stereoselectivity to the catalyst coupled with additional ligands. This work aims to develop a highly efficient Pd catalyst with mild reaction conditions, ultimately designing a new renewable synthesis of alkenes.

**Isakharov, Lazar**
University of Oregon
Mentor(s): Cullen Abigail, Walker Ashley
Poster #162

## The effect of zinc status on cognitive and vascular function in a mouse model of Alzheimer's disease

Co-Author(s): Mila Molina, Abigail Cullen, Ashley Walker

Exploring potential treatments for Alzheimer's disease (AD) is important as the aging population continues to increase. A hallmark of AD is excessive oxidative stress. Previous research has identified zinc as an antioxidant and regulator of vasodilation, associated positively and negatively with cognitive function. However, its relationship with vasodilation in AD has not been fully elucidated. We hypothesize that maintaining zinc status will improve cognitive and vascular function in a mouse model of AD. We treated male and female AD model mice (6 m) with zinc-normal (30 ppm), low (2-5 ppm) and high (300 ppm) diets for 2 m. We evaluated cognition through rotarod and nest building tests. We assessed large artery stiffness by pulsewave velocity and cerebrovascular function by pressure myography. There was an interaction effect of zinc status and sex ($p=0.047$) and a main effect of sex ($p=0.02$) on time spent on rotarod. There was no effect of zinc status or sex on nest building. We identified a main effect of sex on pulsewave velocity ($p=0.01$). We are still analyzing cerebrovascular function but preliminary results indicate sex-differences in response to zinc diets, where low zinc may be detrimental to males but not females. We find that zinc status may impact cognitive and cerebrovascular function, indicating the need for further research into zinc's effect on AD. This research is aimed at determining potential future nutritional interventions for reducing the risk of AD.

**Jahn, Benjamin**
University of Oregon
Mentor(s): Joyce Cheng
Oral Panel Explorations in Expression

## "... and when I close my eyes I see them" Agnes Martin, Gertrude Stein and the Quality of Encounter

In 1959, American abstract painter Agnes Martin excerpted a passage from Gertrude Stein's "Idem the Same: A Valentine to Sherwood Anderson" in her contribution to the print materials of one of her early group exhibitions at Betty Parsons Gallery in New York. This excerpt instantiates an affinity among Stein's writing and Martin's painting. My work undertakes a reading of Martin's project which derives both from her own idealist philosophy of an "awareness of perfection" which is stored in memory and renewed through painting and its analogue in Stein's theory of composition in the "continuous present." I also question

Martin's intermediate position among Abstract Expressionism and Minimalism by reviewing relevant critical debates surrounding the abstract sublime and the unique effect of facture on her iteration of the grid. These debates surround the instant composition and reception elide; space and time become a function of the viewer's apprehension of Martin's evident procedure, particularly through the vicissitudes of her line. Her work emerges in Stein's "continuous present" when her pencil slips, or as she retraces a line in the a priori axiomatic syntax of the grid characteristic of her mature paintings. I conclude by arguing that Martin's contribution complicates the inclination of modernist abstraction towards the evacuation of the subject as it interfaces with her own telos of instantiating an "awareness of perfection" which resides in the mind.

**James, Dante**
University of Oregon
Mentor(s): Caitlin Kowalski, Matt Barber
Poster #93
Works in Progress: Lightning Rounds

## The Pore-fect Team: Sebum's Impact on Microbial Physiology and Antibiotic Response

Co-Author(s): Sylvia Khalil

Human skin contains up to 6,000 sebaceous glands per square inch that produce sebum, comprised of cell debris, lipids, antimicrobials, and fatty acids. Sebum is integral to host skin barrier and defense, yet its influence on bacteria is largely unknown. Recently, artificial sebum formulations have become available, allowing us to study its influence on microbial physiology and antibiotic susceptibility. Staphylococcus aureus is the primary bacterial pathogen of the skin, and causes a range of diseases, from skin lesions to systemic infections. We hypothesize sebum alters S. aureus physiology during skin colonization and impacts its sensitivity to antimicrobials. Using growth assays and genetic mutants, we found that S. aureus growth in sebum requires fatty acid kinase (fakA) and its accessory protein fakB2. These proteins allow uptake of sebum unsaturated fatty acids into the bacterial membrane. We are currently working to understand why incorporation of sebum fatty acids is necessary for growth. Fatty acids have also been observed to alter S. aureus sensitivity to antibiotics. We confirmed that sebum promotes sensitivity to the last-resort antibiotic vancomycin and enhances biofilm growth, a naturally antibiotic tolerant state. Work is ongoing to assess additional sebum–antimicrobial interactions. Through these experiments, we aim to identify mechanisms for therapeutic intervention and enhance our understanding of bacterial physiology in the unique host niche of human skin.

**Janthana, Yanapat**
University of Oregon
Mentor(s): Kevin Harnden
Poster #97

## Engineering Plastic Degrading Enzymes using Machine Learning

Co-Author(s): Kevin Harnden, Parisa Hosseinzadeh

Enzymes provide a safe and green method for catalyzing the degradation of environmental pollutants and synthesizing pharmaceuticals, but limitations lie in the narrow substrate or reaction scope of naturally occurring enzymes and the difficulty in creating novel ones using current computational methods. A major impediment to the use of computational design of enzymes that catalyze novel reactions is the low success rate of the currently available techniques for generating de novo enzymes. Here, we propose to generate a library of artificial enzymes through an iterative cycle of design-build-test-learn, where state-of-the-art computational methods are used to generate an initial library of new enzymes. The designs will be built and tested using large scale gene synthesis techniques and high-throughput screening, where tens of thousands of enzymes can be tested and used to generate a large dataset of successful and unsuccessful enzymes. The dataset will then be analyzed using deep learning algorithms to extract important features for successful enzyme designs. By combining the newest computational methods for enzyme design with state-of-the-art gene synthesis and very high-throughput screening methods, we seek to address the knowledge gaps that prevents successful design of novel enzymes.

**Jaremko, Elise**
University of Oregon
Mentor(s): Jayson Paulose
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Nonlinear plate modeling for sound manipulation

The ability to manipulate sound signals is central to applications ranging from vibrational isolation to ultrasound imaging. Arrays of microscopic graphene plates pose a promising way to direct and process vibrations in the Megahertz regime relevant to ultrasound. While the vibrational response of a plate array can be calculated by numerically solving the nonlinear partial differential equations of elasticity theory, it requires modeling each plate as hundreds of discrete elements which can obscure the effect of changes in array design. These calculations can be sped up massively if each plate can be simplified to a single spring-mass oscillator with a nonlinear response, turning the array into a spring-mass network. My project was to help implement this simplification by testing it on one or two coupled plates. I used the finite-element software COMSOL to solve the full nonlinear plate equations with prescribed initial conditions, and

interpreted the resulting vibrations as single or coupled spring-mass oscillators. I observed a shift in the frequency of the oscillatory response tied to the amplitude of the initial condition. The ultimate goal is to extract parameters for the spring-mass network that will enable the vibrational response of a large array of hundreds or thousands of plates to be calculated quickly and efficiently using a far simpler model.

**Jefferis, Payton**
University of Oregon
Mentor(s): Jonathan Dorogin, Marian Hettiaratchi
Poster #102

## Investigating Properties of Affibody-Conjugated Hydrogels for Controlled Osteogenic Protein Delivery

Bone morphogenetic protein-2 (BMP-2) is a clinically relevant protein used to reestablish the natural healing cascade upon traumatic bone fractures. However, current delivery methods cannot control protein release rates, resulting in adverse effects. Compared to traditional delivery vehicles, leveraging affinity-based biomaterials to control the delivery rates of proteins to injury can mitigate off-target effects. Our lab has identified affibodies, affinity proteins, specific to BMP-2 from a yeast display library and demonstrated the ability to slow BMP-2 release from affibody-conjugated hydrogels. However, the inclusion of affibodies may affect hydrogel physicochemical and biological properties.

Hydrogel porosity with and without affibodies was measured using the equilibrium swelling theory. Affibodies did not alter mesh size. To improve the biocompatibility of the gels, the cell-adhesive peptide RGD was added, and its effects on BMP-2 release and cell infiltration were assessed using enzyme-linked immunosorbent assays (ELISA) and histological analysis, respectively. Only the high RGD concentration (2 mM) minutely increased BMP-2 release. Gels with and without RGD and affibodies were implanted into male Sprague Dawley rats for one week. Histological analyses are ongoing, though preliminary results suggest an increase in cell infiltration upon addition of RGD.

Affibody conjugated hydrogels show promise in improving the efficacy of BMP-2 delivery for clinical applications.

**Jernigan, AJ**
University of Oregon
Mentor(s): Helen Huang
URS Film Screening

## The Irish Potato Famine: A video essay by AJ Jernigan

This work is a creative take on a research project for writing class. The goal was to make a “non-standard” final project, rather than the usual final essay.

This work is built using premiere pro and plenty of stock footage and sound. The essay was written and recorded by AJ, using an audio setup he has been procuring since the start of last year.

AJ says the goal of this project is to adapt the regular essay into a new medium, and teach his peers about a historical event that is very important to his own family history. Being descendant of a line of Irish immigrants, AJ has ancestors who witnessed the famine firsthand, and lived to tell about it.

He hopes that his peers take away the knowledge that this famine was the work of multiple complicated factors coming together to unleash devastating consequences, and the warning that those who do not learn from history are doomed to repeat it.

**Jette, Adam**
University of Oregon
Mentor(s): Sarah Ebert
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Music's Impact on Workouts; Mental Benefits

Listening to music while working out has benefits to improving how you feel while exercising. Being involved in the gym and our love for being active is what has inspired us to learn about effective ways to workout in a healthy form. In the research we conducted over the span of a month, we have achieved our goal to gain a deeper insight and find reasoning in how music is capable of enhancing our mental performance when it comes to being active. We hope that our project will provide a new sense of knowledge when it comes to listening to music and why we feel as though listening to music is a barrier for a safe workout environment as well as a motivator. Working out or being active is a big part of our discourse community here at the U of O so bringing awareness as well as a new profound love for physical activity is a big accomplishment. Our primary findings consist of how different genres of music have the ability to impact many unrecognizable concepts such as positive association, distraction from discomfort, increased enjoyment, and reduced perception of effort. These effects prove how music is a great thing to incorporate in any physical activity, and anyone's preference can make a difference. We have known and had the opportunity to learn more about why music makes our workouts better and much more motivating. Listening to music is a healthy way to find natural motivation and improvements when it comes to physical exercise.

**Jiricek, Amanda**
University of Oregon
Mentor(s): Katie Lynch, Dehlia Wolftail
Oral Panel Pathways to Environmental Empowerment
Environmental Leadership Program:

## Inspiring Future Climate Leaders Through Environmental Education

In the face of the looming climate crisis, young people need to be given the tools to take action. Research shows that nature exposure through environmental education (EE) creates a better learning context in which students excel academically, experience personal growth, and practice land stewardship. EE fosters skills that go beyond the classroom, so students have the tools they need to navigate the climate crisis. The scenic old-growth forests of the McKenzie River watershed are an instrumental resource for educating youth. In recognition of this, the University of Oregon Environmental Leadership Program partnered with H.J. Andrews Experimental Forest to create a climate science curriculum for local middle schools.

Following the U.N. Tbilisi Declaration's Awareness to Action framework, our curriculum explores phenology, microclimate, wildfire ecology, and tree identification, employing hands-on, place-based learning aligned with Next Generation Science Standards. We focus on building skills such as observation, critical thinking, and data collection. Each aspect of our program meets the North American Association for Environmental Education guidelines for excellence. Targeting over 400 students in Lane County, our initiative aims to foster a positive learning environment conducive to lifelong learning, leadership, and action. By the end of our program, students will have an increased awareness of climate change, improved scientific thinking, and a sense of personal growth.

**Johnson, Maxim**
University of Oregon
Mentor(s): Joanna Merson
Virtual

## How to Make a World That Doesn't Exist

At times our world can seem fantastical. It is a collection of natural wonders, unexplainable phenome, and universal rules which all combine to create the world we see today. From mountain ranges which span thousands of kilometers to plants which seem products of science fiction, there are many amazing aspects of our world which make it unique. Through this project I hoped to dissect the many different facets of our world, and translate the many systems and processes into a fantasy world.

My final product is a fantasy map. I felt that this final product would best display the similar natural and cultural systems at play. Through a top-down view of this new world, viewers can start to understand certain

processes which dominate our own world. This map was made using Procreate primarily as well as Adobe Illustrator.

By choosing to create a map I hope to invoke wonder and curiosity in viewers. As a geography student I get lost in the many aspects of our world, from its natural wonders to the patterns we people create on our own. I hope to invoke a similar feeling to those who see this new world.

**Johnson, Ryan**
Lane Community College
Mentor(s): Kimberly Parzuchowski, Caroline Lundquist
Oral Panel Exploring Gender Frontiers: Media, Ethics, and Empowerment

## Ethical Masculinity: An Argument For Gender Equality and The Wellbeing of Men

What role should men play in addressing the systemic issues of masculinity and gender inequality? I define gender inequality as a shared experience of a fallacious belief regarding gender specific capabilities, perpetuated by a system of hegemonic masculinity. Raewyn Connell identifies hegemonic masculinity characterized by male features of strength, courage, aggression, and dominance as a means to provide and protect those deemed weaker. This has also been referred to as "toxic masculinity" due to the egregious behavior and actions it elicits in men in contrast to egalitarian and feminist philosophies. Terry A. Kupers conducted studies on "toxic masculinity" among men incarcerated in prison, and found that for most men this is more of a conceptual stereotype, but they often worry others will view them as unmanly if they don't keep up the facade. In this presentation I explore the problems that men come up against when challenging their own masculinity, proposing a solution in ethical masculinity, and in doing so, hopefully emboldening the argument for gender equality. I propose the development of an alternative, ethical form of masculinity, which is intentional, and favors the autonomous rights and happiness of self and others. I believe the problem of masculinity needs further study, and is of critical importance to anyone who considers the rights and wellbeing of all genders.

**Johnson, Ryan**
Lane Community College
Mentor(s): Kimberly Parzuchowski, Caroline Lundquist
Poster #224

## Relief, An Ethical Reflection on Animal Welfare Poem

I wrote the poem "Relief" with a research and creative writing design I began developing a year ago to help assist in approaching problematic questions using the prose or poetic medium. "Relief" is a poem about anthropocentric moral policy, and a critical reflection on animal welfare created to provoke questions about

the treatment of non-human species for human purposes. For this poem I focused on one question. What causes people to believe non-human species are not worthy of human-like consideration? “Relief” is a poem of accountability that addresses the root of this question. To write the poem I began with research into the extent of current non-human abuses both in scientific research and in industrial animal farms, and what I found is heart wrenching. The foundation of these abuses is the idea of human exceptionalism, claiming that the uniqueness of human sentience and consciousness is what makes humans superior, and non-human species inferior. Robert C Jones provided strong arguments against human exceptionalism in “Science, Sentience, and Animal Welfare”, which helped shape the philosophy of “Relief”. I hope to use this research and creative writing design here as an approach to the abuses of non-human species not through a lens of justification but through a lens of accountability. I designed “Relief” to force us to examine this difficult to discuss problem, and hopefully force us to think deeper on our reasons for why we treat things without care that are not us.

**Johnson, Savannah**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
Oral Panel KIDD Life in Stories

## Sneakers

The story of Sneakers explores the life of Juno and her family in Albuquerque, New Mexico in the mid-1990s. The story is centered around Juno’s relationships with her two older brothers and how they shape the person she has become. Through the eyes of a child, we see Juno’s experiences with childhood trauma, repressed sexuality, and living in poverty. Inspired by my own experiences growing up in New Mexico and Sean Bakers’ 2017 film “The Florida Project” I hope to have crafted a story that resonates with those who feel they’ve lost parts of their childhood and yearn to return to it but cannot.

**Johnston, Sunny**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet’s purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced,

universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Johnston, Sunny**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Jones, Anessa**
University of Oregon
Mentor(s): Adam Glass
Poster #123

## Color Tunability of Benzofulvenes

Co-Author(s): Madeleine Klein, Gracie Cao, Logan Devack

Benzofulvenes and their derivatives have implications as synthetic precursors, molecular materials, and in medicinal applications. The interesting conjugation-based properties of benzofulvenes raises the possibility of color tunability and other optical properties. Our work focuses on the synthesis of various benzofulvenes and investigations into their optical effects through absorbance and fluorescence spectrometry. We are specifically looking to explore push/pull dynamics related to different substituents on our title compounds with regard to conjugation and optical effects. This will allow us to determine HOMO-LUMO energy gaps that may become tunable based on which substituents are involved. Overall, our goal is to increase the reproducibility of benzofulvene synthesis, optimize yield, and manipulate the compounds with varying substituents in order to gain a better understanding of their optical properties and implications in applied scenarios.

**Kahn, Beatrice**
University of Oregon
Mentor(s): Helen Southworth
Oral Panel Voices and Visions: Identity and Culture in Transition

## "Like a prisoner": Confinement and the Carceral State in Jean Rhys' "After Leaving Mr. Mackenzie"

This paper explores the framing of Jean Rhys' "After Leaving Mr. Mackenzie" through a lens of confinement. Using close reading and comparative analysis with Michel Foucault's commentary on the Panopticon in "Discipline and Punish," I posit that Rhys' depictions of the carceral state are bolstered by her personal experiences with the justice system. Isolation has been explored in Jean Rhys scholarship. However, scholars tend to gloss over the indicators (some of them appropriately obscured) of physical imprisonment in "After Leaving Mr. Mackenzie." Julia, the protagonist of the novel, is embodied by carceral realities. First, explicit depictions of incarceration bolster my claim that the figure of the prisoner provides a central framework to the novel. Second, the historical context of female criminality in Paris and London highlight the temporal and spatial aspects of deviance. Finally, allusions to the juridical system and Bentham's Panopticon translate into representations of the variegated arms of the criminal justice system, notably through Mr. Horsfield, Mr. Mackenzie and Mr. James. Ultimately, this project invites a consideration of Rhys' writing within the broader framework of the carceral state.

**Kamman, Charlotte**
University of Oregon
Mentor(s): Mark Fretz
Oral Panel Green Futures in Habitat and Material Science

## Mycelium Bio-Composite Acoustic Isolation Materials for Mass Timber Floor and Ceiling Assemblies

Mass timber is an increasingly popular building material due to its low embodied carbon and aesthetic qualities. However, mass timber's acoustically resonant properties often necessitate the use of acoustic isolation in floor and ceiling assemblies to reduce sound and vibration transmission. Currently, many of the acoustical isolation materials available on the market are non-renewable, petroleum-based materials with large environmental impacts. This research investigates the use of fungal mycelium, specifically Pleurotus ostreatus (Oyster mushroom) and Ganoderma lucidum (Reishi mushroom), as a binding agent for wood processing residues and other organic substrates to create a renewable alternative for acoustic insulation in mass timber assemblies. This research involves testing the material growth and production process as well as measuring the physical and acoustic properties of various materials produced. By varying mycelium

species, substrate formulations, and growth and dehydration parameters, this project seeks to optimize material durability and acoustic performance. The findings of this exploratory research will contribute to the development of eco-friendly building materials, imply opportunities for the reuse of wood processing waste streams, and promote the development and use of innovative, sustainable building materials.

**Kaplow, Sasha**
University of Oregon
Mentor(s): CJ Pascoe
Oral Panel Delving Deeper

## Beneath The Surface

As tattoos grow more common across the world, we must ask the question of "why the gain in popularity?" My research works to connect one's personal, intersecting identities with the ink on their skin, hoping to gain insight as to who the person is in relation to their ink, and how they can heal from past trauma by getting tattoos. Through ten interviews with participants, most of whom reside on the West Coast, conclusions were drawn about the impact of a tattoo on one's healing journey and the connection of that ink to identity sectors. Seven of my ten participants were Jewish, as the relationship between overcoming Holocaust trauma and tattoos was an important aspect of my research. I wanted to know how Jewish people could reclaim the meaning of a tattoo after many of their ancestors were branded by them in the Holocaust from the Auschwitz concentration camp. Is it rude to get ink intentionally when their ancestors had to forcibly? Or is there a reclamation of power associated with younger generations getting tattoos themselves? My findings suggest religion and gender to be the two main identity factors when getting a tattoo. The reasons will be revealed in my presentation.

**Katz, Molly**
University of Oregon
Mentor(s): Jen Doty
Poster #30

## Cyber Spillover: Youth, Parent, and School Administrators' Report on Youth Technology and Effects

Co-Author(s): Chandra Slonecker, Xiaoqi Ma

Our qualitative study aimed to capture crucial insights from parents, school administrators, and middle-school-aged youth themselves regarding their experience with technology use, including its effects on youth relationships and school climates. Our team interviewed eight middle schoolers, eight caregivers, and eight school administrators. All participants took part in an in-depth, semi-structured interview, conducted and

recorded with consent/assent using Zoom (25-60 min.). After transcription, our team conducted a thematic analysis, during which time we identified a coding structure comprised of main themes and sub-themes (Braun and Clarke, 2009). We conducted an initial round of independent coding using DeDoose, with 20% of interviews being double-coded by the full team. We continued to meet regularly throughout coding to ensure thematic consensus (Fereday & Muir-Cochrane, 2006). Four main themes emerged: relationship development, mental health, school climate, and family tech climate.

This study illuminates key ways that youths' tech-based interactions influence the socio-ecological, in-person environments that most middle schoolers navigate each day. Youth, parents, and administrators reported that tech use can be a positive tool; however, all participant categories also reported several examples of tech disrupting youth developmental experiences. Our study reveals a clear need for digital citizenship training tailored to youth, families, and administrators alike.

**Keaton, Cameron**
University of Oregon
Mentor(s): Keli Yerian, Bibi Halima
Poster #226

## Is a student-authored textbook possible? Open Pedagogy says yes!

The Open Educational Resources movement is pushing faculty to adopt free, open-source course materials to reduce the cost of materials for students. This project addresses this call by engaging students to write an open-source course textbook themselves! This student-centered, grant funded project includes five undergraduates who are creating ten multimedia, interactive chapters for LING 144, Learning How to Learn Languages. All of the students recently took this course, which focuses on theory, research, and strategies for learning languages, including languages that are less commonly taught, heritage languages, and indigenous languages that are in danger of disappearing. With the help of a Graduate Employee as a project manager, students are creating the book over a period of six months (January-June) as a team in the platform Pressbooks, which hosts open-access materials. They have completed five chapters so far, with team members dividing up work on writing, illustration, case studies, and multimedia elements that showcase key concepts in the book. This book will become the main text for future offerings of LING 144 (which enrolls about 200 students per year) and will be a living document that future cohorts of students can annotate and update themselves for course credit. Team members will design and present a poster that highlights the purpose of the project, its platform, the content, and the processes of the teamwork.

**Kehoe, Nitsa**
University of Oregon
Mentor(s): Judith Raiskin
Poster #213

## Women's Empowerment on Lesbian Lands: Challenging Gender Norms

Women throughout history have stood in the face of inequality, usually due to gender stereotyping and biases. This research goes into the women's experiences at WomanShare, a lesbian land community in Southern Oregon, to understand how their diverse skills, commitment to education, and mentorship dynamics contribute to their success in communal living and foster a culture of empowerment. By working together to learn, teach, and carry out roles that were traditionally held by men, women at WomanShare were able to create a space of individuality and feminism. The research draws on primary sources, including interviews and writings from community members, portraits, and academic sources that contextualize the feminist movements of the 1960s and 1970s.

**Keller, Abbey**
University of Oregon
Mentor(s): Natanya Villegas, Calin Plesa
Poster #103

## Engineering Circular Guide RNAs for Enhanced CRISPR-Cas9 Efficiency

The CRISPR-Cas9 system has revolutionized genome editing, offering remarkable precision and versatility in targeted genetic modifications. This study presents an approach to improve CRISPR-Cas9 efficiency through the design and validation of circular guide RNA (cgRNA) constructs. Circular RNAs are more stable than their linear counterparts which are susceptible to degradation by RNases which are abundant in the environment and act on their ends. Prior studies show that effective cgRNAs can be produced from self-splicing group I introns, but the optimal linker lengths for efficient circularization remain unknown. The linker, essential for connecting the ends of the cgRNA, is an added sequence that prevents tight folding, allowing stable circularization without interfering with the RNA's editing efficiency. Our goal enables the production of stable cgRNAs using a Golden Gate Assembly (GGA) plasmid incorporating a gRNA template and self-splicing group I introns. Following successful validation of our GGA constructs in Escherichia coli cells, I plan to test numerous cgRNA linkers to find the optimal linker for cgRNA stability and improved CRISPR efficiency. I predict that the circular guide RNAs will exhibit enhanced efficiency and stability compared to linear counterparts, thereby providing valuable insights for advancing CRISPR-Cas9 technology and its applications in genome editing.

**Kerr, Stephenie**
University of Oregon
Mentor(s): Meredith Jacobson
Works in Progress: Lightning Rounds

## Exploring Biophilia in the Workplace: Barriers and Opportunities for Professional Adaptation

Studies about biophilia in the workspace have shown positive correlations between workplace environment and productivity. Biophilia is the essence felt by a human when encountering natural elements. This study's primary purpose is to pursue a healthy mind and body in the workplace which promotes the best conditions to allow workers to fulfil their potential. This study aims to objectively define if it is plausible to adapt biophilia into the workplace without creating a negative cost to benefit ratio. The methodology employed in this study involved secondary and tertiary research methods. Secondary research entailed a comprehensive review of existing literature and data relevant to the topic. Tertiary research involved the analysis and synthesis of information gathered from sources such as academic journals, reports, and credible online databases. When biophilic design is present, reports show that workers provide higher intellectual performance, feel less drowsy throughout the day, less stressed, have satisfaction with workload, and positive thermal satisfaction. Setting up biophilic spaces will incur a large cost initially, however it will pave the way for a positive return on the investment of creating an efficient workspace while supporting health in mind and body of employees. Involving the workers in the planning process during implementation is vital as the impact on worker satisfaction and productivity is dependent on their preferences and specific workstyle.

**Kesterson, Brendan**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
KIDD Artistic Echoes

## Headliner

This piece is a creative short story about a detective, Davis Grey, solving a murder mystery in 1950s Chicago. "Headliner" is heavily inspired by the noir detective film genre that was popularized in the 1940s and 1950s. These low-budget films were shot at night due to cheaper production costs and are known for their gritty depictions of crime, dark and shadowy dispositions, self-centered protagonists, and the alluring femme fatale, a mysterious woman who toes the line between right and wrong. Film noir's ostentatious and often over-the-top nature makes it an intriguing and entertaining genre to explore, whether one does so through writing, reading, or watching. It is my hope that people have just as much fun reading this story as I had writing it.

**Khachatourian, Jenna**
University of Oregon
Mentor(s): Alycia Galindo, Marian Hettiaratchi
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering

## Development of Hyaluronic Acid- Alginate Hydrogels for Neural Tissue Repair

Co-Author(s): Alycia Galindo, Marian Hettiaratchi

Trauma to the central nervous system (CNS), including spinal cord injuries, can lead to severe neurological impairment. There is currently no treatment that completely restores the CNS to its original function. Injectable hydrogels can serve as a method of delivering therapeutics through the highly selective blood-spinal cord barrier. We hypothesize that crosslinking hyaluronic acid (HA) and alginate (Alg) to form a hydrogel will produce an environment that can stimulate neural cell growth. To allow for crosslinking, we exposed aldehyde groups on the Alg through an oxidation reaction using sodium periodate and functionalized HA with adipic acid dihydrazide groups. Mixing the two modified polymers resulted in a hydrazone-crosslinked hydrogel. HA was also functionalized with norbornene groups to enable the bioconjugation of affinity proteins for controlled therapeutic protein release. We varied the modified polymer concentrations of HA and Alg and evaluated the physiochemical properties of different hydrogel formulations including the compression modulus, gelation time, and mass change. We determined that the HA3-Alg2 hydrogel closely matched our target properties. In future work, we will test the cytocompatibility of the HA-Alg hydrogels with neural cells and evaluate neuronal differentiation within our hydrogel platform. Lastly, we will incorporate controlled therapeutic protein delivery of glial cell line-derived neurotrophic factor, to stimulate neural tissue repair.

**Khalil, Sylvia**
University of Oregon
Mentor(s): Caitlin Kowalski, Matt Barber
Oral Panel The Little Things in Life Science
Poster #83

## Fungal antagonism as a driver of antibiotic tolerance in the skin pathogen Staphylococcus aureus

Human skin is home to diverse microbes constituting the skin microbiome. Several members secrete antimicrobials that prevent infection by the skin pathogen Staphylococcus aureus. S. aureus is a threat due to its rapid evolution of antibiotic resistance, but its ability to evolve resistance or tolerance to antagonism by other microbes is unknown. We discovered that the skin resident yeast Malassezia can kill S. aureus and sought to determine how this antagonism might shape S. aureus evolution. To accomplish this, we repeatedly exposed S. aureus to Malassezia antibacterial products and selected for survival. S. aureus evolved tolerance

through activation of a general stress pathway and virulence regulator, but these factors regulate many genes, and it remains unclear how they result in tolerance. Next, we repeated the experiment to select for S. aureus tolerance to Malassezia in the absence of either regulator. We found that tolerance arose through mutation in the serine-threonine phosphatase Stp1. Stp1 regulates the bacterial cell wall and mutations occur naturally in clinical strains tolerant to cell wall targeting antibiotics. Similarly, our evolved Stp1 mutants have thicker cells walls and survive exposure to Malassezia and the antibiotic vancomycin. While work is ongoing to characterize the full tolerance mechanism, these discoveries suggest that in the absence of clinical antibiotics, skin microbial antagonism can select for antibiotic tolerance in important pathogens.

**King Watt, Lauren**
University of Oregon
Mentor(s): Angela Long
Poster #64

## Healthy Minds Study Pre- and Post-COVID: University of Oregon Student Mental Health Needs and Access

Co-Author(s): Zoë Nuñez, Kaitlyn McWilliams

The University of Oregon (UO) participated in the 2017, 2019, 2021, and 2023 Healthy Minds Study (HMS), a survey-based assessment of mental health status and service utilization among college students. A trend analysis of HMS data was done by UO University Health Services and Student Services and Enrollment Management Research and Assessment teams. This trend analysis includes two pre- and two post-COVID onset years.

A qualitative review of UO data suggests increased student need for mental health services, decreased student flourishing when comparing survey results pre- and post-COVID onset years, and increased student self-efficacy to seek services. Increases in anxiety and depression rates, academic impairment, and need for mental health support when comparing survey results pre- and post-COVID onset demonstrate an increased need for mental health services. Already low flourishing levels decreased after COVID onset. Increased rates of help seeking behavior and desire to access services since COVID onset illustrate higher self-efficacy rates. The Health Equity Action Project of the Student Health Advisory Committee recommends UO implement changes to increase access of on campus mental health resources given that students need and actively seek care to create a community of students who are supported and share resources with others.

**Kirkpatrick, Audrey**
University of Oregon
Mentor(s): Melissa Baese-Berk, Tobin Hansen
Poster #244

## Investigating the sociolinguistic environment of Spanish: dialect preferences with heritage speakers

It can be thought that our internal perception of language doesn't have many significant effects on the world around us however social perception of speech other than our own can translate into linguistic hierarchies and discrimination.The research presented aims to analyze the current sociolinguistic environment of Spanish specifically in the U.S. The purpose of the research further investigates to what extent social factors, such as linguistic attitudes emitted by caregivers, have an effect on language attitudes. The main questions posed are: what dialect preferences are present for Spanish heritage speakers in the U.S.? What social factors during childhood contribute to linguistic biases? A Qualtrics survey was distributed to heritage speakers online where they were asked about dialect preferences and ratings of standardness towards four different dialects in Spanish as well as their experience with Spanish during childhood. Results found that negative comments from caregivers during language development, travel during childhood and patriotism had significant effects on language attitudes. The implications of this research are that the social factors mentioned can have effects on language attitudes, however further research should be conducted analyzing different factors and participants. Identifying where negative linguistic attitudes originate from can have us rethink how we teach language both within formal instruction and at home to combat linguistic discrimination.

**Kirkwood, Parker**
University of Oregon
Mentor(s): Cory Olsen
Poster #8

## Riley Revamp

When asked to reimagine an existing dormitory built in the 60s, I wanted to understand the elements that go into designing the common areas of a living space for students. Inspired by the contemporary designs of the newer dorms on campus, I hoped to implement some of the concepts into my own final design. Originally, I wanted to present this space embodying the full mid-century modern look but quickly realized that these maximalist elements are beautiful for certain spaces, but as for a dorm space, the concepts would overwhelm residents. I shifted my concept to brighten the space, fully modernizing the interior ground level, while playing with pops of color, funky textures, and unique design elements to create a very desirable

space for students to live in. I saw the original dark wood tones and immediately wanted to keep the wood elements but at a different tone, something more lite and contemporary. I also focused my design on curvature within the rectangular floor plan. Overall, I wanted this space to feel inviting for residents, a place where you can relax and take a break from school work while enjoying the playful elements and furnishings.

**Kitagawa, Seira**
University of Oregon
Mentor(s): Kelli Matthews
Poster #24

## Case Study of Public Relations Campaign at the National Ainu Museum; to Communicate the Unvoiced

Ainu is a native tribe in Hokkaido, the northern part of Japan. It has a rich history and traditions including their language, spiritual beliefs, and creative arts. However, as the Japanese mainland government expanded its power over Hokkaido from the late 19th century, some policies and treatments were unfair to the Ainu. In 2018, the National Ainu Museum Upopoy opened, which is an impactful step for the Ainu to recognize their culture and history. The case study research focuses on how Public Relations plays a role in the new establishment of the museum as well as in spreading recognition through looking into their website, government report, and social media. Multiple aspects have been covered by their PR plan including planning events, usage of social media, and creating a virtual museum, which overcomes the issue of its location being far away from most parts of Japan. As a result, some numbers support the success of the PR campaign such as the increase in visitors and Hokkaido counties receiving more funding from the government. There are also some qualitative results such as making changes in textbooks about Ainu and bringing more media to cover the museum and the movement beyond. This case study proves the importance of sharing information with multiple aspects of the approach.

**Kitagawa, Seira**
University of Oregon
Mentor(s): Catalina De Onis
Asian Studies Research Event Poster

## Communicating Struggles and Support for Foreign Workers in Japan

The number of foreign workers in Japan has increased over the years, expected to reach 1 million by 2040. The reasons behind it include the declining and aging population. The government has been accepting so-called “foreign workers” to work in Japan to sustain the economy. My research focuses on studying foreign workers’ struggles and support systems and exploring the communication systems behind them through

literature reviews, media observations, and interviewing people from different perspectives. There is a lack of representation and attention to this topic of foreign workers as well as the greater topic of untraditional Japanese communities in Japan. On the other hand, several organizations and individuals pour their work into fighting against unfair conditions that foreign workers face as well as providing language and culture support for the newcomers. There was also a positive point of view from Japanese college students that they are willing to connect, learn, and include people from diverse backgrounds if there is an opportunity. These findings pointed out the lack of communication about the greater topic of diversity in Japan as well as possible opportunities to create a space for more communication and understanding. Having to live in Japan and the US inspired me to acknowledge this issue and provided me the passion to pursue research that is significant to the future of Japan.

**Klein, Abigail**
University of Oregon
Mentor(s): Martin Klebes
Virtual

## Smallpox and COVID-19: An Analysis of Germany's Pandemic Responses

Analyzing the spread of the SARS-CoV-2 virus led me to wonder how prior health crises influence current mitigation strategies. I focused on the Smallpox Pandemic of 1870-1875, but as my research evolved, the 19th century data proved unreliable and I pivoted to examining the responses of the German Empire and the Federal Republic of Germany when faced with major public health crises. This research paper explores the similarities and differences in policy, public perception, and government response during two eras in German history. It investigates the social conditions that made it possible for these pandemics to occur in the first place, as well as the discourse surrounding vaccine mandates.

**Klein, Jasmine**
University of Oregon
Mentor(s): Persimmon Lubman-Tobing
KIDD Life in Stories

## The Monster Under the Pond

"The Monster Under the Pond" is a short story about childhood and growing up with abuse. It explores complex family relationships, resilience, and the close bonds children form with others. It follows two young sisters in post-war, rural america as they find a way to survive motherless and with a father who does not care for them. The environment surrounding them is unforgiving both in and out of their home, so they must find pockets of peace and safety without the help of adults. They make friends, learn from one another along the way, and ultimately must decide for themselves whether to stay in their home or to leave.

**Knapton, Rooke**
University of Oregon
Mentor(s): Kaushal Sapkota
Works in Progress: Lightning Rounds

## The Evolution of Philanthropy in Indigenous America and Post-Colonial Society

In the wake of colonization, the landscape of philanthropy in the United States underwent a profound transformation. This research aims to highlight contrasting definitions and practices between American Indigenous communities and European settlers in the post-colonial era. Citing evidence from historical texts, scholarly articles, and contemporary perspectives, this study exemplifies the complex relationship between culture and altruism, and how values and beliefs shape philanthropic behaviors across communities. Origins of American Indigenous philanthropic practices often prove to be holistic and unique to cultural heritage and community dynamics, whereas the definitions of philanthropy of European settlers are distinctively rooted in religious and economic ideals. This analysis emphasizes the effects of colonialism on modern philanthropic practices and traditions in the United States. Through the acknowledgment and admission of power imbalance throughout American history, we are now able to shift attention towards the amplification of Indigenous voices in philanthropy and further diversify the third sector.

**Koch, Jade**
University of Oregon
Mentor(s): Peg Boulay, Lydia Lapporte
Oral Panel Green Futures in Habitat and Material Science

## Pollinator Monitoring and Riparian Restoration at Whitewater Ranch

Riparian habitats support terrestrial and aquatic ecosystems by providing water filtration services, water temperature regulation, and habitats for numerous organisms. These ecologically complex riparian systems are sensitive to changes in climate, invasive species, and degradation in vegetation. Intense ecosystem changes also adversely affect nearby pollinator populations, threatening the ecosystem services they provide. We will assess and monitor pollinator plantings from Dr. Lauren Ponisio and the Ponisio Lab to understand their implementations in restoring riparian and pollinator habitats decimated by the 2020 Holiday Farm Fire. We will monitor plant health determined by height, vigor, water temperature, survival rates, and competition levels within active riparian restoration areas. We will study native pollinators to gain insight into the mechanisms driving biodiversity and agricultural productivity – contributing to the ongoing restoration project that began on Whitewater Ranch in 2014. After compiling data, we will compare our findings to previous ELP data to analyze the success of restoration efforts. Our research on pollinator conservation, riparian restoration, and sustainable land management practices will aid in informing

policymakers, farmers, and ecologists in making decisions and developing plans that promote the integrity of interdependent ecosystems and further agricultural sustainability.

**Koga, Nathan**
University of Oregon
Mentor(s): Reza Rejaie, Chris Misa
Poster #18

## Multi-level Application-centric Profiling of UO Internet Traffic

Characterizing different aspects of exchanged traffic between an organization and the Internet provides valuable insights for the organization to determine how the network resources are utilized, and help identify potential malicious cyber attacks or performance bottlenecks. However, the huge volume and complexity of Internet traffic make such a profiling effort inherently challenging, as identifying an important event or pattern is akin to finding a needle in a haystack.

In this study, we profile multiple aspects of exchanged traffic between the UO campus and the Internet using flow-level traffic data. Our main goal is to efficiently identify and summarize some key flow-level features of UO traffic that represent normal/typical behavior. This, in turn, enables us to quickly determine whether a single flow or an aggregate group of flows (e.g., all flows associated with a particular application) exhibits any abnormal behavior. To this end, our profiling follows a top-down approach in characterizing UO traffic by starting from aggregate analysis, classifying flows into main categories, and then "zooming into" main categories to gain more insight into each group. This strategy enables us to define a signature at each level for each category of flows.

We present the results of our multi-level profiling of UO traffic and investigate whether meaningful/stable signatures for distinguishing normal and abnormal behavior at each level can be identified.

**Kondo, Emily**
University of Oregon
Mentor(s): Alyssa Herman, Alayna Park
Poster #48

## What Makes a Good Resource: Examining Online Suicide and Non-Suicidal Self-Injury Resources

Co-Author(s): Alyssa Herman, Leo Bordeaux, Alayna Park

In response to increasing prevalence rates of suicide and non-suicidal self-injury (NSSI) in the United States, researchers have developed online mental health resources (e.g., fact sheets) to address barriers preventing those in need from receiving mental health information and care. To identify potential strategies to increase

the accessibility, actionability, and reach of those resources, this study (1) determined the audiences that online suicide and NSSI resources are written for, (2) evaluated the extent to which those resources include evidence-based prevention strategies, and (3) characterized how resources communicate information about suicide and NSSI. Undergraduate students (N = 364; 68% White) rated subsets of 59 suicide and NSSI resources for personal relevance, understandability, usability, approval, and likelihood of recommending that online resource. The resources were coded for specified audience demographics, evidence-based prevention strategies, and communication techniques. Results from linear regression analyses indicated that specified audience demographics (e.g., youth, adults, etc.), prevention strategies (i.e., support networking), and communication techniques (i.e., tone) featured in resources predicted recommendation and approval ratings. Findings from this research can inform the development of more accessible, actionable, and far-reaching mental health resources for individuals with suicidal ideation and NSSI.

**Koontz, Emma**
University of Oregon
Mentor(s): José Meléndez, Kate Mondloch
Oral Panel Delving Deeper

## Immigration Snapshot: Photo Stories of Oregon Refugees and Asylees

A narrative can make or break a movement. The movement for immigration reform is no exception. Despite the frequent and heated discourse, major immigration reform has not been passed in almost 40 years. A major cause of this policy stagnation is the disparity between expert and non-expert perceptions of immigration. Non-experts' perceptions echo un-nuanced media narratives that depict immigrants, refugees, and asylees as threats, victims, or mere economic assets. Conversely, experts in lived and learned experiences know that the experiences of immigrants, refugees, and asylees while influenced by outdated systems, are rich and diverse.

Inspired by the photo-voice methodology, this study invited six Oregon refugees and asylees to contextualize themselves and their communities in photo stories. Integrating storytelling, visual art, narrative analysis, with techniques designed to reframe perspectives on immigration, this study seeks to answer the questions: "What can photo stories from Oregon refugees and asylees tell us about their experiences?" and "How can photo stories from Oregon refugees and asylees complicate the dominant narrative around immigration?" It aims to reignite momentum for policy change by contributing to ongoing efforts to elevate immigrant stories, and advocate for greater support of immigrant, refugee, and asylee causes.

**Kosaraju, Maya**
University of Oregon
Mentor(s): Taren Rohovit, Ulrich Mayr
Poster #49

## It's a Balancing Act: Navigating Internal vs. External Information During Complex Tasks

Co-Author(s): Ulrich Mayr, Taren Rohovit

While driving, do you rely on remembered routes or external maps to get to your destination? Many everyday tasks can be completed by relying on internal or external information, where the strategies include tradeoffs between efficiency and accuracy. Individuals rely on extreme checking cues to avoid the cognitive demands associated with shifting strategies. Current work focuses on how individual difference factors, such as age, affect differences in reliance on external versus internal information. Existing research has not explored what kind of task-specific features may shift an individual's strategic approach. Current literature fails to explore the influence of diverse contexts on strategy use, though ratios of internal and external information are fluid based on different conditions. This experiment focuses on how the complexity of a task changes how one relies on internal memories and external environments. Our experiment tests this question by measuring the rate of checking an external cue while undergoing eye-tracking when given a simple and complex hierarchical task. I hypothesize that in the presence of more complicated tasks, individuals will shift their strategies for utilizing internal/external information to be more extreme (i.e. over-relying in the environment, or over-relying on memory) due to the task's heightened cognitive load. Complex tasks do not allow for the allocation of brain resources to continuously switch between internal and external strategies.

**Krantz, Louisa**
University of Oregon
Mentor(s): Troy Houser, Dasa Zeithamova
Poster #53

## Retrieval vs. integration-based cognitive methods in acquired equivalence

Co-Author(s): Troy Houser, Dasa Zeithamova

The ability to generalize existing knowledge to novel stimuli is fundamental for cognition. Acquired equivalence is a form of generalization where one assumes that if two stimuli share one characteristic, they may share another. Two theories of the cognitive mechanisms underlying acquired equivalence have been proposed. One suggests that related information is combined into a single representation as it is learned, with all related events recalled together when prompted (i.e., integration-based methods). The other suggests that related information is stored separately and retrieved one-by-one when prompted

(i.e., retrieval-based methods). Yet, evidence for these theories remains mixed in the current literature. We hypothesized that underlying cognitive mechanisms may be reliant on a key detail of the task design. To test this, we compared acquired equivalence performance between two groups. Although both groups learned to choose the correct scene for each face from two options, one group's incorrect scene remained constant across repetitions of each face, while the other changed the incorrect scene across trials, allowing participants to use frequency cues, which we hypothesized would enhance integration across related memories. We found higher integration when participants could use frequency cues across memories, suggesting that the mechanisms of acquired equivalence depend on the structure of the task.

**Kraske, Sarah**
University of Oregon
Mentor(s): Hannah Pigg, Katelyn Alley
Poster #114

## Determining the reversibility of nucleolar stress induced by Pt(II) compounds and small molecules

Co-Author(s): Caleb Moon

Understanding the mechanism of action of chemotherapeutic compounds is crucial for the development of cancer therapeutics. Currently there are three FDA approved Pt(II)-based chemotherapeutics: cisplatin, carboplatin, and oxaliplatin. While cisplatin and carboplatin cause cell death through the DNA Damage Response (DDR), recently it was discovered that oxaliplatin causes cell death via nucleolar stress. Nucleolar stress occurs when there is a disruption to the nucleolus, a subsection of the nucleus where ribosome biogenesis occurs. The mechanism by which Pt(II)-induced nucleolar stress occurs is not well understood, prompting the need to investigate this pathway further. This study investigated the reversibility of nucleolar stress caused by Pt(II)-based chemotherapeutic compounds and small molecule chemotherapeutics, specifically RNA Pol I inhibitors; ActinomycinD (ActD), BMH-21, and CX-5461. Results showed that while nucleolar stress induced by Pt(II) compounds was irreversible, nucleolar stress induced by ActD, CX-5461, and BMH-21 was reversible after a 24 hour drug free media chase step. These results give insight into the possible mechanistic differences between Pt(II) chemotherapeutics and other small molecule compounds that induce nucleolar stress. Future directions for this project will focus on investigating the specific points at which nucleolar stress reverses for ActD, CX-5461 and BMH-21, as well as further studying Pt(II)-induced nucleolar stress.

**Kulkarni, Abhishek**
University of Oregon
Mentor(s): Jack Snell-Ryan
Poster #220

## From Humor to Insight: Exploring Sculptural Interpretations in Non-Traditional Art Audiences

This study explores how altering the display context of contemporary art from a 'white cube' gallery to a casual, public setting influences the perception and interpretation of art. By introducing a sculpture as part of a stand-up comedy performance at local bars, the research aims to investigate the initial reactions of audiences unfamiliar with art critique paradigms. Initial findings reveal that audience responses can be broadly categorized into three distinct themes: literal, sexual, and poetic, with a relatively even distribution across these categories. The shift from the contemplative environment of a gallery to a more casual and social setting appears to encourage more superficial readings of art, highlighting the role of context in shaping the depth of artistic engagement. The study posits that these preliminary interpretations might reflect broader tendencies in how first impressions are formed and subsequently influence perceptions of art. The balanced distribution of thematic responses also prompts further investigation into the inherent nature of initial art interactions–whether they are predominantly literal, sexual, or poetic. The findings suggest a need for additional research into how contextual shifts affect the reception and interpretation of contemporary art by lay audiences and the implications of these interactions for broader understandings of art and culture.

**Lambdin, Olivia**
University of Oregon
Mentor(s): Margaret Boulay, Holly Amer
Oral Panel Green Futures in Habitat and Material Science

## Riparian Revegetation and Soil Protection Experimentation for Carbon Sequestration

Co-Author(s): Emma Crump, Janet Damian Vasquez, Sydney Holtz Connor Kenigsberg, Bradley Martinez

Currently, a wide variety of anthropogenic forces contribute to climate destabilization, which adversely affects the health and quality of ecosystems worldwide. The terrestrial portions of these ecosystems can sequester carbon from the atmosphere and store it within the soil, the most significant terrestrial carbon sink. Riparian environments are one of the ecosystems that are important for carbon sequestration and crucial for sustaining biodiversity. Unfortunately, due to the over-extraction of terrestrial resources, riparian environments require restoration to efficiently utilize their carbon sequestration capabilities. The revegetation of these areas provides benefits for the soil in the form of amplifying the health of

microorganisms and stabilizing the soil. Reforesting these areas and surveying their success will also create a suitable habitat for the avian population to thrive and aid in rehabilitating the hydrologic characteristics of the ecosystem. Through deploying soil and forestry management methods, this research project seeks to understand and efficiently employ the mechanisms of riparian woodland restoration that accentuate the ecosystem's ability to sequester carbon within the soil and biomass above and below ground.

**Lawrence, Eliza**
University of Oregon
Mentor(s): Josh Roering
Poster #196

## Mapping Landslides on Prince of Wales Island, Alaska from 2009-2021 using Planet Labs Imagery

On Prince of Wales Island (POW) in Southeast Alaska, the combination of extreme rainfall brought on by atmospheric rivers and steep topography has made landslides a frequent and hazardous occurrence. Detecting and monitoring landslides on the ground can be costly and time consuming, especially when they occur in remote and inaccessible locations.

By using high resolution earth observation Planet Labs Imagery, we can better pinpoint the location and timing of past landslides through visual change detection between two images. We have mapped over 700 landslides across POW (6670 $km^2$) spanning from 2009 to 2021. We determined time constraints of each slide by using images pre and post-landslide failure. These time constraints range from nine months to one week. This high resolution Prince of Wales Landslide Inventory improves the previously created USFS Tongass National Forest Landslide Inventory, which used air photos taken every 10 years to determine the location and timing.

Next, we will use gridded modeled hourly precipitation data across POW to determine the maximum precipitation level during the time constraints identified using Planet Imagery. By understanding what precipitation levels have previously triggered landslides, we can better predict the future behavior of landslides on hillslopes on POW.

**Lawrie, Braden**
University of Oregon
Mentor(s): Dylan Wood
Poster #10

## Waste Utilization Panels -An upcycling strategy for high performance point supported timber slabs

The Waste Utilization Panel (WUP) aims to innovate the mass timber industry by taking Mass Plywood Panels (MPP) and its existing process and creating a new product through structural optimization and aesthetic enhancement. As the mass timber industry continues to grow, trends show us that resources and energy for manufacturing are becoming less bioavailable and more costly. Previous findings showed us that 13-30% of highly engineered MPPs end up as offcuts that are discarded or burned for energy. To combat the issue of material resources, we've sought to incorporate these offcuts back into our product, the WUP. A WUP is constructed by organizing MPP waste material along lines of deformation on top of a standard 3" thick MPP. By intentionally placing material, it is estimated that the WUP could carry the load of a standard 8" panel using 50% less material. The WUP can span in 2 directions without increasing the total thickness, making it an ideal solution as a point-supported building component. The final geometry is derived from structural analysis and is dependent on the structural system being employed. In creating this new product, we hope to confront issues of material usage and demand as the mass timber industry grows. Reintegrating offcuts into a product while meeting structural and design requirements within the industry is our team's way of addressing concerns of the advancement of the mass timber while reducing the environmental impact of construction.

**Lazarus, Simona**
University of Oregon
Mentor(s): Sarah Ebert, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Generating Awareness–Mitigating Food Insecurity at the University of Oregon

Many college students across the nation face food insecurity, meaning they have insufficient access to quality food. The University of Oregon (UO) food insecurity rates are triple, almost quadruple, the national rate (Brian Clark), which is a huge discrepancy and prompted our research question: "With the provided food insecurity resources at the University of Oregon, how can we improve their accessibility to students?" To find a solution, we consulted experts in food insecurity and resources in Eugene as to why the UO rates of food insecurity are disproportionately high and how we can fix them. A common insight was that UO has the resources to reduce food insecurity; however, students either are unaware of them or don't use them. With

more awareness, reduced stigma, and more resource accessibility the lower the food insecurity rates will be. We wanted to generate more awareness by creating mandatory food insecurity training for Freshmen before their first term, including interactive modules, requiring students to watch, read, and learn about food insecurity and the provided resources at the UO. A required quiz at the end would ensure that students are engaged and interacting with the modules. By requiring all new incoming and transfer students to be aware of food insecurity, how prevalent it is at UO, and the resources the university offers, we can create a more aware, food-secure, and tighter-knit future student body.

**Lee, Brittney**
University of Oregon
Mentor(s): Ken-ichi Noma, Sanki Tashiro
Poster #84

## Roles of TBP1 N-Terminus in 3D Genome Organization and Gene Regulation

Co-Author(s): Sanki Tashiro, Ken-ichi Noma

The general transcription factor, TATA box-binding protein (TBP), plays a crucial role in gene transcription by converting genetic information from DNA to RNA. Although this factor is one of the most important transcription factors involved in every type of gene expression and is evolutionarily conserved in eukaryotes, the role of TBP in three-dimensional (3D) genome organization remains unclear. To this end, our recent research has highlighted the multifaceted functions of the TBP N-terminus in transcriptional regulation and 3D genome organization. Here, we show that the N-terminus deletion of TBP (TBPΔN) impairs cell growth at several culturing conditions. Also, our genomics analysis using next-generation sequencing technology reveals that a specific 3D genome structure(gene-sized small chromatin domains), is disrupted in the TBPΔN mutants. Furthermore, we show that the TBP NΔ mutants display a global suppression of gene expression, although there were no significant changes in protein binding of wild-type and mutant TBP proteins across the fission yeast genome. Considering these findings, we propose that the TBP N-terminus is an essential factor in producing proper stress responses in fission yeast cells, which is critical for maintaining faithful segregation of transcribed genes, in addition to their expression and localization across the genome.

**Lee, Nicolas**
University of Oregon
Mentor(s): Cori Cahoon, Diana Libuda
Oral Panel The Little Things in Life Science

## Characterization of mutations that affect sex-specific thermotolerance of the synaptonemal complex

Co-Author(s): Cori Cahoon, Diana Libuda

Meiosis is a specialized form of cell division carried out by sexually reproducing organisms to produce haploid gametes. Various facets of meiosis are sexually dimorphic which impacts how each sex responds to environmental stressors. Unlike oogenesis, spermatogenesis is extremely sensitive to changes in temperature with heat exposure strongly linked to male infertility and cancer. Although the mechanisms behind this heat-induced male infertility are not clearly defined, our data suggests that sexual dimorphisms in the synaptonemal complex (SC), a meiosis-specific chromosome structure, may contribute to the heat sensitivity of sperm in Caenorhabditis elegans. The SC is essential for fertility in both sexes but is sensitive to acute heat exposure only in developing sperm. Heat stress of the SC in sperm prompts early SC disassembly of the C. elegans germline. To determine the proteins that render the SC temperature sensitive we performed a forward genetic screen. The genetic screen has identified 26 mutants that alter the SC response to heat. To identify the causal mutations, we are utilizing whole genome sequencing and SNP-based recombination mapping. From this analysis, we are generating a candidate list of genes and characterizing them to uncover the proteins contributing to the temperature sensitivity of sperm. These studies will reveal the mechanisms by which each mutant alters SC heat sensitivity providing insights into the processes causing heat-induced male infertility.

**Lee, Roxy**
University of Oregon
Mentor(s): Jessica Vasquez-Tokos
Virtual

## Just Passing By: The Way Skin Tone Facilitates Our Identity Formation

Understanding identity formation amongst Latino/as/xs in higher institutions is often a topic that gets overlooked. Existing literature focuses primarily on Latino/a/x identity formation through dimensions such as; time, space, and perceptions, leaving a dearth of literature that looks at all three of those factors combined. Through this research, the question asked is; how does Latinos/as/xs' racial identity formation shift over place and time? Focusing on 10 self-identified Latino/a/x students at the University of Oregon from diverse and non-diverse backgrounds helps to understand how students of this specific institution undergo identity

shifts in response to experiences in college. Looking at the distinct space of a higher education institution during young adulthood will lead to an understanding of Latino/a/x students' identity formation and how it may have shifted pre-college compared to being in college. The results indicate that with experiences that include racist discourse, feeling like an outcast, and finding meaning through campus involvement, Latinos/as/xs at the University of Oregon undergo formational experiences that result in a deeper and better understanding of their ethnic identity.

**Lee, Sofia**
University of Oregon
Mentor(s): Rachel Robinson, Michael Hahn
Poster #176

## The Effect of Speed on Lower Extremity Joint Stiffness During Graded Running

Co-Author(s): Rachel Robinson, Aida Chebbi, Michael Hahn

Joint stiffness is defined as a given joint's resistance to angular displacement under mechanical loading expressed as moment of force. Increased joint stiffness is a factor associated with running related overuse injuries and increases in running speed have been correlated with increased joint stiffness. However, this relationship has only been examined during level ground running; the effect of speed on joint stiffness during graded running is relatively unexplored. The purpose of this study is to examine the effect of speed on joint stiffness and quantify differences between the hip, knee, and ankle joints during graded running. It was hypothesized that as speed increases, stiffness of all joint types and across all grades would also increase. Kinetic and kinematic data were collected from twelve healthy participants as they performed three 30s running trials, as they ran across incline, decline and level ground grades. Joint stiffness was quantified by calculating sagittal plane joint angles and internal moments of the hip, knee, and ankle. For all grades, a significant main effect was detected for joint type, but not speed. No significant interaction effects were detected. While joint stiffness differs between the hip, knee, and ankle when running on graded surfaces, stiffness does not appear to change in response to speed. This study highlights how the role of each lower extremity joint changes to adapt to sloped terrain.

**Leonhardt, Thomas**
University of Oregon
Mentor(s): Mackenzie Kehmeier, Ashley Walker
Poster #161

## Are Whole-Body Metabolic Alterations Dependent on Age and APOE Genotype in Mice?

Co-Author(s): Mackenzie Kehmeier, Ashley Walker

Apolipoprotein E (ApoE) is a protein that transfers lipids and cholesterol throughout the body and brain. The E4 allele is the greatest genetic risk factor for Late-Onset Alzheimer's Disease (AD). E4 is associated with metabolic dysfunction and a shift in fuel utilization. The purpose of this study was to investigate whole-body metabolism between old E3 and E4 mice. Previous research has found lowered energy expenditure and oxygen consumption in young female E4 mice, so it was hypothesized that aged E4 mice would reflect this. To conduct this study, aged, male and female E4 (n=15) and E3 (n=11) mice were placed in Prometheon Metabolic Cages to measure whole-body oxygen consumption (VO2 in ml/hour/kg), carbon dioxide production (VCO2 in ml/hour/kg), and respiratory exchange ratio (RER= VCO2/ VO2). These metabolic parameters were normalized to the corresponding body weight. 12-hour light and dark cycles were used to simulate standard mouse circadian rhythms. Our data revealed no significant differences between total, light, and dark cycle VO2 or VCO2 in aged E3 and E4 mice (p>0.05). However, old E4 animals displayed a higher mean RER compared to old E3 animals (0.93±0.022 v. 0.89±0.030, p=0.0015). The differences in RER are likely a result of slight increases in CO2 production and slight decreases in O2 consumption. This suggests that old E4 mice shift to increased oxidative phosphorylation, a characteristic seen in human brains at the onset of neurodegeneration.

**Levay, Dasha**
University of Oregon
Mentor(s): Sarah Ebert, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Generating Awareness–Mitigating Food Insecurity at the University of Oregon

Many college students across the nation face food insecurity, meaning they have insufficient access to quality food. The University of Oregon (UO) food insecurity rates are triple, almost quadruple, the national rate (Brian Clark), which is a huge discrepancy and prompted our research question: "With the provided food insecurity resources at the University of Oregon, how can we improve their accessibility to students?" To find a solution, we consulted experts in food insecurity and resources in Eugene as to why the UO rates of food insecurity are disproportionately high and how we can fix them. A common insight was that UO has the resources to reduce food insecurity; however, students either are unaware of them or don't use them. With

more awareness, reduced stigma, and more resource accessibility the lower the food insecurity rates will be. We wanted to generate more awareness by creating mandatory food insecurity training for Freshmen before their first term, including interactive modules, requiring students to watch, read, and learn about food insecurity and the provided resources at the UO. A required quiz at the end would ensure that students are engaged and interacting with the modules. By requiring all new incoming and transfer students to be aware of food insecurity, how prevalent it is at UO, and the resources the university offers, we can create a more aware, food-secure, and tighter-knit future student body.

**Lewis, Lydia**
University of Oregon
Mentor(s): Katie Lynch, Shellsea Miller
Oral Panel Pathways to Environmental Empowerment

## Beyond Plant Identification: Inspiring Environmental Stewardship Through Outdoor Education

Outdoor education enhances students' mental well-being and academic performance, fostering critical skills such as problem-solving, empathy, and stress reduction. The Wild Wanderers is a newly established team within the Environmental Leadership Program at the University of Oregon, dedicated to crafting an environmental education curriculum that resonates with students and emphasizes that humans play an essential role in our planet's ecosystems. Our team has developed six in-class and two field trip lessons, benefiting over 300 first and second graders from three local elementary schools. Field trips to Mt. Pisgah Arboretum offer students a unique opportunity to immerse themselves in nature, fostering not only a deeper understanding of the environment but also strengthening interpersonal connections. Our team has partnered with 90by30, an organization committed to ending child neglect and abuse in Lane County by 2030, our collaboration promotes nature as a sanctuary, where students are able to cultivate essential social-emotional skills. Our curriculum focuses on the oak woodland and Douglas-fir forest ecosystems, promoting ecological knowledge and a sense of place. To assess the impact of our program, we will collect qualitative data on students' understanding of ecological processes, appreciation for nature, and recognition of the importance of biodiversity and conservation.

**Lewis, Sophia**
University of Oregon
Mentor(s): Rachel DiNitto
Oral Panel Asian Studies Research Event

## Storm of Progress: Historical Subjectivity and the Art of Hiroshi Nakamura

This seminar paper discusses the work of Japanese painter Nakamura Hiroshi (b.1932) in the late '50's and early 60's and attempts to read his art from this period in light of the debates over subjectivity raging among the Japanese intelligentsia in the immediate postwar era. Although Nakamura's work has received considerable discussion in scholarship dealing with postwar Japanese art, this paper is the first to draw a connection between his art and the postwar subjectivity debates. Facing defeat in WWII and an ongoing occupation by the US military, Japanese intellectuals attempted to theorize the new kind of person (subject) that would arise - or must be made to arise - in the face of the occupying forces' policy of democratization. At times passionate and daring while at others elitist and obscure, these debates would nevertheless influence the output of a generation of radical artists and writers. A young student radical and member of the radical left-wing Zengakuren in the 1950's, Nakamura produced a number of startling, grotesque, and deeply moving paintings that were influenced by the turbulent political energy that ultimately culminated in the massive protest in 1960 against the renewal of the United States-Japan Security Treaty. Drawing from contemporary writings as well as Marxist theory, I argue that Hiroshi Nakamura used art as an attempt to grasp at the challenge of subjectivity in the face of fascism, military occupation, and consumer capitalism.

**Lightle, Drew**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Lightle, Drew**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Lillie, Audrey**
University of Oregon
Mentor(s): Lisa Munger
Oral Panel Unveiling Nature's Rhythms
Poster #65

## Phonic Richness on a New Artificial Coral Reef in Indonesia

In recent years, coral reefs globally are experiencing increasing impacts due to factors such as warming average temperatures and anthropogenic activities. Reef restoration efforts have found passive acoustic monitoring to be a helpful tool for measuring ecological health during recovery. The purpose of this study was to utilize audio data to investigate reef health within Misool, Raja Ampat, Indonesia, located in a region of high marine biodiversity.

In May 2023, the Kenari, a former pearl aquaculture service ship was situated less than 0.5 miles south of the Misool Eco-Resort to create an artificial reef. A hydrophone was placed on this shipwreck one week after sinking, and 30 second audio files were recorded every 5 minutes over a 3.5 month period. Data were analyzed by 20 students in the Winter 2024 HC301 class, "Coral Reef Acoustic Ecology." We identified more than 20 unique sounds, the majority of which are likely from fish. We measured phonic richness, i.e. the number of distinctive individual biological sounds during an hour at dawn, midday, dusk, and night. We only focused on days that fell as a new, quarter or full moon. Our results will contribute to conservation efforts and inform our understanding of reef growth and biodiversity over time.

**Linnenkohl, Katherine**
University of Oregon
Mentor(s): R. Scott Fisher, Jim Imamura
Poster #134

## TESS Follow-up at the Pine Mountain Observatory: Observing Transiting Exoplanets

Co-Author(s): Abby Lewis, Ian Sherman, Erin Morrison Caisa Mccraw

The field of exoplanet science, which studies planets outside our solar system, has seen a period of remarkable growth and interest in recent years. The most common method of exoplanet detection is by observing transit events. Not only do transit event detections aid in the discovery of exoplanets, but we can also learn about their approximate size, orbital period, and even atmospheric composition. Transits occur when an exoplanet passes between its star and the observer such that it blocks a fraction of the starlight as it passes. Observing this allows for precise measurements of the change in flux of the star-planet system over time. Utilizing the Pine Mountain Observatory's (PMO) new telescope system, we've detected thirteen transiting exoplanets with varying transit depths and target star magnitudes. Harnessing the power of aperture photometry within AstroImage J software, our observations of transiting exoplanets have opened the door to work with the TESS Collaboration (Transiting Exoplanet Survey Satellite). TESS has confirmed around 400 new exoplanets and identified more than 7,000 exoplanet candidates. Our inclusion into the Seeing Limited Ground-based Follow-up Group (SG1) has permitted us to contribute meaningfully to the ongoing TESS mission while simultaneously carrying out undergraduate research using a sub-meter telescope.

**Linnenkohl, Katie**
University of Oregon
Mentor(s): Scott Fisher, James Imamura
Poster #135

## Farm-to-table Photons: Observational Techniques and Data Reduction at the Pine Mountain Observatory

Research at the University of Oregon's Pine Mountain Observatory (PMO), a research-grade facility nestled in the heart of Central Oregon, is an involved and undergraduate-led endeavor. Using PMO's 0.35m 'Robbins' Telescope, students are engaged in a wide array of research activities. To make their projects possible, students work under the supervision of PMO Director Dr. Scott Fisher with guidance of on-site operations staff, to build a familiarity with the equipment, procedures, and techniques needed to collect high signal-to-noise imaging data. From using their firsthand knowledge of the telescope system and its CCD detector to find research targets and plan observations, to the operation of the observatory during data collection

and the implementation of the systematic error analysis and noise reduction techniques standard to the field, students at PMO gain valuable exposure to nearly every aspect of research in astronomy. Moreover, students at PMO are left with a robust and hands-on appreciation of what may be considered outwardly dull, but nonetheless incredibly important aspects of research such as keeping intricate and comprehensive observing logs and dedicating entire nights of observing to taking flat, dark, and bias calibration images. For research at PMO, understanding instrumentation and data calibration serves as an equal partner to specialized project specific analysis techniques in the pursuit of high quality results.

**Lippert, Luca**
University of Oregon
Mentor(s): Samuel Hinton
Poster #104

## Engineering and characterizing chimeric DcuS/EnvZ histidine kinases against novel ligands

A bacterium's ability to detect and respond to environmental changes is a prerequisite for survival. Bacteria deploy a wide range of two-component systems comprised of a sensor histidine kinase (SHK) and cognate response regulator (RR) to interact with their environment. SHKs detect a broad scope of ligands and stimuli, such as osmolarity, pH, metal ions, and organic compounds. Following activation, the SHK phosphorylates its RR, which in turn influences gene expression to mediate cell response. TOf the ~3.5 million identified SHKs, only a few hundred are characterized. To bridge this gap, we take advantage of the high modularity of SHK sensory domain structure to engineer chimeric HKs. The sensory domain of the SHK DcuS is fused with the transmembrane and cytosolic domains of EnvZ. The chimera communicates with an orthogonal RR, which mediates transcription of a synthetic gene circuit with sfGFP as the reporter. To find chimeras with novel functions we constructed an 8.8 million member DcuS/EnvZ mutant library. Here we screen our original Dcus/EnvZ chimera and mutant library against the known DcuS ligand and aspartate, which DcuS has no affinity for. By measuring the log-fold fluorescence change relative to a no-ligand control using flow cytometry, our study aims to identify new DcuS sensory domains with specificity for novel ligands. Our future studies aim to probe many SHK chimeras with varying sensory domains against a large ligand panel to characterize SHKs at scale.

**Littlejohn, Tiana**
University of Oregon
Mentor(s): Katie Lynch, Shellsea Miller
Oral Panel Pathways to Environmental Empowerment

## Beyond Plant Identification: Inspiring Environmental Stewardship Through Outdoor Education

Outdoor education enhances students' mental well-being and academic performance, fostering critical skills such as problem-solving, empathy, and stress reduction. The Wild Wanderers is a newly established team within the Environmental Leadership Program at the University of Oregon, dedicated to crafting an environmental education curriculum that resonates with students and emphasizes that humans play an essential role in our planet's ecosystems. Our team has developed six in-class and two field trip lessons, benefiting over 300 first and second graders from three local elementary schools. Field trips to Mt. Pisgah Arboretum offer students a unique opportunity to immerse themselves in nature, fostering not only a deeper understanding of the environment but also strengthening interpersonal connections. Our team has partnered with 90by30, an organization committed to ending child neglect and abuse in Lane County by 2030, our collaboration promotes nature as a sanctuary, where students are able to cultivate essential social-emotional skills. Our curriculum focuses on the oak woodland and Douglas-fir forest ecosystems, promoting ecological knowledge and a sense of place. To assess the impact of our program, we will collect qualitative data on students' understanding of ecological processes, appreciation for nature, and recognition of the importance of biodiversity and conservation.

**Lohf, Haley Mae**
University of Oregon
Mentor(s): Felix Deku, Rebecca A. Frederick
Poster #111

## Long-term Chemical Stability Evaluation of Multichannel thin-film Implants

Co-Author(s): Dr. Felix Deku, Dr. Rebecca A. Frederick

Despite major advances in brain-computer interfaces, implanted polymer thin-film devices remain susceptible to inter-layer delamination and material degradation caused by factors such as fluid ingress or scar tissue formation. I am testing the long-term stability of a prototype 16-channel neural interface device, comparing polyimide (PI) and PI/amorphous silicon carbide (a-SiC) substrate. Similar a-SiC thin films show to improve electrical insulation and liquid ingress resistance (Deku et al, 2018) but their direct comparison with polymer substrates has not been established. Initial measurements for all devices are recorded in phosphate buffered saline (PBS) at room temperature. I am soak-testing PI devices in phosphate buffered saline

(PBS) at 37 and 67 deg C, and PI/a-SiC in PBS at 37 and 87 deg C. In 14 day intervals, open circuit potential, impedance, and charge storage capacity of each electrode are recorded over the course of 20 weeks. Low-impedance coatings, such as PEDOT and IrOx, are often used to improve the electrochemical performance of microelectrodes, and so, I will also investigate the long-term stability of coatings electrodeposited on thin-film fabricated microelectrodes. We expect devices with low-impedance coatings to exhibit more stable impedance, charge storage, and conductivity over time. My goal is to find the optimal trade-offs of materials combinations to enhance neural device performance long-term.

**Lopez Navarrete, Adamaryz**
University of Oregon
Mentor(s): Lynn Stephen, Gabriela Martinez
URS Film Screening

## Encontrando Pertenencia/Finding Belonging

"Encontrando Pertenencia/Finding Belonging" follows Yoyo, a 59-year-old father, husband, musician, and community member. Yoyo currently resides in Hermiston. He reflects on building a life in Eastern Oregon and his constant commitment to persevere for himself and his family. This is a story about finding belonging in a community far from your homeland.

**Luedemann, Erin**
University of Oregon
Mentor(s): Ulrick Casimir
Oral Panel Exploring Gender Frontiers: Media, Ethics, and Empowerment

## Unveiling Masculine Vengeance: Exploring *Fight Club*'s Influence on Gender Norms

Revenge narratives portraying male protagonists frequently exaggerate traits associated with traditional masculinity, such as strength, aggression, and violence. These depictions reinforce societal expectations that men should respond to perceived wrongs with assertiveness to maintain their masculine identity. The influence of media, film, and literature normalizes this vindictive behavior from males and therefore grants them social exemption from the usual repercussions associated with such actions. In my research I analyzed how these correlating themes are represented in the famously known film, *Fight Club*.

In *Fight Club*, heightened and primal masculinity is elevated in response to societal emasculation developed by a rise of consumerism. Members of the Fight Club hold beliefs that they are entitled to their vengeance and should not be punished for their hyper-masculine behavior. Many enthusiasts of the film glorify the actions of the characters resulting in the adoption of these traditional masculinity ideals into our communities. These influences are what shape our cultural norms surrounding gender where violent behavior from males is considered "expected."

**Lyman, Gwendolyn**
University of Oregon
Mentor(s): Tobin Hansen
Oral Panel Voices and Visions: Identity and Culture in Transition

## Cerrando La Brecha: Latinx Voices' on Identity, Community, and Social Entrepreneurship

Aspects of identity influence everyday lived experiences, including as a community member starting and operating a small business. By conducting semi-structured interviews with Latinx entrepreneurs on the westside of Chicago, my research examines how identity intersects with entrepreneurship, belonging, and the role of nonprofits in supporting marginalized communities. I ask: how have entrepreneurial experiences shaped and been shaped by Latinx identities?

While there is extensive research about Latinx marginalization in the U.S. and the racial wealth gap in Chicago, the field of social entrepreneurship,the application of a business model to create positive social change, has emerged over the past twenty years. I am writing an ethnography to learn more about Latinx social entrepreneurship in Chicago and share it with community members and the nonprofit WeavingImpact, an organization that provides business curriculum and mentorship to Latinx social entrepreneurs in Little Village, a predominantly Latino community. This research will serve as a case study for the importance of CBOs and the support of social entrepreneurship.The insights from this project will support WeavingImpact's growth and amplify voices of historically marginalized peoples. As social entrepreneurs, these individuals utilize a business model with the goal of improving social outcomes in their community. This research will contribute to a larger conversation about identity and social entrepreneurship.

**Mackey, Blu**
University of Oregon
Mentor(s): Jeff Todahl
Virtual
Poster #38

## The Foster Care System: A Segue to Sex Trafficking

Sex trafficking is a prevalent and persistent human rights, social justice, and economic issue. Fueled by a multi-million-dollar industry, this global epidemic is complex and compounded by poorly resourced government and private sector response systems. The United States foster care system, in particular, serves youth at risk for sex trafficking and is well-positioned to provide trauma-informed services that support youth and act as a buffer for harm. However, given overall poor systems alignment and inadequate access to trauma-informed therapy and healthcare services, U.S. foster youth are particularly vulnerable to trafficking – and this disproportionately impacts lower-income and historically excluded youth. As a result,

advocacy groups have urged government officials to use their power for positive reform and construction of systems and equitable foster care practices that account for race, ethnicity, and social class. This systematic literature review explores the evolution of sex trafficking in the United States between 2000 and 2023, examines systems response, and investigates a more effective approach to foster care and systematic reform.

**Malaqui, Wyne Johner**
University of Oregon
Mentor(s): Cory Olsen
Poster #9

## Riley Revamp

The architectural vision guiding the redesign of Riley Hall prioritizes the seamless integration of impactful microinteractions, with a focus on commemorating the annual influx of new college residents. Originally serving as a nursing dormitory, Riley Hall has undergone a transformation into a University of Oregon residence hall, retaining its rich heritage while adapting to contemporary needs. The overarching objective is to honor its historical legacy and resilience while fostering a profound sense of continuity and belonging among present and future occupants. Extensive research, encompassing literature reviews, consultations with current and past residents, and engagement with faculty members, revealed dissatisfaction with the existing design. Feedback suggested a lack of community engagement, limited recreational opportunities, and a general perception of isolation akin to confinement. Through comprehensive analysis, it becomes apparent that prioritizing resident comfort and enhancing the collegiate experience while preserving the building's historical significance is paramount. This approach aims to redefine Riley Hall as a vibrant hub of student life, seamlessly blending tradition with modernity to create a nurturing environment conducive to personal growth and academic success.

**Mancuso, Gabriel**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #153

## EAA+BFR Therapy to Stimulate Pax7 Cell Proliferation and Promote Muscle Memory

Muscle memory refers to the phenomenon where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. Mechanistically, this is theorized to be due to myonuclei gained during training being retained with atrophy/disuse, enabling initiation of protein synthesis and muscle regeneration without waiting for new nuclei to form. Research shows that essential amino

acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells; Pax7+) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will persist following four weeks of no treatment. Muscle biopsy cross-sections (7 μm) were immunostained with antibodies directed at Pax7+ cells (satellite cells), laminin (for cell/fiber boundaries), and slow-type muscle fibers (MyHC I). Nuclei were labeled with DAPI. Images were captured with a Leica fluorescence microscope (DM4000B) equipped with a Leica DFC 360FX camera using a 20x/0.50 objective. We are currently analyzing tissue cross-sections to quantify Pax7 cell proliferation and central nuclei numbers, and degree of myonuclear accretion.

**Mancuso, Gabriel**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #154

## EAA+BFR Therapy to Stimulate Myonuclear Accretion as Quantified from Single Muscle Fibers

Muscle memory refers to the occurrence where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. This is attributed to retained myonuclei gained during training, enabling quicker initiation of protein synthesis and muscle regeneration. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will remain elevated 4 weeks post-treatment. Fiber bundles were fixed in 4% PFA/PBS for 48 hours, moved to PBS, and separated in 40% NaOH with agitation for 2 hours to shed single fibers from the bundle. We immunostained nuclei using DAPI, 1nM, by fiber type using anti-MyHC I for 90 minutes. Single fibers were imaged using a Leica Thunder widefield microscope equipped with a HC PL APO CS2 40x/1.10 N.A. water immersion objective. Lasers with emission wavelength 390 nm were used at 27% intensity at 100 msec, captured with a Ki8 camera with x-y resolution of 300 nm x 300 nm with a z-step of 0.39 μm. Images were deconvolved using Huygens Essential software package followed by 3D reconstruction and quantification using Imaris. This work is ongoing.

**Manning, Georgia**
University of Oregon
Mentor(s): Tom Hahn, Blayne Burnside
Poster #11

## UNBE-LEAF-ABLE AIR!

The paper aims to investigate the effect of indoor plants on carbon dioxide levels by testing the air quality levels in two rooms. From prior research and knowledge, it is known that plants absorb carbon dioxide and release oxygen during photosynthesis, (during daylight hours).Therefore, we decided to measure carbon dioxide levels in our areas of study every day at sunset as effects of photosynthesis were maximized. The areas of study were two isolated bedroom environments with multiple controlled variables. The study took place in downtown Eugene's Titan Court apartment complex. Two bedrooms within the same unit were used as the area of study. Both rooms are approximately 100 square feet and have one operable South-facing window. One bedroom was devoid of plants, while the other housed 12 plants of various species. Carbon dioxide levels were measured once a day at sunset with a carbon dioxide meter and were compared quantitatively over a one-week period. This research will help determine the effect indoor plants have on reducing carbon dioxide levels and therefore increasing air quality. With the common individual having plants in their home, quantifying these benefits to air quality may give reason to introduce plants to their living spaces, if they do not already have them.

**Marchant, Elizabeth**
University of Oregon
Mentor(s): Judith Raiskin, Linda Long
Poster #214

## Feminist Communications: Sonja K. Foss and Marsha Houston

My research, conducted mainly on the archival collections of Sonja K. Foss and Marsha Houston held in the University of Oregon Knight Library, examines their work in the field of feminist communications and their personal lives to give context to their work. I examine their careers through an intersectional lens, and ask how race shapes both their work and their experiences as academics. My poster will display my original research and findings of both women's work and personal items left in the archives. This research is conducted for the class WGS 410 Gender, Sexuality, and Feminism in the Archives.

**Marshall, Izzie**
University of Oregon
Mentor(s): Jamie Yang
Poster #217

## Pleasure, Empowerment, and Art: Tee Corinne's Approach to Sexual Education

This research examines the archival collection of Tee Corinne in the University of Oregon Knight Library. Tee Corinne's work grapples with dispelling the mysteries and stigma of women's sexuality through imagery and storytelling. The legacy of her work creating the Cunt Coloring Book and the collection of photographs published in the Yantras of Women love display Corinne's narrative construction of women's sexuality. Beyond her work in the public eye, this research dives into the archives left behind by Corinne. The collection contains hundreds of boxes filled with written correspondence, personal writing, artwork, photographs, organizational materials, and curriculum. This presentation looks at Corinne's collection through the lens of the development of sexual education in the 1970s-1990s. Some examples are Corinne's centering of imagery of labias and lesbian sex, participation in a sex education movie and retreat, and development of sexuality lectures and teaching guides.

**Marshall, Zach**
University of Oregon
Mentor(s): Diana Libuda, Cori Cahoon
Poster #85

## Identifying proteins that regulate the temperature sensitivity of developing sperm.

Co-Author(s): Diana Libuda, Cori Cahoon

Sexual reproduction requires the generation of haploid gametes, such as eggs and sperm. The processes that produce these gametes, however, are sensitive to environmental stressors. Exposure to elevated temperatures causes DNA damage in sperm that is strongly correlated to infertility in both humans and other organisms, including the model organism Caenorhabditis elegans. The molecular mechanism(s) causing this heat-induced male infertility remain unclear. To identify proteins that contribute to the heat sensitivity of developing sperm, we performed a forward genetic mutagenesis screen and identified 26 mutants that enhance or suppress sperm heat sensitivity. We performed whole genome sequencing to identify the gene responsible for two different mutants: cah3 and cah35. cah3 enhances sperm heat sensitivity and the mutation causing this phenotype is located on either the left side of chromosome IV or in the right two thirds of chromosome V. cah35 is another enhancer mutant with a more pronounced enhancer phenotype than cah3, and is mapped to the left side of chromosome II, the middle of chromosome IV, and the right two thirds of chromosome V. Currently, I am testing candidate genes within these genomic regions to identify the gene

responsible for the mutant phenotypes. Overall, these experiments will reveal the proteins that affect the temperature sensitivity of developing sperm thereby gaining insights into the mechanisms contributing to temperature-induced male infertility.

**Martin, Cam**
University of Oregon
Mentor(s): Katie Lynch, Dehlia Wolftail
Oral Panel Pathways to Environmental Empowerment
Environmental Leadership Program:

## Inspiring Future Climate Leaders Through Environmental Education

Co-Author(s): Gabby Sanchez, Warrren Watts, Justine Aynesworth Hannah Hoffmann, Kai Schrosk

In the face of the looming climate crisis, young people need to be given the tools to take action. Research shows that nature exposure through environmental education (EE) creates a better learning context in which students excel academically, experience personal growth, and practice land stewardship. EE fosters skills that go beyond the classroom, so students have the tools they need to navigate the climate crisis. The scenic old-growth forests of the McKenzie River watershed are an instrumental resource for educating youth. In recognition of this, the University of Oregon Environmental Leadership Program partnered with H.J. Andrews Experimental Forest to create a climate science curriculum for local middle schools.

Following the U.N. Tbilisi Declaration's Awareness to Action framework, our curriculum explores phenology, microclimate, wildfire ecology, and tree identification, employing hands-on, place-based learning aligned with Next Generation Science Standards. We focus on building skills such as observation, critical thinking, and data collection. Each aspect of our program meets the North American Association for Environmental Education guidelines for excellence. Targeting over 400 students in Lane County, our initiative aims to foster a positive learning environment conducive to lifelong learning, leadership, and action. By the end of our program, students will have an increased awareness of climate change, improved scientific thinking, and a sense of personal growth.

**Martin, Rhett**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Four different coding models simulating oscillatory and rotational motion through VPython

In this presentation, we will show to the audience four different physics simulations/animations including damped oscillation, 2D transverse waves, inelastic collisions, and angular momentum. We will explain our code to the audience, then answer questions and accept input suggestions for our simulations/animations from the audience.

Luke: A simulation of a mass and spring system that oscillates in air under the forces of gravity and drag using a numerical/incremental method of solving the differential equation that would model the system.

Zack: An animation that shows how a transverse wave propagates outwards on an array of spheres using selected amplitudes and wave speeds to calculate each sphere's position over time.

Rhett: A simulation of oscillatory motion of a mass connected to a spring affected by a friction coefficient due to the surface the mass moves on. A graph of velocity shows the movement of the mass, and the affect friction has on its velocity.

Jazmin: A simulation of off-axis impact between a sphere and a rectangular shape to demonstrate conservation of momentum. Observers will be able to change different variables, such as mass and intel speed, to investigate the resulting collision.

**Martin, Zack**
University of Oregon
Mentor(s): Dr. Allison McGuffie
Oral Panel The Trans*formative Power of Cinema

## Tangerine's Overcoming of Cisheteronormative Anxiety with Electronic Music

Transgender people have long been marginalized within the confines of white patriarchal subjectivity on film, where trans* visibility is often used as a problematic metaphor for transformation and secrecy. For example, the "reveal" trope aligns the camera with a cisgender person's perspective as a trans* character shows their body and exposes the "truth", thereby reaffirming cisgender assumptions about sex and gender and dehumanizing the trans* character. A new wave of filmmakers are working to recenter the focus of the camera's gaze to a subjective trans* point of view that disrupts cisheteronormative logic. This project aims to dissect how various films construct a subjective, transgender gaze through film narrative, mise-en-scene, sound, cinematography, and editing. "Tangerine's Overcoming of Cisheteronormative Anxiety with Electronic

Music" dissects how the film positions the spectator to hear through a trans gaze through classical and electronic music juxtaposition.

**Martin, Zack**
University of Oregon
Mentor(s): Dr. Josef Dufek
Poster #194

## Acoustical Levitation: A New Method of Studying Volcanic Eruptive Dynamics and Planetary Processes

Acoustic levitation utilizes the properties of sound standing waves to suspend particles without physical contact. Ultrasonic pressure waves generated from an array of transducers form standing waves, where they hold particles in areas of minimal movement called nodes. Studying particles, like volcanic ash, in isolation allows for the study of the long-term gas-particle interactions within the particle reference frame and controlled particle collisions. This method allows us to accurately determine particle momentum, electric charge, and surface properties. In this study, we built three types of acoustic levitators to determine their particle density limitations. This allows future projects to optimize the levitator design for specific particle types and densities. Transducer polarity was tested before gluing and soldering them into the levitator hemispheres. Particles of different densities were levitated under the same voltage and time conditions. Acoustic standing wave nodes were imaged using dry ice and lasers to improve particle placement accuracy. We found that levitators with a larger driving voltage range could levitate a larger range of particle densities. Testing and documenting these levitators have optimized our levitator design for paraffin wax (and other analog materials), which allows us to investigate the collisional properties of hydrocarbon particles in the atmosphere on the moon Titan.

**Masciopinto, Audrey**
University of Oregon
Mentor(s): Lisa Munger
Oral Panel Unveiling Nature's Rhythms
Poster #65

## Phonic Richness on a New Artificial Coral Reef in Indonesia

In recent years, coral reefs globally are experiencing increasing impacts due to factors such as warming average temperatures and anthropogenic activities. Reef restoration efforts have found passive acoustic monitoring to be a helpful tool for measuring ecological health during recovery. The purpose of this study was to utilize audio data to investigate reef health within Misool, Raja Ampat, Indonesia, located in a region of

high marine biodiversity.

In May 2023, the Kenari, a former pearl aquaculture service ship was situated less than 0.5 miles south of the Misool Eco-Resort to create an artificial reef. A hydrophone was placed on this shipwreck one week after sinking, and 30 second audio files were recorded every 5 minutes over a 3.5 month period. Data were analyzed by 20 students in the Winter 2024 HC301 class, "Coral Reef Acoustic Ecology." We identified more than 20 unique sounds, the majority of which are likely from fish. We measured phonic richness, i.e. the number of distinctive individual biological sounds during an hour at dawn, midday, dusk, and night. We only focused on days that fell as a new, quarter or full moon. Our results will contribute to conservation efforts and inform our understanding of reef growth and biodiversity over time.

**Matheson, Mia**
University of Oregon
Mentor(s): Dasa Zeithamova, Troy Houser
Poster #46

## Impact of Reward Certainty on Generalization of Categories

Co-Author(s): Troy Houser

The brain's limited capacity for information makes efficient storage critical, through category generalization. Is memory of generalized categories related to the expectation of consistent or inconsistent rewards? We investigated this with a behavioral within-subjects experiment that had participants who were shown a series of sequential images in a certain or uncertain category. Certain reward categories gave point values of 50 each trial to participants. Uncertain reward categories rewarded participants of a variable amount of points ranging from 0-100 with a mean distribution of 50. Following the study portion, individuals were tested on memory accuracy through old-new judgements. Those that were falsely recognized were interpreted as evidence for generalization of category knowledge. Our guiding question was to investigate whether it is more useful to generalize typical characteristics from a central tendency or to learn many examples and generalize based off of that? Findings suggest a difference in certain and uncertain rewards on the effect of memory for the generalized categories. Gaining insight of generalization and human memory holds significance for future research for learning subsequent generalization as generalization is critical for adaptive and survival capabilities.

**Mathews, Zach**
University of Oregon
Mentor(s): Dylan Wood
Poster #10

## Waste Utilization Panels -An upcycling strategy for high performance point supported timber slabs

The Waste Utilization Panel (WUP) aims to innovate the mass timber industry by taking Mass Plywood Panels (MPP) and its existing process and creating a new product through structural optimization and aesthetic enhancement. As the mass timber industry continues to grow, trends show us that resources and energy for manufacturing are becoming less bioavailable and more costly. Previous findings showed us that 13-30% of highly engineered MPPs end up as offcuts that are discarded or burned for energy. To combat the issue of material resources, we've sought to incorporate these offcuts back into our product, the WUP. A WUP is constructed by organizing MPP waste material along lines of deformation on top of a standard 3" thick MPP. By intentionally placing material, it is estimated that the WUP could carry the load of a standard 8" panel using 50% less material. The WUP can span in 2 directions without increasing the total thickness, making it an ideal solution as a point-supported building component. The final geometry is derived from structural analysis and is dependent on the structural system being employed. In creating this new product, we hope to confront issues of material usage and demand as the mass timber industry grows. Reintegrating offcuts into a product while meeting structural and design requirements within the industry is our team's way of addressing concerns of the advancement of the mass timber while reducing the environmental impact of construction.

**McBurney, Cosmo**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**McBurney, Cosmo**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**McCall, Eden**
University of Oregon
Mentor(s): Dan Morrison, Torsten Kjellstrand
URS Film Screening

## Environments Interconnected: Alaskan Coastal Wetlands Support Wildlife & Community

“It’s hard to say why birds capture the imagination, but they do,” says Erin Cooper, Biologist and Program Manager for the Forest Service in Cordova, Alaska. “Maybe it’s just because they’re a sign of the wildness of an area.”

Each spring, millions of small migratory birds coming from as far south as Chile and Argentina stop to rest and refuel on the Copper River Delta, an expansive wetland ecosystem on the coast of Southcentral Alaska.

Coastal ecosystems are all interconnected, from the macro- to megafauna within a biome to the migratory birds that connect mangroves and Arctic tundra thousands of miles apart. I was asked by a conservation organization, Pacific Birds Joint Venture, to highlight the importance of these ecosystems, so I pitched and produced a three-part short film series about the ecological, cultural and economic importance of three wetlands in Alaska: the Copper River Delta, the Stikine Delta, and the Yakutat Forelands.

Filming in Alaska presents unique logistical challenges, from remote locations to unpredictable weather. Filming happened in sideways rain thanks to Xtratuf boots, Grunden coats, and lots of desiccants and rain covers for film equipment which also survived airboat rides, muskeg mud, and freezing temperatures.

These films were made possible due to funding and support from Pacific Birds Habitat Joint Venture, Ducks Unlimited, the U.S. Forest Service Chugach National Forest, and the University of Oregon School of Journalism and Communication.

**McCall, Eden**
University of Oregon
Mentor(s): Erik Steiner
Works in Progress: Lightning Rounds

## Documenting Environmental Histories & Enhancing Environmental Consciousness through LandTalk

With climate change and human development rapidly altering landscapes, we risk losing both physical places and our sense of place, which is crucial for local environmental awareness and agency. LandTalk, a citizen science platform started in 2018, encourages intergenerational discussions about landscape changes to foster such reflections. Already, it has garnered over 500 contributions, which include discussions on the history and potential future of local landscapes.

To understand the impact of these conversations, I utilized qualitative and quantitative data analysis techniques, such as text mining and sentiment analysis. This involved scripting in Python to analyze place-focused nouns, change-focused verbs, and sentiment indicators, and using data visualization methods like T-SNE and word clouds to present the findings.

The research so far indicates that these discussions prompt personal reflections on landscape changes and reveal collective perceptions of space and time, demonstrating how digital platforms like LandTalk can archive and promote dialogue on environmental stewardship, significantly contributing to environmental history and digital humanities.

Future research can further explore the themes discussed in these conversations and how they may enhance individual and collective environmental agency. Additionally, creating a lexicon of change terminology may offer shared understandings for contributors to discuss landscape change.

**McGowan, Alexandra**
University of Oregon
Mentor(s): Nicole Kurhanewicz, Diana Libuda
Poster #86

## Investigating the role of piRNA pathway disruption on heat-induced male infertility

Co-Author(s): Nicole Kurhanewicz, Diana Libuda

Exposure to high temperature is a highly conserved cause of male infertility. Using the model organism Caenorhabditis elegans, the Libuda Lab found that a single, acute heat exposure produces DNA damage in developing sperm and decreases male fertility. Subsequent work implicated transposons, which are mobile genomic elements, as a driving agent of this heat-induced DNA damage. Normally transposon movement is repressed in the germline by a genome maintenance system termed the PIWI/piRNA system. Preliminary

data indicates that heat affects the piRNA pathway differently between sexes. Notably, loss of the piRNA pathway master regulator PRG-1 impairs male fertility, elevates expression of transposons, and enhances the production of heat-induced DNA damage in developing sperm. Further, the piRNA pathway is also known to regulate sperm development genes. As such, the piRNA pathway represents a compelling target for study as a sex-specific mechanism underlying heat-induced male infertility. My project seeks to identify specific piRNA pathway components dysregulated by heat stress in developing sperm. Using high-resolution immunofluorescence microscopy, I am assessing how localization and abundance of key piRNA pathway proteins change with heat shock. My results will implicate specific piRNA pathway components in the development of heat-induced male infertility and shed light on underlying differences in egg and sperm developmental programs.

**McKeehan, Zoë**
University of Oregon
Mentor(s): Vicente Torres Lezama
Poster #243

## La Cohesión de La Comunidad y la Coexistencia de Diferentes Religiones en el Pueblo de Huilloc

Utilizando un enfoque etnográfico del trabajo de campo, esta investigación procura brindar conocimiento sobre la comunidad de Huilloc, específicamente en términos de las religiones practicadas en el pueblo. Desde los años ochenta y noventa, muchas religiones han venido a la comunidad y han cambiado mucho la cultura. Existe una falta de información sobre las religiones en Huilloc en la comunidad académica. Después de siete entrevistas, yo descubro que el tema de conflictos entre religiones en mi propuesta no existe en la misma forma en Huilloc. Existe un sentimiento muy fuerte de comunidad en Huilloc que tiene más poder de las diferencias entre las religiones. Los temas que vuelven a ocurrir en la investigación son el apoyo, los cambios, el sincretismo, la ética, fusión y fisión.

**McManus, Charlie**
University of Oregon
Mentor(s): Andrea Herrera
Oral Panel Exploring Gender Frontiers: Media, Ethics, and Empowerment
Poster #20

## Improving the Experiences of Gender Marginalized Computer Science Majors

Women, even though they are more likely to earn college degrees than men, have been found to leave STEM majors at higher rates than men. In addition, trans and nonbinary people aren't usually considered when

doing this research. Yet, Science, Technology, Engineering, and Math (STEM) fields are some of the fastest growing fields. These are industries that are both high paying and creating important change for today. With the research I contacted 12 UO Peer-Universities in hopes of collecting data on Computer Science majors with a focus on retention data for gender marginalized groups. While most universities didn't have the data I needed it gave me valuable insight into how universities represent students outside of male and female. I also researched resources and programs that these universities offer for Computer Science majors. My study highlights the need to focus on supporting gender marginalized STEM Majors as well as what universities could be doing to learn about and support these students more in Computer Science fields.

**McNair Welch, Ashauntene**
University of Oregon
Mentor(s): Mattias Vogel
Poster #241

## Resonance of South Asian Pop Culture in America

This research project explores the multifaceted influence of South Asian pop culture on various aspects of American media. Beginning with examining historical events such as the 1947 partition and extending to the post-9/11 era, the study delves into how South Asian creatives have woven their narratives into the fabric of American pop culture. From the diverse styles of South Asian music, cuisine, fashion, and cinema, to the representation of cultural values, the project navigates through the nuanced intersections of these two vibrant cultural spheres. Multicultural societies allow for more heritages to thrive and fusions between cultures are created for a more rich and accepting environment. Additionally, the research scrutinizes instances of cultural appropriation, revealing the challenges and controversies that arise when elements of South Asian cultures are adopted without due acknowledgment. By drawing on academic sources and real-world examples, the project aims to provide a comprehensive understanding of South Asia's profound impact on shaping the American cultural landscape.

**Medved, Hannah**
University of Oregon
Mentor(s): Emma Reed
Poster #170

## Cardiovascular, thermoregulatory, and perceptual responses to repeated far-infrared sauna in adults

Co-Author(s): Emma Reed, John Halliwill, Christopher Minson

**Introduction:** Repeated passive heating with hot tubs or Finnish saunas can result in heat acclimation marked by cardiovascular and thermoregulatory adaptations that may be protective during a heat event. It is unknown if repeated far-infrared (FIR) sauna bathing results in heat acclimation in adults with obesity. **Purpose:** We hypothesized that repeated FIR sauna bathing would result in a lower resting heart rate, rectal temperature, skin temperature and greater sweating and thermal tolerance in adults with obesity. **Methods:** Four adults with obesity (39±9 y, BMI: 33.9±1.4 kg/m2) completed 30 sessions of FIR sauna bathing. During the first, fifth, and thirtieth sauna sessions, heart rate, rectal temperature, and skin temperature were measured every 5 min. Thermal perceptions recorded every 10 min. Sweat rate was calculated via changes in body mass corrected for fluid intake and time in the sauna. Results: Heart rate and skin temperature increased during sauna visits (p < 0.01) but there was no change across visits (p>0.26). Rectal temperature decreased during sauna visits (p = 0.02) but there was no change across visits (p=0.92). Thermal perceptions increased during sauna visits (p < 0.01) but there was no change across visits (p>0.24). Sweat rate did not change across visits (p=0.79). **Conclusions:** Repeated FIR sauna bathing did not result in heat acclimation in adults with obesity. This could be in part due to the lack of change in rectal temperature during the sauna sessions.

**Melloul, Silkie**
University of Oregon
Mentor(s): Benjamín Alemán
Poster #133
Virtual

## Hot Enough for You? Combining Factorial Design and Finite Element Analysis for Optimal Heat Transfer

From brewing your morning coffee or warming up leftovers in the microwave to keeping your cell phone cool or your car from overheating, heat transfer shapes our daily routines, often without us even realizing it. Efficient heat transfer systems are crucial in various industries, ranging from engineering to energy production, to ensure optimal performance and resource utilization. Traditional experimental analysis

methods often employ a single-factor-at-a-time approach, which may overlook interactions among multiple variables, leading to inaccuracies and inefficiencies. This study utilizes a novel approach to optimize heat transfer efficiency in water heating systems by integrating factorial design and finite element analysis. Leveraging factorial design, we systematically explore multiple factors simultaneously to uncover interactions and intricacies influencing heat transfer performance. Using Fusion 360 3D CAD, we develop detailed heatsink models, followed by finite element analysis in COMSOL Multiphysics to simulate heat transfer dynamics. Our interdisciplinary approach not only identifies key factors affecting heat transfer efficiency but also offers insights into subtle nuances often overlooked by traditional methods. By bridging experimental analysis with computational modeling, this research contributes to advancing water heating technology and offers a cost-effective and time-saving methodology for optimizing heat transfer systems.

**Melo, Fox**
University of Oregon
Mentor(s): Aaron Galloway
Virtual

## The Effects of Algae On Fatty Acid Concentration in Purple Sea Urchin: a Work in Progress

Kelp forests along the Pacific coast provide vital habitat for diverse marine life, including sea otters (Enhydra lutris), which use these habitats to hide from predators and raise pups. Algae (Rhodophyta, Chlorophyta, and Pheophyta) are primary producers in shallow waters, converting solar energy into essential nutrients distributed throughout the food chain. However, climate change and predator dynamics have affected algae availability on the Oregon coast. Exploding sea urchin (Echinoidea) populations, enabled by declining sea star predators due to wasting disease, have grazed voraciously on kelp and algae. This research investigates the impacts of altered urchin-algae trophic dynamics along the Oregon coast: (1) Do urchins demonstrate feeding preferences among different algae variants? (2) Can we observe these effects through a local coastline survey? This research, conducted at the Oregon Institute of Marine Biology during the spring and summer of 2024, will be discussed in this presentation, focusing on the current status of the ongoing investigation. Quantifying urchin grazing impacts and determining preferential consumption is imperative for potential urchin management and intertidal restoration efforts in Oregon's rapidly changing nearshore environment. This research provides key insights into the relationships underpinning Oregon's affected intertidal ecosystems that support diverse life and reintroduction programs, including those involving sea otters.

**Merrill, Maya**
University of Oregon
Mentor(s): Hale Selek, Rachael Volker
Works in Progress: Lightning Rounds

## Redesigning Campus Dining to Improve Sustainability at the University of Oregon

This research work-in-progress explores innovative approaches to diminish food and packaging waste within campus dining at the University of Oregon, using principles of product design and system redesign. Emphasizing a human-centered design approach, the project considers various facets of product design, including user needs, environmental impact and product life cycle, and user experience, to identify opportunities for improvement. After collecting information from user research and interviews with UO dining and waste management staff, I will use this information to inform my ideation, prototyping and design. This research will ultimately culminate into the following deliverables: a written product design honors college thesis (to be presented and published to the Clark Honors College in Fall 2025) detailing ways to decrease waste produced by UO dining; a sustainable dining system redesign proposal; and redesigned products including bioplastic compostable food packaging, science communication designs for educational messaging on proper waste management for students and campus waste bin redesigns. Ultimately, this research and design work will provide actionable insights and recommendations for fostering sustainability within campus dining halls at UO, with implications for broader adoption in other university dining halls in the United States.

**Metzger, Sam**
University of Oregon
Mentor(s): Lauren Ponisio, Rose McDonald
Oral Panel Green Futures in Habitat and Material Science

## Variation in bumble bee foraging networks across a gradient of forest canopy

Land use change, invasion of non-native species, and other modes of habitat loss contribute to native bee population declines. A key facet in declines may be due to a loss of nutritional resources, especially when landscapes have reduced floral diversity and abundance. Increasing floral resources may mitigate future declines and forest ecosystems may offer necessary food and nesting opportunities for native bees. However, it is unclear whether and how forest management practices influence the capacity of these roles. My research advances understanding bumble bee nutrition as a function of plant community structure by expanding within a forest ecosystem. I focused on foraging patterns of bumble bees across a gradient of canopy openness in the Oregon Coast Range. With the understanding that bumble bees prefer warm, sunny, fair-weathered spaces with abundant floral resources, I hypothesized that there would be a positive relationship between floral diet breadth and canopy openness. I further predicted that increased canopy

cover would result in less floral richness, greater bumble bee diet complementarity, and a shift in plant functional characteristics . My research provides information that could assist in conifer forest management practices with goals to better provide for wild bumble bee community restoration and conservation.

**Miller, Gillian**
University of Oregon
Mentor(s): Mark Carey
Oral Panel Pathways to Environmental Empowerment

## Glaciers & Rivers: One Body Shaping the Labor Landscape

Glaciers are often understood as remote, removed from human life, bound to the mountains they inhabit, and separate from the rivers they feed. This research examines Emmons Glacier on Mount Rainier and the White River in Washington state as a case study to explain why reconnecting glaciers to the rivers they feed is crucial for fully understanding both the glacier and the river. This work also explores how, through the glacial river system, glaciers shaped and continue to influence the labor landscape and modern human daily life in general. As a whole, this research works to shift our understanding of glaciers to dynamic shifting bodies that drive forces in peoples' lives far from their terminus. In doing so, this study hopes to increase public attention and care for glaciers.

**Miller, Joshua**
University of Oregon
Mentor(s): Nick Pancheri
Poster #180

## Limb weight bearing behavior may not indicate therapeutic potential for osteoarthritis treatments

Co-Author(s): Nick Pancheri

Osteoarthritis (OA) is an uncurable degenerative joint disease that affects over 32.5 million US adults and results in whole joint pathology. A subtype of OA, post-traumatic ssteoarthritis (PTOA), develops after joint trauma, and studies have shown that ACL tears increase the risk of developing PTOA by 50-90%. Therefore, there is a need to develop novel therapeutics that protect against joint trauma induced PTOA, yet preclinical testing models have been ineffective at translating promising therapeutics into human patients. Thus, there is a need to enhance preclinical PTOA models for improved clinical translatability. We hypothesize that weight-bearing behavior can be quantitatively measured after physiologically relevant ACL injury in rodents as a method to assess therapeutic efficacy. Male Lewis rats received a non-invasive knee injury to cause

ACL rupture. After injury, animals were treated with novel prospective drug-loaded microgels to attenuate cartilage degradation. Weight bearing behavior was measured using the Bioseb Dynamic Weight Bearing System 2.0 before and after therapeutic intervention. Reported metrics include the amount of weight borne on both injured and uninjured rear limbs. Weight bearing behavior was significantly reduced after injury but was ineffective at measuring a therapeutic effect. Future work will explore other functional metrics and also micro-CT imaging to quantify changes in cartilage thickness in the intraarticular space after treatment.

**Mills, Elton**
University of Oregon
Mentor(s): Judith Raiskin, Linda Long
Poster #212

## "Work It Out together": Full Moon Rising and Rural Feminist Labor Organizing

While many histories are being uncovered, stories of women's labor in contemporary rural settings remain largely untold. In an effort to prove rural settings a necessary vessel for expanding outside of traditional capitalist ideals, this research focuses on Full Moon Rising: the first all-female work crew within the Hoedads Reforestation Co-Op in the late 20th century. Full Moon Rising formed under the lesbian separatist movement of the 1970's with the intention of being antithetical to the patriarchal capitalist American workforce culture. Personal interviews, archived Hoedads documents, and other historical writings aid in analyzing how anti-patriarchal organizations in rural and remote areas differ in function from traditional organizational structures under capitalism, as well as how the removal from the urban grind is conducive to self determination for marginalized folks. The focus on intentionally centering on the wellbeing of the group over that of the individual and equitable pay for all those partaking in the effort facilitated an experience that went beyond a 9-5, nurturing the bodies and minds of female laborers.

**Minu-Sepehr, Ava**
University of Oregon
Mentor(s): Jason Younker, Catalina de Onís
Poster #197

## Counter-mapping the Coos Bay estuaries: knowing through being, making, and offering

My research examines the (in)visible histories of the Coos Bay estuaries through creative mapping. Currently, members of the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw (CTCLUSI) and the Coquille Indian Tribe (CIT) reside in Coos Bay and remain traditional stewards. As a recently colonized landscape, Coos Bay is an important site to study the urgent issues of Indigenous and environmental justice.

I approach this environmental and Indigenous history using creative practices of mapping as a form of

inquiry. Specifically, I use an 'overdrawing' method–a mapping technique that allows for integrating many kinds of knowledge into a map. My overdrawings are forms of "counter-mapping" (Peluso, 1995)–a mapping strategy that upends conventional, colonial uses of cartography. Given the context of this landscape, I ask: what insights and questions might be revealed by these overdrawings? I argue that these materials probe and problematize the (in)visibilities of landscapes, investigating how space is politically and culturally created.

This presentation encompasses a continuation of my research methods and mapping. Most importantly, I also turn to the critical work and responsibility of returning research to the Tribes and areas studied, a necessary aspect of decolonial research. I speak to the collaborations allowing me to print, bind, and submit my edited research to the CTCLUSI and the CIT libraries, and other ethical, sensitive forms of knowledge sharing.

**Misra, Gayatri**
**University of Oregon**
**Mentor(s): Tom Hahn, Siobhan Rockcastle**
**Oral Panel Delving Deeper**

## Is It Getting Warm In Here?

The weather conditions in Eugene, Oregon vary dramatically especially during the latter part of winter term (February till March). This causes a strong impact on both the academic and social aspects of a university campus and the people involved with it. Through this research project a strong understanding of different ways through which weather plays an important role in affecting passive solar heating designs and buildings was assessed. The objective of this project was to test out the efficiency of a Trombe wall design from late February - late March. It was hypothesized that the efficiency of the Trombe wall is 50% more effective on a sunny day or above than on a day when it is cloudy.The larger question that was being looked at here was recording the efficiency of a Trombe wall because it affects the overall running time of an active heating system and the efficiency of the heating system design for a building. With building design going green, this is one passive system type that can be used to help a building to be able to reach these goals. The goal is for buildings to require fewer active systems and use passive systems as much as possible so that this can be achieved. Depending on the location of the building the goal would be to be able to rely completely on passive systems so the building could be a net zero building. The result of this project showed that the Trombe Wall was 50% more effective on a sunny day compared to a cloudy day.

**Mitchell, Mallory**
University of Oregon
Mentor(s): Michael Silverstein, Ellen Peters
Poster #32

## Numeracy, Verbal Ability, and Affective Motivated Reasoning About Solutions to Health Threats.

Co-Author(s): Michael Silverstein, Ellen Peters

Recent studies suggest that people's affective evaluations (i.e. positive or negative evaluations experienced as feeling states) of health threats and their solutions are not independent, impeding normative risk-benefit analysis. Negative affect toward a health threat may motivate more positive affect toward a solution through affective motivated reasoning (AMR). These findings contradict affective misattribution findings–that affect from one source is often misattributed to other, incidental targets. Affect is central to risk and benefit perceptions. In the presence of numeric information, numeracy (i.e., numeric literacy) is a determinant of affect and how affect from different sources impacts judgments and decisions. Verbal ability has been linked with more polarized motivated reasoning. Our proposed experiment evaluates the impacts of the affect source as well as numeric and verbal abilities on AMR and affective misattribution. We expect that induced negative affect incidental to a threat will be misattributed and increase negative affect toward a solution, especially for participants low in numeracy and verbal ability. Further, we expect that induced negative affect toward a threat will–through AMR–increase positive affect toward the solution, especially for participants low in numeracy and participants high in verbal ability. We anticipate that our findings will have important implications for the communication of medical threats and their solutions.

**Mitchem, Owen**
University of Oregon
Mentor(s): R. Scott Fisher, Jim Imamura
Poster #134

## TESS Follow-up at the Pine Mountain Observatory: Observing Transiting Exoplanets

The field of exoplanet science, which studies planets outside our solar system, has seen a period of remarkable growth and interest in recent years. The most common method of exoplanet detection is by observing transit events. Not only do transit event detections aid in the discovery of exoplanets, but we can also learn about their approximate size, orbital period, and even atmospheric composition. Transits occur when an exoplanet passes between its star and the observer such that it blocks a fraction of the starlight as it passes. Observing this allows for precise measurements of the change in flux of the star-planet system over time. Utilizing the Pine Mountain Observatory's (PMO) new telescope system, we've detected

thirteen transiting exoplanets with varying transit depths and target star magnitudes. Harnessing the power of aperture photometry within AstroImage J software, our observations of transiting exoplanets have opened the door to work with the TESS Collaboration (Transiting Exoplanet Survey Satellite). TESS has confirmed around 400 new exoplanets and identified more than 7,000 exoplanet candidates. Our inclusion into the Seeing Limited Ground-based Follow-up Group (SG1) has permitted us to contribute meaningfully to the ongoing TESS mission while simultaneously carrying out undergraduate research using a sub-meter telescope.

**Mitchem, Owen**
University of Oregon
Mentor(s): Scott Fisher, James Imamura
Poster #135

## Farm-to-table Photons: Observational Techniques and Data Reduction at the Pine Mountain Observatory

Co-Author(s): Alton Luken, Calvin Ajizian, Abby Lewis Caisa McCraw, Erin Morrison

Research at the University of Oregon's Pine Mountain Observatory (PMO), a research-grade facility nestled in the heart of Central Oregon, is an involved and undergraduate-led endeavor. Using PMO's 0.35m 'Robbins' Telescope, students are engaged in a wide array of research activities. To make their projects possible, students work under the supervision of PMO Director Dr. Scott Fisher with guidance of on-site operations staff, to build a familiarity with the equipment, procedures, and techniques needed to collect high signal-to-noise imaging data. From using their firsthand knowledge of the telescope system and its CCD detector to find research targets and plan observations, to the operation of the observatory during data collection and the implementation of the systematic error analysis and noise reduction techniques standard to the field, students at PMO gain valuable exposure to nearly every aspect of research in astronomy. Moreover, students at PMO are left with a robust and hands-on appreciation of what may be considered outwardly dull, but nonetheless incredibly important aspects of research such as keeping intricate and comprehensive observing logs and dedicating entire nights of observing to taking flat, dark, and bias calibration images. For research at PMO, understanding instrumentation and data calibration serves as an equal partner to specialized project specific analysis techniques in the pursuit of high quality results.

**Mohler, Austin**
University of Oregon
Mentor(s): Mike Hahn, Michael McGeehan
Poster #112
Virtual

## Evaluation of a Multi-Axial Shear Sensor Using a Multi-Layer Perceptron Model

Co-Author(s): Michael McGeehan, Keat Ghee Ong, Mike Hahn

Use of tactile shear sensors has increased, particularly in rehabilitation practices and assistive devices. Examples include monitoring dynamic stresses between a residual limb and prosthetic socket interface to monitor loads that can result in discomfort or pain. Our shear sensing system is based on a red, green, and blue (RGB) wavelength-filtering photoresistor measuring broad spectrum light reflected from an RGB color pattern surface. The goal of this study was to develop a two-output machine learning algorithm (multi-layer perceptron (MLP)) approach for transducing the four outputs from the sensor (RGB and broad-spectrum light) into shear displacement data. Shear data from the sensor were collected by displacing it in 1 mm increments on a modified computer numeric control (CNC) positioning stage for a total range of ¬±10 mm in the X (medial-lateral) and Y (anterior-posterior directions). This process was repeated 10 times for a total (n) of 1100 datapoints. A custom hyperparameter tuning algorithm was used to find optimal hyperparameters for our data. The MLP algorithm resulted in an R2 of X = 0.99 and Y = 0.98, and RSME of X = 0.23 mm and Y = 0.39 mm. The final average k-fold cross-validation score of both coordinates was 98.87% using randomized 80-20 (training vs test data) partitions, which was repeated 10 times. The MLP algorithm showed higher on-average accuracy compared to comparable single output algorithms but had higher misclassification costs.

**Montes, Nina-Grace**
University of Oregon
Mentor(s): Lori Shontz
Virtual

## A Content Analysis of ESPN's Coverage of the 2023 Women's College World Series

The Men's and Women's College World Series are one of the largest sporting events in Oklahoma City and Omaha every year. But, when ESPN extended its contract with the NCAA in 2011, (ESPN, 2011) they announced that they would continue their US coverage of the baseball and softball tournament and expand their coverage in the early rounds of both tournaments.

This qualitative content analysis of ESPN's coverage between the 2023 Men's and Women's College World Series aims to expand the understanding of women's sports media coverage by focusing on softball. This project investigates whether the media treatment of softball exhibits gender biases similar to those

researchers have found in other women's sports. Specifically, it examines the NCAA and ESPN's coverage of the Women's College World Series in comparison to its male counterpart. Through a content analysis of live game broadcasts and written articles, the research found that the softball broadcasts had more creative elements to it such as graphics, music, player segments and replays, but the softball written coverage remained monotone and strictly facts, something that the baseball articles weren't.

**Moon, Caleb**
University of Oregon
Mentor(s): Hannah Pigg, Katelyn Alley
Poster #115

## Understanding the Unique Pt(II) Induced Nucleolar Stress Response

Co-Author(s): Sarah Kraske

There are three FDA-approved platinum chemotherapeutics: cisplatin, carboplatin, and oxaliplatin. Until recently it was thought that these compounds caused cell death by crosslinking DNA, triggering the DNA Damage Response (DDR). Recent studies have shown that oxaliplatin may instead follow a nucleolar stress-induced cell death mechanism. The nucleolus is a sub-compartment of the nucleus where ribosome biogenesis occurs and disturbances to processes within the nucleolus are called nucleolar stress. While DDR is activated primarily by DNA damage, there are a variety of nucleolar stress-inducing stimuli. Checkpoint kinase 1 (Chk1) is a regulatory protein involved in various cellular pathways. Inhibiting Chk1 causes cell cycle arrest in the G1 phase and prevents activation of DDR. Observing the effect of Pt(II) compounds with a Chk1 inhibitor provides further insight into the relationship between Pt(II)-induced DDR and nucleolar stress. U-2OS cells were first treated with caffeine, a Chk1 inhibitor, followed by drug treatments with Pt(II) compounds. Immunofluorescent labeling was then used to determine if nucleolar stress was occurring. Results indicate an increase in nucleolar stress induction after Chk1 inhibition. Interestingly, cisplatin, which does not cause NPM1 relocalization in wild-type U-2OS cells, induced nucleolar stress when Chk1 was inhibited. This may indicate that the Pt(II)-induced nucleolar stress response involves Chk1 or that it may be cell cycle-dependent.

**Morgan, Jessica**
University of Oregon
Mentor(s): Johnny Ryan, John Christian
Poster #199

## Estimating the contribution of glacier melt to Whychus Creek streamflow in Central Oregon

Co-Author(s): Maxim Shapovalov

Warming climate threatens the existence of glaciers around the world, and alpine glaciers are particularly vulnerable. The disappearance of these glaciers would have a significant impact on the availability of freshwater for local residents. The purpose of this research project is to understand the contribution of glacier melt towards Whychus Creek streamflow. Whychus Creek supplies drinking water and irrigation to local residents in Central Oregon and it is also an important habitat for steelhead. While it is known that the creek is fed by runoff from glaciers, snowpack, and precipitation, the relative contribution of these sources remains unquantified. In this study, we developed a temperature index model using data from the largest glacier on Middle Sister, Hayden Glacier. During the time period from July 3rd to September 30th, 2023, weather data from this glacier was collected at two separate elevations. Using the air temperature data, we derived a melt coefficient that, when multiplied by each positive degree day (PDD), provided an estimate of daily melt for the glacier throughout the melt season. Making a generous assumption, we also applied this ablation rate to other glaciers on Middle and North Sister (namely Irving and Diller) to estimate the total daily volume of meltwater runoff. Then, we compared this to stream gauge data to find the contribution of the glacier melt to Whychus Creek streamflow.

**Morrison, Clara**
University of Oregon
Mentor(s): Taylor Guthrie
Poster #144

## ISC Preprocessing: Addressing Naturalistic Stimuli Challenges in Functional MRI Data Acquisition

Co-Author(s): Taylor Guthrie, Rob Chavez

In our study at the Computational Social Neuroscience Lab, we explored how individuals process their own experiences, those of a close partner, and of strangers by analyzing brain responses. Participants formed dyads, and each was recorded in an interview session, sharing personal stories based on specific prompts. Subjects then underwent fMRI scans while listening to recordings of their own stories, their partner's stories, and stories from strangers. The primary task of this portion of the project was preprocessing the

data for use in an intersubject correlation analysis, which brought additional challenges due to the use of the naturalistic stimulus. This involved segmenting the functional MRI data into three categories–self, partner, and stranger–and implementing slice time correction to ensure temporal alignment of the audio with the corresponding brain imaging data, allowing for each stimulus to be captured entirely while keeping its format consistent. The subsequent analysis focused on correlating voxel time series across subjects to identify brain regions with synchronized activity when exposed to identical audio stimuli. Preliminary results show robust correlations, particularly in the primary auditory cortex, confirming the efficacy of our preprocessing methods and setting the stage for a deeper understanding of social brain functions.

**Mottau, Owen**
University of Oregon
Mentor(s): Chantell Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## How can we make The Rec more welcoming for people who suffer through gym-anxiety?

Gym anxiety, or gym-timidation, is a common experience for many when entering or working out in a gym. Recognizing the various forms of gymtimidation and their causes is crucial for developing effective strategies to manage or alleviate the anxiety. One example of how gym-anxiety may arise is the spotlight effect, a cognitive bias where individuals feel overly conscious of being observed by others. By fostering peer support through initiatives like a gym buddy system, we aim to empower students to feel more comfortable and confident in using The Rec, thereby promoting a healthier and more inclusive fitness environment. We've studied UO students' Rec engagement, comparing freshman to Juniors-Seniors attendance and gender distribution, and tracked class-wise facility usage. Gathering personal anecdotes on gym attendance, preferred workout times, and areas used enriches our grasp of student motivations, enhancing our fitness environment. We propose The Rec buddy system for UO students, accessible online. Students share details like availability and preferences to find like-minded peers for workouts. It fosters social connections, enhances safety, and offers motivation and a fresh gym perspective. Ideal for those seeking workout partners or newcomers wanting support in the gym community.

**Moyer, Jeana**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## VPython Simulations of Systems Involving Oscillatory Motion and Waves

When researching physics, simulations are often created so that variables can be manipulated in a controlled environment and behaviors can be visualized. We created four simulations using VPython in the Glowscript web application to investigate properties of oscillations and waves. Individually, we created simulations of orbital motion, sound propagation in a one-dimensional solid, diffraction from a single slit, and instantaneous velocities during rolling. To create our simulations, we started with a fundamental physics concept, used the concept to develop pseudocode, and worked from this pseudocode to create a working simulation. Through this, we gained a better understanding of physics and scientific computing, starting from minimal experience with programming. The simulations produce results that are consistent with the real-life behavior of these systems. Features of the simulation programs include user interfaces to control inputs and displays of results in graphical or numerical formats. Our simulations are significant in that they allow us to investigate natural phenomena that would otherwise be too small or too fast to view with the naked eye.

**Mullen, Timothy**
University of Oregon
Mentor(s): Matthias Vogel
Poster #235

## Deep Rooted Conflict: India and Pakistan

India and Pakistan have had a complex long standing geo-political conflict that has had powerful impacts on South Asian dynamics. The conflict that dates back to 1947 is fully rooted among both societies culturally, socially, and economically and has ranged from excessively violent to mild displeasure. This clash of nations originated from the British partition of the land after cries for independence directed at the British Empire from the citizens of the region became overwhelming. This lead to setting the roots for the conflict that would continue for decades to come. Our objective with this research is to thouroughly understand this competition between nations and how it came to be. We will do this by understanding the historical context around it, the history of wars between them, political moves, policies, economic overlapping that also affects the surrounding nations, and general moves made by each country towards one another. The study will also include many specific factors that lie underneath the broad contrast of ideas between these two nations such as the water sharing disputes, nuclear weapon development, the role of media, and terrorism carried out on one another's soil. In conclusion, the goal of this project is to offer us an understanding of one of the most complex and enduring relationships that this world has to offer to study.

**Muñiz Sanchez, Cinthia**
University of Oregon
Mentor(s): Nicole Swann, Apoorva Karekal
Oral Panel From Mind to Molecule
Poster #165

## Statistical Analysis of Electroencephalography's Capability in Measuring Cognitive Impairment

Co-Author(s): Apoorva Karekal, Allison Prince, Blake Sims Mackenzie Carnes, Nicole Swann

Some studies have been done on Parkinson's disease (PD) patients to understand the relationship between cognitive impairment and electrophysiological signatures recorded using electroencephalography (EEG). The research aimed to determine if the strength of EEG signals is related to cognitive dysfunction in PD patients. We collected resting EEGs from patients with PD on and off medications. Only off-medication was used for analysis to minimize frequency fluctuations caused by the medication. We correlated our data with the standard clinical rating scale for cognition, the Montreal Cognitive Assessment (MoCA), to assess relationships between both. Specifically, we analyzed the power spectral density (PSD) of the recordings using the FZ, F3, and F4 electrodes. Based on MoCA's official cutoff, PD subjects (n=23) were divided into low (≤25) and high (≥26) MoCA scores. Our results showed no significant correlations between Theta, Alpha, Sigma, Beta, or Gamma and their MoCA score (r = -0.045, 0.236, -0.171, -0.146, -0.115; respectively). Similarly, the difference between the same frequencies between the two groups was non-significant (P= 0.98 for theta, 0.08 for alpha, 0.078 for sigma, 0.21 for beta, 0.72 for gamma). This approach demonstrates that PSDs derived from EEGs don't appear to relate to PD-related cognitive impairment measured with the MoCA. Analyzing different features of the EEG data or utilizing more sensitive methods for cognition could be useful in future studies.

**Myers, Benjamin**
University of Oregon
Mentor(s): Matthias Vogel
Poster #232

## Nagorno-Karabakh Border Conflict

At this time, both nations of Armenia and Azerbaijan are in conflict both politically and militarily regarding a region called Nagorno-Karabakh. The two nations are fighting for various reasons, including historical claims and ethnic presences. These skirmishes make the territory extremely volatile and difficult to enter or leave, creating a unique issue. Because the region's borders lie entirely within Azerbaijan, a nation that stands in opposition of its existence, the only way for Armenian aid to reach Nagorno-Karabakh is through designated

corridors, of which there is only one. So how did this territory come to be, and why are it's borders the way that they are?

**Nako, Lierta**
University of Oregon
Mentor(s): Erin Beck
Poster #228

## Getting to the Root: Preventing Violence Against Women in Guatemala Through Interventions With Men

Violence against women and girls (VAWG) is a global crisis. While there is a growing consensus about the need to engage men and boys in VAWG prevention, this recognition has not uniformly translated into on-the-ground strategies and research. This research describes and explains that gap by focusing on attempts to address VAWG in Guatemala, a country with one of the highest rates of VAWG in the Americas.
As most organizations in Guatemala working to prevent VAWG are NGOs, this research project therefore focuses on the work being done by Guatemalan NGOs to combat VAWG. First, it "maps" the work of NGOs in Guatemala to analyze what these organizations are doing around the issue of prevention. Second, finding that very few organizations focus on involving boys and men in their primary activities, this project asks what are the barriers to involving boys and men in VAW prevention work in Guatemala?
My research and interviews with representatives of four Guatemalan NGOs focused on VAWG identifies three factors that make working with men and boys difficult: 1) NGOs' financial limitations; 2) men's perceptions of women's organizations; and 3) the gap in empirical evidence regarding anti-violence interventions aimed at boys and men. I conclude that research in the field of VAWG prevention must be expanded to effectively establish frameworks for targeting the root cause of VAWG: dangerous, deeply-entrenched norms surrounding men and masculinities.

**Napper, Crow**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## VPython Simulations of Systems Involving Oscillatory Motion and Waves

When researching physics, simulations are often created so that variables can be manipulated in a controlled environment and behaviors can be visualized. We created four simulations using VPython in the Glowscript web application to investigate properties of oscillations and waves. Individually, we created simulations of orbital motion, sound propagation in a one-dimensional solid, diffraction from a single slit, and instantaneous

velocities during rolling. To create our simulations, we started with a fundamental physics concept, used the concept to develop pseudocode, and worked from this pseudocode to create a working simulation. Through this, we gained a better understanding of physics and scientific computing, starting from minimal experience with programming. The simulations produce results that are consistent with the real-life behavior of these systems. Features of the simulation programs include user interfaces to control inputs and displays of results in graphical or numerical formats. Our simulations are significant in that they allow us to investigate natural phenomena that would otherwise be too small or too fast to view with the naked eye.

**Neuman, Hannah**
University of Oregon
Mentor(s): Joshua Roering, Brooke Hunter
Poster #193

## Geomorphic controls on soil organic carbon storage in the Oregon Coast Range

Co-Author(s): Joshua Roering, Brooke Hunter

How can we better estimate soil carbon stocks in topographically variable terrain in order to inform land management practices that facilitate the storage of carbon in soils as a natural climate solution? We collect soil samples across ridgelines in the Hadsall Creek area of the Oregon Coast Range that span a range of hilltop curvature values to examine how soil depth, total carbon stock, and relative abundance of particulate organic carbon (POC) and mineral-associated organic carbon (MAOC) vary with curvature, which is used as a proxy for erosion rate, and can be measured from airborne LiDAR data. We use a combination of size separation and density fractionation to separate the soil carbon into POC and MAOC pools. The distribution of POC vs MAOC in the soil gives insights into the residence time of carbon in the soil - MAOC primarily exists in the soil via occlusion to mineral aggregates and is physically and chemically shielded from decomposition, thus it is slower cycling than POC, which is unprotected. The resulting trends can then be extrapolated over a region to develop high-resolution maps of soil carbon stocks.

**Nguyen, Ethan**
University of Oregon
Mentor(s): Ramesh Jasti, Gabriela Bailey
Poster #124

## Investigating Fluorescence via the Incorporation of an Electron Donor Unit into Cycloparaphenylenes

The development of fluorescent molecules is an important component in a multitude of biological imaging applications and light-emitting materials. [n]Cycloparaphenylenes ([n]CPPs: where n denotes the number

of phenylene units within the structure) are a unique class of carbon nanomaterials known for their size-dependent emissions (blue-shift in emission with increasing n), common absorbance, and bottom-up synthetic approach. Their radially oriented pi-system also makes them an ideal candidate to investigate the effects of incorporating electron-modulating groups, such as thiophene, into their strained scaffolds to tune emission. My contribution to the project focuses on incorporating an electron donor (thiophene) into [10]CPP, resulting in the synthesis of thio[10]CPP. The synthesis involves a seven-step process involving lithiation-addition reactions, Suzuki cross-couplings, followed by reductive aromatization. As of now, thio[10]CPP has been successfully synthesized as confirmed by proton nuclear magnetic resonance (NMR) spectroscopy. Further characterization will be carried out to probe the optoelectronic properties of the thio[10]CPP as well as take x-ray crystallography, mass spectrometry, carbon NMR, and Fourier Transform Infrared Resonance spectroscopy measurements. Ultimately, we aim to explore the potential applications of the target molecule in biological imaging and light-emitting materials.

**Nguyen, Viviann**
University of Oregon
Mentor(s): Christina Karns
Oral Panel Exploring Educational Environments

## The Effects of Educational Architecture on Childhood Development

Learning environments are positioned to adapt in tandem as the understanding of childhood cognitive development continuously evolves. The current educational infrastructure is inconsistent, but rigid, leaving little room for newer educational styles that arose as our understanding of childhood cognitive development continues to grow. Intentional architectural design that considers adaptable programming may provide more opportunities for these new educational styles to flourish, supporting and propelling such changes. However, addressing the intersection of children's cognitive development and the physical environment in which that development is fostered is a multidisciplinary concept requiring a diverse set of perspectives. The lack of studies dedicated to this intersection exploring interactive education and the importance of indoor and outdoor exploration leads us to question; How do environmental stimuli affect cognitive development in children?

This project is a collaborative effort between students specializing in architecture and psychology to develop a systematic approach to answering these questions. We plan to conduct a systematic literature review, allowing us to identify potential measures and conclude whether a meta-analysis is feasible by examining potential barriers. These include relevant published research available for conduction, validity to constructs, and inconsistency between the terminology and methodology of the fields in question.

**Nicholson, Olivia**
University of Oregon
Mentor(s): Jen Doty
Poster #30

## Cyber Spillover: Youth, Parent, and School Administrators' Report on Youth Technology and Effects

Our qualitative study aimed to capture crucial insights from parents, school administrators, and middle-school-aged youth themselves regarding their experience with technology use, including its effects on youth relationships and school climates. Our team interviewed eight middle schoolers, eight caregivers, and eight school administrators. All participants took part in an in-depth, semi-structured interview, conducted and recorded with consent/assent using Zoom (25-60 min.). After transcription, our team conducted a thematic analysis, during which time we identified a coding structure comprised of main themes and sub-themes (Braun and Clarke, 2009). We conducted an initial round of independent coding using DeDoose, with 20% of interviews being double-coded by the full team. We continued to meet regularly throughout coding to ensure thematic consensus (Fereday & Muir-Cochrane, 2006). Four main themes emerged: relationship development, mental health, school climate, and family tech climate.

This study illuminates key ways that youths' tech-based interactions influence the socio-ecological, in-person environments that most middle schoolers navigate each day. Youth, parents, and administrators reported that tech use can be a positive tool; however, all participant categories also reported several examples of tech disrupting youth developmental experiences. Our study reveals a clear need for digital citizenship training tailored to youth, families, and administrators alike.

**Nielson, Olivia**
University of Oregon
Mentor(s): Christina Karns
Oral Panel Exploring Educational Environments

## The Effects of Educational Architecture on Childhood Development

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lack of studies dedicated to this intersection exploring interactive education and the importance of indoor and outdoor exploration leads us to question; How do environmental stimuli affect cognitive development in children?

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**O'Connell, Shannon**
University of Oregon
Mentor(s): Robert Schofield
Works in Progress: Lightning Rounds

## How Wear of Ant Mandibles is Correlated with Different Behaviors in Ants

Contrary to popular belief, leaf-cutter ants don't consume the leaves they cut. These tiny insects have a much more important role with their leaves and have contributed to scientific advancements. The Schofield lab emphasizes investigating the biophysics of ants, scorpions, and other invertebrates. The peculiar materials leaf-cutter ants, and many other invertebrates, utilize for their teeth, claws, and other tools, which include zinc, manganese, and other unique elements, are the main subject of attention. While at the Schofield lab, I have gained experience working with leaf-cutter ants and learning how they operate. By gaining hands-on experience with leaf-cutter ants, I have observed ant behavior and how they interact with their environment. I was able to design and construct humidity tanks for the leaf-cutter ants. In our lab, we noticed that the blackberry leaves that the ants depend on were drying out and as a result, the ants struggled to maintain their colonies. Leaf-cutter ants derive their energy from plant leaves. They cut large parts of the leaves to feed a fungus in the family Lepiotaceae. With this fungus, leaf-cutter ants can cultivate their own gardens, they use this fungus to nourish themselves. Considering these factors, helping preserve the colony's health is essential. This lab explores a fascinating phenomenon: the precise form of metal in the cuticle, and how the mandible wear alters its behavior.

**Ode, Jazmin**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Four different coding models simulating oscillatory and rotational motion through VPython

In this presentation, we will show to the audience four different physics simulations/animations including damped oscillation, 2D transverse waves, inelastic collisions, and angular momentum. We will explain our code to the audience, then answer questions and accept input suggestions for our simulations/animations from the audience.

Luke: A simulation of a mass and spring system that oscillates in air under the forces of gravity and drag using a numerical/incremental method of solving the differential equation that would model the system.

Zack: An animation that shows how a transverse wave propagates outwards on an array of spheres using selected amplitudes and wave speeds to calculate each sphere's position over time.

Rhett: A simulation of oscillatory motion of a mass connected to a spring affected by a friction coefficient due to the surface the mass moves on. A graph of velocity shows the movement of the mass, and the affect friction has on its velocity.

Jazmin: A simulation of off-axis impact between a sphere and a rectangular shape to demonstrate conservation of momentum. Observers will be able to change different variables, such as mass and intel speed, to investigate the resulting collision.

**Ohleyer, Daisy**
University of Oregon
Mentor(s): Peg Boulay
Oral Panel Green Futures in Habitat and Material Science

## Balancing Wildlife Habitat, Recreation, and Human Impact in Park Management

The cities of Eugene and Springfield have created parks and natural areas for recreational use, such as Georgia Pacific Natural Area and Howard Buford Park which provide habitat for target species such as the Oregon Vesper Sparrow (Pooecetes gramineus affinus) and Northwestern Pond Turtle (Actinemys marmorata). These public natural areas are designed to increase human interaction with nature while minimizing disturbance to wildlife. Northwestern Pond Turtles and Oregon Vesper Sparrows are species native to Oregon that inhabit these areas and serve as wildlife attractions for visitors. Through conducting visual encounter surveys on Northwestern Pond Turtles and point count surveys on birds, including the Oregon Vesper Sparrow, our research aims to inform future park management practices. Our study sites are Georgia Pacific Natural

Area and Mt. Pisgah at Howard Buford Recreation Area. Our goal is to understand the effects that human interactions have on wildlife and recommend future management practices to enhance visitors' experiences with nature while emphasizing wildlife conservation. In partnership with Friends of Buford Park and Willamalane Parks and Recreation District, this project will explore how the management of parks can benefit both wildlife habitats and provide the desired visitor experience.

**Okeke, Debbie**
University of Oregon
Mentor(s): Robert Chavez
Poster #141

## A Brain-First Approach to the Relationship between Anxiety and White-Matter Neuroanatomy Similarity

Previous research has shown white-matter neuroanatomy as a predictor of various behavioral traits and neurological conditions. However, researchers have traditionally proven these relationships using a phenotype-first approach where subjects are first grouped based on a shared condition before comparing the anatomy of interest. Some have begun using brain-first approaches, which may help prevent the oversimplification of neuroanatomy and its effects in phenotype-first approaches (Bathelt et al., 2019). Our study explores possible relationships between white-matter microstructure similarity and measures of anxiety using a brain-first approach. The sample consisted of 108 adults examined in a non-clinical setting. We collected diffusion MRI data and analyzed it with tractography software, using multiple features of white-matter structure to assign appropriate clusters. We used a K-Means Cluster Analysis to generate the final groups and compared these findings to anxiety self-reports among participants. Although there were indications of differences in anxiety levels between clusters of people, there were no significant differences between the clustered groups and their anxiety levels. Though not statistically significant, the differences found imply there may be a relationship between white-matter neuroanatomy and anxiety not captured by this cluster analysis. Implications and areas for further exploration of how to approach these relationships will be discussed.

**Olavarrieta Colasurdo, Andrés**
University of Oregon
Mentor(s): Scott Hansen
Poster #116

## Reconstitution of Reversible GTPase Activation Using Light Induced Signaling Inputs

Co-Author(s): Sophia Doerr

The ability of cells to transiently alter the concentration and spatial distribution of signaling molecules is a hallmark of cellular organization and signal adaptation. At the plasma membrane, spatial heterogeneity in cell signaling emerges from biochemical reactions involving phosphatidylinositol phosphate (PIP) lipids, PIP kinases, PIP phosphatases, and Rho-family GTPases. Interconnected positive and negative feedback loops are thought to control the communication between these distinct families of signaling molecules to create emergent properties, such as polarization, cortical oscillations, and transient spikes in activity. Although genetics and cell biology approaches have identified several classes of molecules that regulate these emergent properties, we do not currently know enough about these systems for biochemical reconstitution using a bottom-up approach. Here, we describe a new in vitro system to reconstitute minimal signal adaptation modules that are built around the communication between small GTPases and PIP lipid modifying enzymes. To this end, we established an optogenetics based system that utilizes the iLID-SspB light-induced protein heterodimerization systems to spatial and temporal control the activation of small GTPase's and PIP lipid phosphorylation on supported membranes in vitro. We use this approach to dissect the communicate between Ras GTPase and phosphatidylinositol 3-kinase (PI3K).

**Olds, Charlotte**
University of Oregon
Mentor(s): Brice Kuhl, Lindsay Rait
Poster #54

## Contextual similarity influences memory organization

Co-Author(s): Lindsay Rait, Brice Kuhl

Memory experiments using free recall paradigms allow for the measurement of how memories are organized. These experiments have shown that memories which share a common context during encoding are more likely to be clustered together during free recall. In this study (n=35), we tested whether memories with similar–but not identical–contexts are also clustered together during free recall. Participants studied words alongside pictures of scenes. Participants were instructed to remember the words for a later memory test. The pictures were not relevant for the memory test but served as a context in which the words were encoded. Critically, some of the pictures were similar to each other (e.g., pictures of libraries) whereas other pictures

were unrelated. After studying the words and pictures, participants were given two minutes to recall as many words as they could (free recall). We found that participants were more likely to make recall transitions (memory clustering) between words that were encoded in similar contexts compared to words that were encoded in unrelated contexts. Interestingly, encoding a word in a context that was similar to another context did not influence the probability that the word was recalled–only the way the word was organized in free recall (the degree of clustering). Collectively, these results demonstrate that memories which share similar contexts tend to be grouped together during recall.

**Orman, Tucker**
University of Oregon
Mentor(s): Andrew Lovering, Karleigh Bradbury
Poster #168

## Thermal Response: Core and Perceived Temperature Change after Cold Water SCUBA Diving

Co-Author(s): Makayla Perez, Karleigh Bradbury, Andrew Lovering

Objective: To measure core temperature (Tc) and thermal sensation before and after cold water SCUBA diving in male and female recreational divers wearing wetsuits and drysuits. Methods: Fifty-two subjects (23M, 27F) completed SCUBA dives at varied depths and durations in cold water (10.4 ± 1.9°C). Ten subjects (5M, 5F) wore drysuits, dry gloves and hoods. The remaining 42 (19M, 23F) wore wetsuits (14mm core, 7mm arms and legs), with hoods, gloves and booties. Tc was measured before and after each dive using a telemetric pill that was swallowed ~10 hr prior to the start of the dive. Thermal sensation was measured immediately before and after each dive. Results: There was a significant effect of suit type on ΔTc/min (p=0.02) with those in wetsuits having a greater decrease in Δ Tc/min (-0.02 ± 0.02°C) than those in dry suits (-0.00 ± 0.01°C). In those in wetsuits, there was no significant difference (p = 0.26) in ΔTc/min between men (-0.01 ± 0.02°C) and women (-0.02 ± 0.02°C). There was no significant difference (p=0.29) in Δ thermal sensation between wetsuit wearers (-2.0±1.0 arbitrary units (a.u)) and drysuit wearers (-1.0±1.0 a.u.). Conclusion: Drysuits were more effective at maintaining Tc throughout cold water dives. There were no differences in ΔTc in either men or women wearing wetsuits. Our results suggest cold water divers maintain Tc better using drysuits, despite not feeling any warmer than those in wetsuits. Funding: University of Oregon, pills provided by USARIEM.

**Orsi, Addy**
University of Oregon
Mentor(s): Keli Yerian, Bibi Halima
Poster #226

## Is a student-authored textbook possible? Open Pedagogy says yes!

The Open Educational Resources movement is pushing faculty to adopt free, open-source course materials to reduce the cost of materials for students. This project addresses this call by engaging students to write an open-source course textbook themselves! This student-centered, grant funded project includes five undergraduates who are creating ten multimedia, interactive chapters for LING 144, Learning How to Learn Languages. All of the students recently took this course, which focuses on theory, research, and strategies for learning languages, including languages that are less commonly taught, heritage languages, and indigenous languages that are in danger of disappearing. With the help of a Graduate Employee as a project manager, students are creating the book over a period of six months (January-June) as a team in the platform Pressbooks, which hosts open-access materials. They have completed five chapters so far, with team members dividing up work on writing, illustration, case studies, and multimedia elements that showcase key concepts in the book. This book will become the main text for future offerings of LING 144 (which enrolls about 200 students per year) and will be a living document that future cohorts of students can annotate and update themselves for course credit. Team members will design and present a poster that highlights the purpose of the project, its platform, the content, and the processes of the teamwork.

**Orsolino, Rae**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Orsolino, Rae**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Owusu-Hienno, Valerie**
University of Oregon
Mentor(s): Victoria Guazzelli Williamson, Kathryn Mills
Poster #142

## Mentalizing in the Teen Brain

Research suggests that mentalizing–or the ability to understand the underlying mental states of others–develops across adolescence. Various theories have been put forth as to how such capacities develop, including the theory of simulation-based mentalizing. Simulation-based mentalizing is the idea that to understand another individual's experience, one actively puts oneself in another individual's shoes to determine how one would think and behave in such a situation. Using a simulation-based task as a neural localizer of simulation and applying this to brain activity during a spontaneous mentalizing task, we will compare behavioral strategies and neural activity during mentalizing in a group of adolescents and adults to probe the development of mentalizing capacities. Through this study we are aiming to compare the neural correlates of simulation and spontaneous mentalizing in adolescents versus adults. Additionally, we are working to create and compare individual mentalizing profiles among adolescents and adults and link these profiles with functional outcomes including internalizing symptoms. Finally, we are working towards establishing feasibility for a larger study of this nature with this pilot.

**Paris, Lawren**
University of Oregon
Mentor(s): James Prell
Poster #117

## Investigating Gas-Phase Biomolecular Ion Thermochemistry as a Tool for Native Ion Mass Spectrometry

As the field of native mass spectrometry grows, there is increasing interest in quantitatively determining ion dissociation, unfolding thermochemistry, and kinetics using commonly available mass spectrometers. In particular, understanding the relationship between ion activation, internal energy, and temperature will likely be necessary for detailed structural interpretation of Collision Induced Dissociation and Collision Induced Unfolding data for native biomolecular ions and their complexes. Here, we use quantum computational theory to predict heat capacities for a variety of model biomolecular structures and report effects of level of theory, basis set, ion secondary structure, and biomolecule type on vibrational heat capacity per vibrational degree of freedom from 100 to 3000 K. On a degree-of-freedom basis, these values are remarkably invariant within each biomolecule type and can be used to estimate heat capacities of much larger biomolecular ions. We also explore effects of heat capacity ion heating, cooling, and internal energy distribution as a function of time use a home-built program (IonSPA). We observe that these internal energy distributions can be nearly Boltzmann for larger ions and at higher temperatures achieved through collisional heating after a brief (few-μs) induction period.

**Parker, Bailey**
University of Oregon
Mentor(s): Mattias Vogel
Poster #241

## Resonance of South Asian Pop Culture in America

This research project explores the multifaceted influence of South Asian pop culture on various aspects of American media. Beginning with examining historical events such as the 1947 partition and extending to the post-9/11 era, the study delves into how South Asian creatives have woven their narratives into the fabric of American pop culture. From the diverse styles of South Asian music, cuisine, fashion, and cinema, to the representation of cultural values, the project navigates through the nuanced intersections of these two vibrant cultural spheres. Multicultural societies allow for more heritages to thrive and fusions between cultures are created for a more rich and accepting environment. Additionally, the research scrutinizes instances of cultural appropriation, revealing the challenges and controversies that arise when elements of South Asian cultures are adopted without due acknowledgment. By drawing on academic sources and real-

world examples, the project aims to provide a comprehensive understanding of South Asia's profound impact on shaping the American cultural landscape.

**Paschall, Sadie**
University of Oregon
Mentor(s): Sara Cotton, Frances White
Poster #182

## The Malinow Howlers: Identifying a Historic Primate Osteological Collection

Co-Author(s): Sedona Epstein

This project examines an unidentified primate specimen from the UO Primate Collection in order to determine the species, sex, and age of the primate skeletal remains. This project hypothesizes that the unidentified specimen is a subadult male black howler monkey (Alouatta caraya). Through the utilization of both a comparative analysis of specimens within the UO primate osteology collection and Tim D. White's (2012) work in human osteology, our research resulted in positive matches in morphologic features in comparison to adult male black howler monkeys (A. caraya). The specimen was compared against the remains of two male howler specimens, two female howler monkey specimens, one unsexed howler monkey specimen, and two unsexed woolly monkey specimens. Further investigation and comparison of these specimens support the conclusion that the unidentified primate is a subadult male black howler monkey (A. caraya) and highlight the importance of comparative collections. The current findings raise further questions regarding the life history of the specimen and its possible relation to field studies led by Malinow et al. (1960s). Further studies could include hair sample analysis to determine the diet of the animal when alive. With information on diet, we could connect this to a geographic location or common diet of howler monkeys to determine where the specimen came from.

**Pawar, Abhay**
University of Oregon
Mentor(s): Keli Yerian, Bibi Halima
Poster #226

## Is a student-authored textbook possible? Open Pedagogy says yes!

The Open Educational Resources movement is pushing faculty to adopt free, open-source course materials to reduce the cost of materials for students. This project addresses this call by engaging students to write an open-source course textbook themselves! This student-centered, grant funded project includes five undergraduates who are creating ten multimedia, interactive chapters for LING 144, Learning How to Learn Languages. All of the students recently took this course, which focuses on theory, research, and strategies

for learning languages, including languages that are less commonly taught, heritage languages, and indigenous languages that are in danger of disappearing. With the help of a Graduate Employee as a project manager, students are creating the book over a period of six months (January-June) as a team in the platform Pressbooks, which hosts open-access materials. They have completed five chapters so far, with team members dividing up work on writing, illustration, case studies, and multimedia elements that showcase key concepts in the book. This book will become the main text for future offerings of LING 144 (which enrolls about 200 students per year) and will be a living document that future cohorts of students can annotate and update themselves for course credit. Team members will design and present a poster that highlights the purpose of the project, its platform, the content, and the processes of the teamwork.

**Penn, Hayden**
University of Oregon
Mentor(s): Hope Healey
Poster #72

## Exploration in the Gulf Pipefish: Charting the Developmental Cellular Atlas

Co-Author(s): Hope Healey, Vithika Goyal, Micah Woods

A marvel of biology lies within the fact that development begins from a single cell and leads to the creation of mature, complex organisms such as ourselves. How does this process occur in unique animals, such as those with highly altered traits? A stunning example of this exists within Syngnathid fish which includes the commonly known seahorses, pipefishes, and seadragons. These fishes share unique, 'derived' traits, such as male-pregnancy, long, tube-like snouts, and other intriguing changes to their body plans. Our study characterizes the cells present in developing Syngnathus Scovelli, Gulf pipefish, at the onset of craniofacial elongation. To accomplish this, we measured cellular gene expression, grouped cells based on the similarity of their gene expressions, and subsequently identified genes found to be differentially expressed in each group. We then annotated cell types using relevant literature in combination with visualization of marker genes using in-situ hybridizations. In this atlas, we identified numerous cell types relevant for understanding syngnathid's unique biology including tendons (marked by tnmd), bone cells (marked by ifitm5), and cartilage cells (marked by ddr2 ). The characterizations presented in our research represent a novel resource to researchers studying the basis of the unique features observed in our beloved Gulf pipefish and related species and will serve to support further analyses of these eye-catching fish.

**Periche, Ari**
University of Oregon
Mentor(s): Kevin Harnden, Parisa Hosseinzadeh
Poster #105

## Deep Learning-Guided Design of De Novo Type I Copper Centers

Co-Author(s): Kevin Harnden, Parisa Hosseinzadeh

Electron transfer (ET) metalloproteins are vital for facilitating biological processes essential to life. Cupredoxins, are an extensively studied subclass of ET proteins distinguished by their conserved cupredoxin fold, which hosts Type I copper sites (T1Cu). Despite the extensive studies done on native T1Cu proteins and their properties, attempts to recreate T1Cu sites within de novo protein folds have been sparse, revealing a fundamental gap in the unbiased understanding of the relationship between protein structure and T1Cu function. To fill this gap, we aim to develop a library of computationally designed de novo proteins hosting T1Cu sites. To develop this library, we are utilizing a pipeline of deep neural networks that (1) generates protein backbones starting with only the T1Cu site ligands and their geometric arrangement, (2) designs appropriate amino acid sequences that encode the generated backbone structure, and (3) predicts the structures of the designed sequences. After completing the libraries, we plan to experimentally characterize the designs. The insights gained upon the analysis of successful designs will provide us with insights into the key features of T1Cu proteins.

**Peters, Payton**
University of Oregon
Mentor(s): Alexander Dracobly
Poster #236

## The Experience of World War One

Our research project is based on the book “The Beauty and the Sorrow” by Peter Englund. Englund’s novel takes personal narratives of twenty individuals who were impacted by the first world war, all from many different backgrounds and all impacted in very unique and different ways, and allows the reader to imagine what it was like to exist day to day during this global conflict. As a class, we took on the task of finding even more of these narratives to emulate Englund, and to put ourselves in the shoes of these very real people who experienced such a momentous, life-altering historical event.

**Peterson, Genevieve**
University of Oregon
Mentor(s): Matthias Vogel
Poster #231

## The Black Market in Argentina

In our research project we explore Argentina's black market. We specifically focus on how it is intertwined with the Argentinian economy, politics, along with impact on low income families in recent years. To answer our questions; we turned to scholarly articles and news stories covering Argentina's black market, as well as some first hand accounts from those who have been impacted. The economy is on the brink of recession, and inflation has skyrocketed prices for citizens, whose wages have not been able to keep up. All these issues are causing political tensions to run high, as many are turning to the government to fix the issues with their once blossoming economy. We were able to conclude that Argentina's continual social and political instability has contributed to not only the creation of the black market in Argentina but also its continual prevalence. Through our research we discovered some of the challenges that the Black Market has inspired in Argentina.

**Phillips, Abigail**
University of Oregon
Mentor(s): Ben Chaloupka
Poster #47

## The implications of digital versus physical documentation of past experiences

As time moves forward, most people rely on their mobile phones for many aspects of everyday life, and often share parts of their lives on the internet through social media apps. Social media can be looked at as a digital diary, but true journal writing has been around for hundreds of years longer than social media. Both can be seen as outlets of personal experience and a way to remember the past. What is the impact of using written representations of memory (e.g. journal, blog) versus technological representations (e.g. photos, videos) on the retrieval of autobiographical memories? This study's procedure involves subjects coming into the lab for a two-part study and being instructed to participate in a computer task. They will come in for part-one, and one week later for part-two. Subjects are randomly assigned to the journaling or the Instagram (social media) condition, and first see a list of 16 cue words. They are asked to generate a personal memory associated with each word. For part-two they are asked to recall what they had written during part-one, with the cue word present. I have about 25 participants so far that I may use for analysis. Although there is still more analysis to be done, it seems as though those in the journaling condition are more accurate in recalling their autobiographical memories. I believe this study will shed light on how social media affects our personal memories, and may inspire a change in how we document our personal lives moving forward.

**Pierce, Christopher**
Lane Community College
Mentor(s): Caroline Lundquist
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering

## Mind Over Matter: Disarming Chronic Pain with Psychobehavioral Therapy

In the US, there are currently more than 100 million people who battle chronic pain. In the general clinical practice, the most effective and underutilized modality to treat chronic pain is psychobehavioral therapy. During my time working in interventional pain management, I realized that chronic pain patients are underserved and undertreated. To help chronic pain patients, I begin my research into understanding how pain works down to the molecular level so that I could begin the next steps in providing physical causational proof that psychobehavioral therapy works. By gathering empirical data published from medical journals in the US, as well as globally, I was able to apply a thematic analysis of pain, current treatment standards, proposed treatment standards, and the applications of psychobehavioral therapy. The process in understanding what pain is, how pain is communicated, and how this treatment can be shown to improve the quality of life for a chronic pain patient allows for further research to be implemented and develop higher standards within clinical practices. When all the available modalities come together to treat chronic pain, the patient is given the opportunity to live their best life with chronic pain. When given the tools to be able to understand their pain and understand how powerful their brain is, they can fight against the chronic pain cycle that continues to bring them down.

**Polk, Marcus**
University of Oregon
Mentor(s): Sean Brudney, David Allcock
Poster #130

## Frequency Stabilization of a 729 nm Diode Laser using Pound-Drever-Hall Locking

The development of quantum information systems such as quantum computing have the capacity to enhance our understanding of complex quantum interactions, such as those in chemical reaction simulations and dynamic protein modeling. Trapped Ion Quantum Computing is one promising path to develop the scaffolding necessary to accurately simulate quantum systems. Trapped Ion Quantum Computing consists of two key components: qubits and electromagnetic fields (e.g. lasers). A qubit is the quantum counterpart to a modern computer's bits, the part of the computer used for the processing of data. Within the Oregon Ions research group, we use the electron energy levels of calcium ions to act as our qubits. Typically, these ions are cooled to a "ground state" and can be excited to higher energy levels through the use of finely tuned diode lasers. The goal of my research has been to improve the stability of the 729 nm laser in the lab because commercial

diode lasers are not stable enough for precision ion manipulation. This ongoing project uses the Pound-Drever-Hall (PDH) locking method to improve laser stabilization. The PDH locking method is where a part of the laser light is shown through an UltraLow Expansion (ULE) glass cavity to detect frequency fluctuations. Cavity dynamics dictate the formation of standing waves at specific frequencies, which can be used to actively correct frequency deviations in the diode laser, leading to increased frequency stability.

**Port, Jane**
University of Oregon
Mentor(s): James Watkins, Thomas Giachetti
Poster #195

## Ash Sintering in Volcanic Conduits During Explosive Eruptions

Co-Author(s): James Watkins, Thomas Giachetti

This project intends to better understand the process of sintering of ash in volcanic conduits during an explosive eruption. Sintering refers to the process of "forming a solid mass of material through heat and pressure without melting to the point of liquefaction" (Watkins). Using a Rapid Quench Cold Seal Hydrothermal Apparatus, experiments were conducted with two types of obsidian (hydrated and dehydrated) within small metal capsules. The obsidian was then crushed and sieved into specific grain sizes and put into individual capsules. The capsules were placed inside the apparatus under intense heat and pressure, at approximately 850°C and 550 bars of pressure. They then underwent rapid decompression, at either 1 megapascal/second or 0.1 megapascal/second.

Once done, the capsules were cut open using a diamond saw and then mounted into an epoxy puck. The pucks were then polished and carbon coated. Once coated, they were taken to a scanning electron microscopy (SEM) for detailed pictures that are necessary for further analysis. The pictures will be analyzed for sintered boundaries between grains as well as the presence of pumice in the samples.

We have found that hydrated obsidian is more likely to sinter than dehydrated obsidian and that smaller grain sizes are also more likely to sinter than larger grains sizes. Once all the samples are fully analyzed, we plan to write a paper and submit it to be published in an academic journal.

**Posey, Bailey**
University of Oregon
Mentor(s): Persimmon Tobing
KIDD Creative Chronicles

## Broken Promises

Hi! My name is Bailey Posey and I'm a second-year sociology student here at the University of Oregon. My story "Broken Promises" is set in a world where since the creation of the world, people also knew the day it would end. The story follows a young girl named Poppy as the news announces the end of the world will be coming earlier than expected. Poppy doesn't quite believe it, though; nonetheless, the announcement sparks something in her, and she goes in search of her first–and only–love, her ex-boyfriend Cameron. She's forced to reflect on the last few years she's spent without Cameron, in turn leading to her having to confront the things she's lost and missed out on in the name of heartbreak. This story encapsulates young, teenage love, and explores how heartbreak can fundamentally change and define you. Poppy's story seeks to highlight how that teenage love can resurface, through the grief of your past self, in times of fear, panic, and uncertainty.

**Presley, Mica**
University of Oregon
Mentor(s): Christina Karns
Oral Panel Exploring Educational Environments

## The Effects of Educational Architecture on Childhood Development

Learning environments are positioned to adapt in tandem as the understanding of childhood cognitive development continuously evolves. The current educational infrastructure is inconsistent, but rigid, leaving little room for newer educational styles that arose as our understanding of childhood cognitive development continues to grow. Intentional architectural design that considers adaptable programming may provide more opportunities for these new educational styles to flourish, supporting and propelling such changes. However, addressing the intersection of children's cognitive development and the physical environment in which that development is fostered is a multidisciplinary concept requiring a diverse set of perspectives. The lack of studies dedicated to this intersection exploring interactive education and the importance of indoor and outdoor exploration leads us to question; How do environmental stimuli affect cognitive development in children?

This project is a collaborative effort between students specializing in architecture and psychology to develop a systematic approach to answering these questions. We plan to conduct a systematic literature review, allowing us to identify potential measures and conclude whether a meta-analysis is feasible by examining potential barriers. These include relevant published research available for conduction, validity to constructs, and inconsistency between the terminology and methodology of the fields in question.

**Prince, Allison**
University of Oregon
Mentor(s): Nicki Swann, Apoorva Karekal
Poster #143

## Cognitive vs Motor Function in Parkinson's Disease

Parkinson's disease (PD) is the second most prevalent neurodegenerative disease, marked by muscle rigidity, gait instability, and tremor. Cognitive symptoms such as attention difficulty and information processing speed are also relevant and can develop into Parkinson's disease dementia (PDD). PDD is marked by language, memory, and judgment impairments. Previous research has highlighted concerns about a potential link between cognitive and motor decline in PD.

The study investigated if impaired cognition is correlated with impaired ability to stop an ongoing movement with 26 healthy controls (HC) and 27 PD subjects off medication. Stopping time (ST) was tested for planned and unplanned stopping events during a Continuous Movement Stop Task (CMST). Cognition scores were calculated via the Montreal Cognitive Assessment (MoCA). MoCA and ST were correlated for each subject. It was hypothesized that lower cognition scores are correlated with slower ST events for all participants.

Significance was found (p=0.01) for HC vs PD for planned ST. Significance was not found (p>0.05) for HC vs PD unplanned ST, nor for HC vs PD MoCA scores. In addition, significance was not found for HC MoCA vs HC planned and unplanned ST, as well as PD MoCA vs PD planned and unplanned ST. A negative trend was found for all HC or PD vs MoCA correlations for all event types.

The results indicate a weak relationship for cognitive vs motor decline in those with PD.

**Prunuske, Jin**
University of Oregon
Mentor(s): Maureen Zalewski Regnier, Olivia Frigoletto
Poster #55

## Intergenerational Risk for Internalizing and Externalizing Problems: Exploring a Protective Factor

Children of mothers with elevated emotion dysregulation (ED) may be at greater risk for developing symptoms of internalizing (INT) and externalizing (EXT) problems and in turn, future psychopathology. While previous studies have investigated early pathways that may help to explain this association (e.g., unsupportive maternal responding), our understanding of factors that protect against the downstream effects of maternal ED on child outcomes is limited. To explore prospective protective factors, the current study will examine the moderating role of positive maternal involvement on the relationship between maternal ED and preschoolers'

INT and EXT problems. This study will include 178 mother-child dyads, from a recently completed, longitudinal, randomized control trial. Maternal ED was assessed using the Difficulties in Emotion Regulation Scale and maternal positive involvement was measured with the Alabama Parenting Questionnaire. Teachers reported on preschoolers' INT and EXT problems in the classroom setting using the Caregiver-Teacher Report Form from the Child Behavior Checklist. It is hypothesized that positive maternal involvement will moderate the relationship between maternal ED and child INT and EXT problems, such that more positive maternal involvement will buffer against the effect of maternal ED on child INT and EXT problems. Examining factors that mitigate risk among children of mothers with elevated ED will inform effective prevention and intervention efforts.

**Ptacek, Sylvie**
University of Oregon
Mentor(s): Dr. Allison McGuffie
Oral Panel The Trans*formative Power of Cinema

## Behind a Blushing Robot

Transgender people have long been marginalized within the confines of white patriarchal subjectivity on film, where trans* visibility is often used as a problematic metaphor for transformation and secrecy. For example, the "reveal" trope aligns the camera with a cisgender person's perspective as a trans* character shows their body and exposes the "truth", thereby reaffirming cisgender assumptions about sex and gender and dehumanizing the trans* character. A new wave of filmmakers are working to recenter the focus of the camera's gaze to a subjective trans* point of view that disrupts cisheteronormative logic. This project aims to dissect how various films construct a subjective, transgender gaze through film narrative, mise-en-scene, sound, cinematography, and editing. The project analyzes the nuance of "good" representation of trans* identity through Space Sweepers' Bubs.

**Pulley, Loralie**
University of Oregon
Mentor(s): Peg Boulay
Oral Panel Green Futures in Habitat and Material Science

## Balancing Wildlife Habitat, Recreation, and Human Impact in Park Management

The cities of Eugene and Springfield have created parks and natural areas for recreational use, such as Georgia Pacific Natural Area and Howard Buford Park which provide habitat for target species such as the Oregon Vesper Sparrow (Pooecetes gramineus affinus) and Northwestern Pond Turtle (Actinemys marmorata). These public natural areas are designed to increase human interaction with nature while minimizing

disturbance to wildlife. Northwestern Pond Turtles and Oregon Vesper Sparrows are species native to Oregon that inhabit these areas and serve as wildlife attractions for visitors. Through conducting visual encounter surveys on Northwestern Pond Turtles and point count surveys on birds, including the Oregon Vesper Sparrow, our research aims to inform future park management practices. Our study sites are Georgia Pacific Natural Area and Mt. Pisgah at Howard Buford Recreation Area. Our goal is to understand the effects that human interactions have on wildlife and recommend future management practices to enhance visitors' experiences with nature while emphasizing wildlife conservation. In partnership with Friends of Buford Park and Willamalane Parks and Recreation District, this project will explore how the management of parks can benefit both wildlife habitats and provide the desired visitor experience.

**Punches, Abigail**
University of Oregon
Mentor(s): Marjorie Celona
Oral Panel Explorations in Expression

## "Priam": A Dramatic Reading

During my time in the Kidd Creative Writing Program last year, I became interested in writing short stories that showcased my own interpretation of certain events in Greek myth. This story focuses on a famous episode from Homer's great epic the Iliad where the Trojan king Priam sneaks into the Greek camp under cover of darkness to bargain with his son's murderer, the great hero Achilles, for the body of his son Hector whom Achilles has slain. I couldn't help but write about such striking characters with such strong emotions. It's a writer's dream. I hope that my dramatic reading of my take on this story will encourage those listening to take a look at the original epic and realize that the people's of long ago lived and loved as we do now.

**Ramirez, Kayamity**
University of Oregon
Mentor(s): Clair Herbert
Gallery Room

## Cautionary Space

**Materials: mixed media illustration using mostly pens and a yellow highlighter with a tiny dab of red paint on paper.**

My illustration is something almost anyone, in any city, could see any day. Just a common space that people occupy. This is the everyday, non-spectacular setting of the surrounding community. What changes how this space is perceived is the viewer. My illustration represents an impressionistic point-of-view of someone who is unhoused. This scene has spaces and figures that may be dangerous while also containing the

possibility for connection and a safe space to rest. The alley and resting figure offer this potential however they are surrounded by space that requires caution. Even with the presence of one who is also 'other' and unhoused, safety and connection are not guaranteed. It may be impacted by the authoritative blue figure or the distorted street figures. The shop with caution tape over it may affect how the other figures react to the viewer and the alley figures presence. In producing this illustration, I was reflecting on Eugene, the average downtown scene, and how the space is perceived. A shop, a busy sidewalk, an alley, and the people who tuck themselves away into the hidden corners. Each aspect of this space contains different meanings and possibilities dependent on the viewer.

**Ramirez, Kayamity**
University of Oregon
Mentor(s): Erica Bornstein
Gallery Room

## Positionality: Domination and Connection

My work is a diptych, the first image "Domination" is mixed media with a hand-drawn illustration in pen that I glued to the canvas and then painted around. For the second image "Connection" I only used acrylic paint. These two paintings represent position, power, connection, and hope. In "Domination" a group looks down on the subject who is living under the lines of power emanating from the dominating figures. The subject refuses to look at them, their back is turned and they are looking up at the sky. Refusing to acknowledge those who subjugate them while also refusing to lower their head. Even under a dominating power they exercise their autonomy. In "Connection" the viewers are above, at level, and below the subject who has turned to face them. They are seeing while being seen. The coalescence of colors between the figures while the black lines of power flow over them show their connection through communication. This connection gives the subject and viewers hope. The lines of power still flow over them. Some are barely touched while others are crossed multiple times however the power and influence that began with domination has an end.

**Ramirez, Kayamity**
University of Oregon
Mentor(s): Judith Raiskin, Linda Long
Poster #215

## Perceptions of Sex-Work and Sex-Workers.

My research is centered on varying perceptions of sex-work and sex-workers while focusing on people with lived experience. The Norma Hotaling collection in the University of Oregon's Special Archives contains insight into her perception and others around exploitative sex-work and the programs seeking to assist

victims. Many of the recorded comments on plays and the SAGE organization highlight the different opinions regarding how exploitative sex-work is presented, discussed, and addressed. Norma Hotaling's own work and the SAGE documents shows how she used her own experience-based perception to inform policies and methods of organizations against human trafficking.

**Reclusado, McKenna**
University of Oregon
Mentor(s): Katie Lynch, Shellsea Miller
Oral Panel Pathways to Environmental Empowerment

## Beyond Plant Identification: Inspiring Environmental Stewardship Through Outdoor Education

Outdoor education enhances students' mental well-being and academic performance, fostering critical skills such as problem-solving, empathy, and stress reduction. The Wild Wanderers is a newly established team within the Environmental Leadership Program at the University of Oregon, dedicated to crafting an environmental education curriculum that resonates with students and emphasizes that humans play an essential role in our planet's ecosystems. Our team has developed six in-class and two field trip lessons, benefiting over 300 first and second graders from three local elementary schools. Field trips to Mt. Pisgah Arboretum offer students a unique opportunity to immerse themselves in nature, fostering not only a deeper understanding of the environment but also strengthening interpersonal connections. Our team has partnered with 90by30, an organization committed to ending child neglect and abuse in Lane County by 2030, our collaboration promotes nature as a sanctuary, where students are able to cultivate essential social-emotional skills. Our curriculum focuses on the oak woodland and Douglas-fir forest ecosystems, promoting ecological knowledge and a sense of place. To assess the impact of our program, we will collect qualitative data on students' understanding of ecological processes, appreciation for nature, and recognition of the importance of biodiversity and conservation.

**Reisman, Ava**
University of Oregon
Mentor(s): Margaret Boulay, Holly Amer
Oral Panel Green Futures in Habitat and Material Science

## Riparian Revegetation and Soil Protection Experimentation for Carbon Sequestration

Currently, a wide variety of anthropogenic forces contribute to climate destabilization, which adversely affects the health and quality of ecosystems worldwide. The terrestrial portions of these ecosystems can sequester carbon from the atmosphere and store it within the soil, the most significant terrestrial

carbon sink. Riparian environments are one of the ecosystems that are important for carbon sequestration and crucial for sustaining biodiversity. Unfortunately, due to the over-extraction of terrestrial resources, riparian environments require restoration to efficiently utilize their carbon sequestration capabilities. The revegetation of these areas provides benefits for the soil in the form of amplifying the health of microorganisms and stabilizing the soil. Reforesting these areas and surveying their success will also create a suitable habitat for the avian population to thrive and aid in rehabilitating the hydrologic characteristics of the ecosystem. Through deploying soil and forestry management methods, this research project seeks to understand and efficiently employ the mechanisms of riparian woodland restoration that accentuate the ecosystem's ability to sequester carbon within the soil and biomass above and below ground.

**Renteria, José**
University of Oregon
Mentor(s): John Park, Feather Crawford
Poster #15

## The AI Renaissance: Fostering Creativity Through Generative Systems

The rapid ascension of generative AI systems bears the potential to revolutionize the field of user interface design, offering designers unprecedented capabilities to create innovative and immersive user experiences. This exploration delves into the potential of generative AI for UI and software design, aiming to investigate its role as an extension of the designer's skillset and its impact on creativity and innovation. Through a combination of theoretical inquiry and practical experimentation, this study examines the methods and procedures involved in leveraging generative AI, with the overarching goal of enhancing the user interface experience. While the results of this investigation are still in progress, preliminary findings suggest that generative AI holds immense promise in facilitating the creation of dynamic, personalized, and aesthetically pleasing designs. The primary conclusion drawn from this work is that generative AI systems have the potential to revolutionize design practices, enabling designers to push the boundaries of creativity and deliver exceptional user experiences. The implications of this research extend beyond the realm of design, offering insights into the ever evolving relationship between technology and creativity. This study is of significant interest to designers, technologists, researchers, and practitioners seeking to harness the power of generative AI to shape the future of design.

**Reynoldson, Vivian**
University of Oregon
Mentor(s): Matthias Vogel
Poster #234

## Civic Education in Scandinavia

This project explores civic education in Scandinavia, more specifically in Sweden, Norway, and Denmark. While the mental health and literacy rates flourish in these countries, we wanted to explore the ways citizens learn and grow to uphold their democracy. To explore thoroughly we wanted to investigate the government styles in each country as well as their educational systems. A common theme among the Scandinavian countries is the access to free higher education as well as a slower step-by-step of learning civic processes. We used academic journals, articles, and the International Civic and Citizenship Education Study (ICCS). We found that typically student's gain knowledge of civic processes throughout their education to become well-rounded members of society. In essence, our research will help explain the positive effects of learning about civic procedures early in life, consistently, to cause overall positive mental health and active citizenship.

**Ribeiro, River**
University of Oregon
Mentor(s): Michele Ribeiro
Oral Panel Exploring Educational Environments

## Group Dynamics and Institutional Courage in Team Sports

Dynamics within team sports at the collegiate level has not always taken into consideration the importance of strengths-based approaches to mental health and well-being. This presentation will explore how relationships of the players (for example power dynamics) affect the performance of a team where the individuals depend on each other to win, such as rowing, relays in track and field, and other team sports. The presentation will also highlight how pressures from universities affect the dynamics and performance of a team, as well as how institutional courage within the team can improve these dynamics. Gender and racial differences will be highlighted and qualitative data will be shared regarding athletes narratives.

**Rice, Calvin**
University of Oregon
Mentor(s): Robert Kyr
Explorations in Expression

## The Sea at Night by Calvin Rice: An Art Song for Soprano and Piano

For the symposium, I am presenting a piece that I composed for the Oregon Composers Forum titled The Sea at Night. It was written in response to my own journey in discovering spirituality and its ties to the natural world. To truly capture the special feelings needed to set this poem to music, I drew on my own experiences with nature. Many of my ideas are inspired by trips I took to the Washington and Oregon Coasts.

My piece is a representation of the natural ebb and flow of the ocean, with watery and fluid textures throughout. However, it also strives to describe the sea as a metaphor for the universe. The poet Sri Aurobindo uses lines like "a rough glimmering infinity" to describe the ocean, revealing his belief that the sea is a vessel for the cosmos. I also took inspiration from Aurobindo's unique ideas about spirituality. For him, attaining a heightened consciousness by melding the physical and spiritual world is the ultimate goal of living. This is different from more traditional Buddhist ideas, which describe the ultimate goal as freeing oneself from the physical world.

I composed and performed this piece as part of my work for the Composers Forum Seminar in the School of Music and Dance. The vocal soloist is Grammy-winning soprano Estelí Gomez and I am the pianist in the performance which was given in the Oregon Composers Forum Concert Series on March 16, 2024 in Berwick Hall in the School of Music and Dance.

**Rice, Jianna**
University of Oregon
Mentor(s): Tom Hahn, Anupam Satumane
Poster #3

## Bread beyond the crust: insulating with yeast-y beasties

The purpose of this case study was to further understand a variety of materials and their insulative capabilities. The driving hypothesis was that slices of bread could be used, as an alternative insulation material, to decrease the heat loss through car windows after the active heating systems have been shut off, at night by 20%. The study involved sets of insulation panels, made from bread, cardboard, and foamboard, being installed into the windows of a car. Temperatures were taken periodically, every 1 minute for an hour, throughout each of the four tests using a HOBO. The temperatures were then used to compare the heat losses, which were calculated using the change in temperature of the car during each test. The study found that the bread was not the most effective insulator, but the cardboard was. The cardboard decreased heat

loss by almost 21% more than the bread. Overall, the study found that a lot more could be studied about using bread as insulation, and it'd like to be acknowledged that a lot of modifications would be needed to actually use bread effectively in practice.

**Rice, Yuji**
University of Oregon
Mentor(s): Mathias Vogel
Poster #230

## Effects of Colonization on Central Africa

Central Africa, a region abundant in natural resources yet riddled in poverty. Central Africa's massive reservoir of minerals, and lush forest stands in stark contrast to its socio-economic struggles. Central Africa has extremely high levels of poverty, lack of infrastructure, and political instability. We hope to examine the historical, political, economic, and social factors contributing to this situation facing Central Africa. We will discuss colonial legacies, resource extraction, governmental failures, corruption, and conflicts to show the challenges that central africa faces. Through utilizing existing research and offering insights from international perspectives. Through this analysis we hope to shed light on the issues that Central Africa faces today and in the future.

**Richard, Danielle**
University of Oregon
Mentor(s): Matthew Dickman
KIDD Life in Stories

## Poetry Collection: Florida Refrain

Selected poems from my work in the Walter and Nancy Kidd Creative Writing Workshops. I consider this collection a love letter to my hometown in north Florida. Home is present in each of these works without being the sole focus of any piece; some pieces are more explicitly concerned with home than others, but all are informed by the context of my upbringing. This collection is a testament to the way that our homes and our childhoods inform our work, showing up even when do not expect or intend it. The things we carry in our hearts each day always find their way into our creative endeavors; this collection is my way of saying, "Florida, I am holding onto you."

**Richter, Madeleine**
University of Oregon
Mentor(s): Katie Lynch, Shellsea Miller
Oral Panel Pathways to Environmental Empowerment

## Beyond Plant Identification: Inspiring Environmental Stewardship Through Outdoor Education

Outdoor education enhances students' mental well-being and academic performance, fostering critical skills such as problem-solving, empathy, and stress reduction. The Wild Wanderers is a newly established team within the Environmental Leadership Program at the University of Oregon, dedicated to crafting an environmental education curriculum that resonates with students and emphasizes that humans play an essential role in our planet's ecosystems. Our team has developed six in-class and two field trip lessons, benefiting over 300 first and second graders from three local elementary schools. Field trips to Mt. Pisgah Arboretum offer students a unique opportunity to immerse themselves in nature, fostering not only a deeper understanding of the environment but also strengthening interpersonal connections. Our team has partnered with 90by30, an organization committed to ending child neglect and abuse in Lane County by 2030, our collaboration promotes nature as a sanctuary, where students are able to cultivate essential social-emotional skills. Our curriculum focuses on the oak woodland and Douglas-fir forest ecosystems, promoting ecological knowledge and a sense of place. To assess the impact of our program, we will collect qualitative data on students' understanding of ecological processes, appreciation for nature, and recognition of the importance of biodiversity and conservation.

**Rico, Natalie**
University of Oregon
Mentor(s): Kristen Lee, Chris Doe
Poster #140

## The Role of Transcription Factors in Regulating Drosophila Brain Development and Behavior

Surprisingly, 60% of genes expressed in the fruit fly Drosophila can also be found in humans, including genes regulating brain development. These genes include transcription factors (TFs), which turn other genes "on" or "off" by binding to DNA sequences. I am interested in how TFs affect brain development and function. I used the well-characterized Drosophila Mooncrawling Descending Neuron (MDN) since the TFs expressed are known and its behavioral output is backward motion in Drosophila larvae. RNA interference (RNAi) was also used to inhibit gene expression, also called gene knockdown. Previous work has shown that MDN expresses the TFs Hunchback (Hb), Dbx, and Engrailed (En) throughout its life cycle, therefore I screened whether these

TFs are important for MDN behavioral output. I used optogenetics to activate the neuron, a biological tool to control the activity of a neuron. I found that when we knocked down Dbx, there was no change in backward locomotion when MDN was activated. However, for En and Hb knockdown, we found that there was an increase in backward locomotion when MDN was activated, meaning that Hunchback and Engrailed expression in MDN are important in regulating this backward behavior. Future studies will investigate the mechanism by which MDN and misexpression of TFs affect the morphology and connectivity. Understanding how neurons work concerning behavioral output is important to further understand movement disorders like Parkison, tremors, and Tourettes.

**Riley, Aria**
University of Oregon
Mentor(s): Kathryn Lynch
Oral Panel Pathways to Environmental Empowerment

## A Bilingual Environmental Education Project Linking Culture and Ecology Through Migratory Birds

Migratory birds are an invaluable link between ecology and culture. In the Environmental Leadership Program at the University of Oregon, Aves Compartidas provides elementary aged students with a framework to connect with nature and culture through shared migratory birds. With our partner, the Willamette-Laja Twinning Project, we ignite the spark of science and awaken ecological awareness. Fostering students' educational outcomes in bilingual lessons prepares the next generation of environmental stewards. Nature-based education contributes to the improved mental and physical well-being of students. Our curriculum is guided by the Next Generation Science Standards, which help our students become well-rounded scientists. We prepared to lead environmental education by drawing on resources that promote children's curiosity for the natural world to guide their learning. When this program ends, the team will have served over 300 El Camino del Rio students via five classroom lessons and a field trip at Mount Pisgah Arboretum. This allows students to recognize their place in ecological systems and provide them with tools to become involved. Aves Compartidas' goal is to encourage lasting gratitude for nature by connecting with our shared bird species in Oregon and Guanajuato. We not only focused on scientific curriculum but inspired students' genuine connection and brought awareness of environmental issues, resulting in lifelong appreciation of nature– the cornerstone of stewardship.

**Rinelli, Rachel**
University of Oregon
Mentor(s): Puja Clifford
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity
Poster #31

## Socioecological State Solutions to Minimize Further Youth Harm Amid Rise in Oregon Addiction Crisis

In 2020, Oregon garnered national attention with the passing of Ballot Measure 110, making it the first US jurisdiction to decriminalize drug use. Though the measure aimed to combat the state's addiction epidemic through public health initiatives, its implementation coincided with a dramatic rise in addiction harm - especially among adolescents, whose drug-related mortality rate surged by over 500%. My research sought to analyze the bigger picture behind Oregon's substance crisis and identify reasoned policy recommendations for minimizing future youth harm. To evaluate Oregon's current youth risk, I used a systematic review of multidisciplinary academic studies and government reports to create a conceptual model based on the ecological systems theory of child development. To determine how policy influenced this model, I used a meta-analysis of case study data to produce a series of predictive models demonstrating how hypothetical state policy changes impacted the predicted trajectory of youth harm. My results indicate that the state's most effective way to protect youth moving forward is by continuing its current public health approach, addressing prior inefficacy to enact intended programs, and creating initiatives promoting adolescent drug safety education. As public panic leads to calls to repeal Measure 110 in the state's upcoming election, this research is critical as its results warn rash re-criminalization of drug use will likely cause excess harm to Oregon's children.

**Rios, Maya**
University of Oregon
Mentor(s): Catalina de Onís
Poster #242
Virtual

## Somos de Muchas Voces: Science and Environmental Justice Radio Reporting in the Willamette Valley

My project explores environmental justice advocacy and the need for equitable access to science and climate information for Spanish-speaking communities. This project investigates barriers to scientific communication and advocates for culturally centered scientific content within Spanish-speaking communities in the Willamette Valley. The radio program features interviews with Hispanic and Latine scientists and community

activists, highlighting topics such as wildfires, bilingual science education, and the role of native bees. It aims to make scientific information more accessible to Spanish-speaking audiences in the Pacific Northwest, highlighting the disproportionate impact of environmental harm on marginalized communities. By centering Latine voices, this project seeks to make science more accessible and relevant to Spanish-speaking audiences in the region.

**Rizzo, Adrienne**
University of Oregon
Mentor(s): Peg Boulay, Lydia Lapporte
Oral Panel Green Futures in Habitat and Material Science

## Pollinator Monitoring and Riparian Restoration at Whitewater Ranch

Riparian habitats support terrestrial and aquatic ecosystems by providing water filtration services, water temperature regulation, and habitats for numerous organisms. These ecologically complex riparian systems are sensitive to changes in climate, invasive species, and degradation in vegetation. Intense ecosystem changes also adversely affect nearby pollinator populations, threatening the ecosystem services they provide. We will assess and monitor pollinator plantings from Dr. Lauren Ponisio and the Ponisio Lab to understand their implementations in restoring riparian and pollinator habitats decimated by the 2020 Holiday Farm Fire. We will monitor plant health determined by height, vigor, water temperature, survival rates, and competition levels within active riparian restoration areas. We will study native pollinators to gain insight into the mechanisms driving biodiversity and agricultural productivity – contributing to the ongoing restoration project that began on Whitewater Ranch in 2014. After compiling data, we will compare our findings to previous ELP data to analyze the success of restoration efforts. Our research on pollinator conservation, riparian restoration, and sustainable land management practices will aid in informing policymakers, farmers, and ecologists in making decisions and developing plans that promote the integrity of interdependent ecosystems and further agricultural sustainability.

**Robinson, Regan**
University of Oregon
Mentor(s): Ulrich Mayr
Poster #56

## Cognitive Representations of Action-Based Decisions

Every action a person takes is influenced by the memories they have of past experiences of similar actions. These past experiences have been demonstrated to be combined in cognition as a "conjunctive representation," which helps promote quick action, but at the cost of flexibility in the case of changing

plans. In the current experiment, we are investigating the idea that independent processing through lower-dimensional representations helps to make up for the inflexibility of conjunctive representations, but at the cost of efficiency. We also hypothesize that biasing between the two processing formats is done in a continuous manner based on specific situational demands. We are investigating this through a computer-based experiment where participants ($n \approx 40$) are asked to prioritize either accuracy or speed in their responses to the imagined movement of a stimulus. We anticipate that when participants prioritize speed–but not accuracy–they will exhibit a partial overlap cost in correctness and quickness of their responses. Such a result would indicate that our cognitive system can switch between efficiency and flexibility by relying either on simple representations of basic action features or on the conjunctive integration of such features.

**Rodriguez Lopez, Sarai**
University of Oregon
Mentor(s): Sarah Ebert, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Generating Awareness–Mitigating Food Insecurity at the University of Oregon

Many college students across the nation face food insecurity, meaning they have insufficient access to quality food. The University of Oregon (UO) food insecurity rates are triple, almost quadruple, the national rate (Brian Clark), which is a huge discrepancy and prompted our research question: "With the provided food insecurity resources at the University of Oregon, how can we improve their accessibility to students?" To find a solution, we consulted experts in food insecurity and resources in Eugene as to why the UO rates of food insecurity are disproportionately high and how we can fix them. A common insight was that UO has the resources to reduce food insecurity; however, students either are unaware of them or don't use them. With more awareness, reduced stigma, and more resource accessibility the lower the food insecurity rates will be. We wanted to generate more awareness by creating mandatory food insecurity training for Freshmen before their first term, including interactive modules, requiring students to watch, read, and learn about food insecurity and the provided resources at the UO. A required quiz at the end would ensure that students are engaged and interacting with the modules. By requiring all new incoming and transfer students to be aware of food insecurity, how prevalent it is at UO, and the resources the university offers, we can create a more aware, food-secure, and tighter-knit future student body.

**Rohbock, Myrihe**
University of Oregon
Mentor(s): Elliot Berkman, Anastasia Browning O'Hagan
Poster #59
Virtual

## Pain, Discrimination, & Child Mental Health Among Black Families

Co-Author(s): Anastasia Browning O'Hagan, Elliot Berkman

Pain presents a substantial challenge to many people living in the United States (US). However, Black US community members navigate unique and disproportionate pain outcomes due to systemic disparities and treatment. This study aims to investigate the relationship between parental pain processes (specifically pain catastrophizing), parent's experiences with discrimination, and child internalizing/externalizing (I/E) behaviors among Black families. I hypothesize that there will be a significant positive relationship between a parent's pain behaviors and their child's I/E symptoms, and that a parent's exposure to discrimination will significantly moderate this relationship, such that the positive relationship between parent's pain behaviors/intensity, and their child's I/E symptoms will be stronger when parents report having experienced more discrimination. Utilizing a cross-sectional design, 764 Black adults living in the US will be recruited via CloudResearch's MTurk Toolkit. Participants who identify as parents will complete self-report measures including the Pain Catastrophizing Scale, Behavioral Health Checklist, and Detroit Daily Discrimination Scale to assess parental pain catastrophizing, child I/E behaviors, and discrimination levels, respectively. The study aims to provide insights into tailoring interventions to address the specific needs of the Black community, contributing to the enhancement of psychological well-being in this population. Limitations, such as reliance on parent-reported data and the cross-sectional nature of the study, underscore the need for future longitudinal research to further elucidate these relationships.

**Roles, Katie**
University of Oregon
Mentor(s): Tom Hahn, Siobhan Rockcastle
Oral Panel Delving Deeper

## Is It Getting Warm In Here?

The weather conditions in Eugene, Oregon vary dramatically especially during the latter part of winter term (February till March). This causes a strong impact on both the academic and social aspects of a university campus and the people involved with it. Through this research project a strong understanding of different ways through which weather plays an important role in affecting passive solar heating designs and buildings was assessed. The objective of this project was to test out the efficiency of a Trombe wall design from late

February - late March. It was hypothesized that the efficiency of the Trombe wall is 50% more effective on a sunny day or above than on a day when it is cloudy. The larger question that was being looked at here was recording the efficiency of a Trombe wall because it affects the overall running time of an active heating system and the efficiency of the heating system design for a building. With building design going green, this is one passive system type that can be used to help a building to be able to reach these goals. The goal is for buildings to require fewer active systems and use passive systems as much as possible so that this can be achieved. Depending on the location of the building the goal would be to be able to rely completely on passive systems so the building could be a net zero building. The result of this project showed that the Trombe Wall was 50% more effective on a sunny day compared to a cloudy day.

**Rosa-O'Hayer, Lyric**
University of Oregon
Mentor(s): Jessica Vasquez-Tokos, Raoul Liévanos
Oral Panel Pathways to Environmental Empowerment
Poster #200

## Navigating a Climate Crisis–The Interconnection of Extreme Weather Events and Life Decisions

The climate crisis is no secret, and extreme weather events–a clear, visual manifestation of the climate crisis–are known to bring destruction in their wake. However, it is unclear how extensive of an impact they have on people. This research aims to answer the questions; how has the presence or experience of extreme weather events influenced people's mental health and life decisions? Does this experience have a bigger impact than their knowledge of climate change? To answer this, a series of surveys (44 responses) and in-depth interviews (11) with college students were conducted, asking about their knowledge of climate change, experience with extreme weather events, feelings of climate anxiety, and how these impact their life decisions. Life decisions include but are not limited to whether to have kids, where to live, what to study, and career choice. Overall respondents expressed their belief in climate change and its impact on the severity of extreme weather events, but different levels of attention were paid to their existence. This led to the finding that experiencing extreme weather events can impact life decisions and mental health, but there are varying degrees of impact depending on the severity of the event through class status and attention to climate change. With this knowledge, there is the opportunity to advocate for better policies and initiatives around resources for post-extreme weather event care, as well as increased attention to preventative methods.

**Rose, Alexa**
University of Oregon
Mentor(s): Mahala Ruddell
Poster #238

## Archival Functionality: Developing the Vonda N. McIntyre Papers

The increased backlog of unprocessed collections at archival institutions has hindered the fundamental purpose of such facilities to maintain the accessibility of cultural and historical records for public research. Archivists must contend with storage and maintenance issues that are exacerbated by preservation-driven policies. Previous research shows that efficient archival processing emphasizes functionality, taking into consideration both preservation concerns and public access. The materials of writer Vonda N. McIntyre at the University of Oregon's Special Collections and University Archives (SCUA) reflect the integration of processing policies that prioritize collection accessibility and research value. This project aimed to apply archival processing frameworks to SCUA's prioritization of the acquisition of women authors in Science/Speculative Fiction (SF) collections, developing the Vonda N. McIntyre papers into a fully processed collection of 24 boxes available for public access. Implementing SCUA's Collection Development Policy and folder-level arrangement, I identified the overall content and structure to produce a processing plan that addressed the collection's primary condition concerns and ensured appropriate description. Processing larger collections like the McIntyre papers within this framework informs continued efforts to reduce archival backlogs and upholds the foundational principles of archives.

**Rozendal, Tanner**
University of Oregon
Mentor(s): Roxann Prazniak
Oral Panel Explorations in Expression

## Forging Abstract Art: The Need for Revised Authentication Techniques

Abstract expressionism, a prominent 20th century art movement spearheaded by artists like Jackson Pollock and Mark Rothko, emphasized the subconscious expression of emotions through seemingly random applications of paint. The perceived ease of replicating such techniques, and the half-billion-dollar evaluations of these painting, has led to rampant forgery. Indeed, Jackson Pollock is one of the most forged artists of all time, with an estimated 350 fakes in circulation. Contrary to popular belief, Pollock's work is highly sophisticated, containing fractal patterns similar to the complex structures in nature. Evidently, traditional methods of authentication are insufficient, and revised approaches are necessary to preserve the integrity of the abstract expressionism movement. Fractal analysis has demonstrated a 93% authentication rate for Pollock's work, suggesting it may reliably differentiate authentic abstract expressionist pieces from

skilled forgeries. The synthesis and analysis of legal documents, interviews, and journal articles suggests that by embracing advanced higher-order authentication techniques, the art world can better preserve the integrity and value of the iconic Abstract Expressionism movement while mitigating the detrimental effects of forgery.

**Rozendal, Tanner**
University of Oregon
Mentor(s): Jens Kreth
Poster #91

## Novel Interactions of Oral Commensal Corynebacterium and Opportunistic Pathogen Candida Albicans

Co-Author(s): June Treerat, Emily Helliwell, Jens Kreth

Sophisticated synergistic and antagonistic relationships within the oral commensal community contribute to host defense against invading pathogens. Dysbiosis in the oral microbiome can lead to oral diseases and systemic health concerns. Of particular interest is the opportunistic pathogen Candida albicans and its synergistic interaction with Streptococcus mutans, which promotes virulent hyphae formation and biofilm production in C. albicans. Some fatty acids released by the oral commensal Corynebacterium species are known to inhibit Candida biofilm formation. In this study, we isolated several oral Candida strains to assess hyphae formation when co-cultured with S. mutans. Additionally, we introduced Corynebacterium durum into the co-culture in order to investigate its antagonistic effects on the Candida isolates. Our results reveal that C. durum significantly impacts the growth and hyphae formation of C. albicans, providing direct evidence of its antagonistic role in C. albicans pathogenesis. Furthermore, we isolated membrane vesicles from oral Corynebacterium samples, which appear to vary in composition depending on the strain and conditions. Further research is needed in order to elucidate the functional biochemistry of these membrane vesicles and understand their inhibitory mechanisms.

**Russo, Logan**
University of Oregon
Mentor(s): Cathy Wong, Laila Nawab
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## Simulating Halide Segregation in Mixed-Halide Perovskite Nanocrystals

Perovskites nanocrystals (NCs) are a promising class of materials for applications in light emitting diodes (LEDs). The stoichiometric amounts of different halides within mixed-halide NCs can be tuned to adjust the emission wavelength, which is advantageous for use in LEDs. However, under illumination, halides within the

NC lattice form segregated domains of bromide and iodide. Formation of iodide-rich regions causes a redshift in the emission spectrum, which is detrimental for application in LEDs. The mechanism that causes this segregation is not yet fully understood. In this research, we propose that photoexcited electrons strain the crystal lattice and attract iodide due to its thermodynamically stable bandgap.

Here we utilize a unique blend of computational and experimental approaches to investigate the mechanism of halide segregation. A Monte Carlo simulation was created in Python to model the migration of iodide under illumination; it is rule-based and generates randomized arrays to mimic the NC lattice. The simulation is used to predict the emission spectra of the NCs and is compared to experimental results using fluorescence spectroscopy. We then employ single-shot transient absorption (SSTA), a novel time-resolved pump-probe technique, to measure the excited-state dynamics of the NCs in situ. This research provides key insight into the mechanism of halide segregation which currently restricts perovskites from widespread use in photovoltaic devices.

**Saing, Audrey**
**University of Oregon**
**Mentor(s): Mike Hahn, Emily Karolidis**
**Poster #159**

## Sex-Based Differences in Plantar Pressure Distribution to Inform Soccer Cleat Design

Existing soccer cleats on the market are biased towards male biomechanical data, which may hinder female soccer players' performance. This study explores plantar pressure differences between males and females during tasks that simulate dynamic match play with future application to female-centric cleat design. Ten males and nine females were instructed to run a fatiguing protocol on artificial turf. This modified Gauntlet protocol included straight running and changes in direction in five stages of decreasing distance from 1600 m to 100 m. During the third (400 m) stage, plantar pressure data were collected using pedar® insoles in a pair of soccer cleats. Plantar pressure data during four cutting steps were used to calculate force-time integral normalized to body weight (FTI) in nine anatomical regions of the foot. Independent t-tests were conducted to determine if sex had a significant effect on FTI in each region of the foot. Females had a significantly lower FTI in the medial forefoot ($p = 0.029$) and significantly higher FTI in the central forefoot compared to males ($p = 0.006$). Future female soccer cleat designs might include modified studs or adapted insole materials in the central forefoot area to best distribute plantar pressure loading while performing dynamic multiplanar movements.

**Sambhi, Prabhleen**
University of Oregon
Mentor(s): Oluwakemi Balogun
Works in Progress: Lightning Rounds

## Nationalism's Impact on Gender in Punjab: Historical Roots, Realities, & Implications

The Partition of 1947, marking the division of India and Pakistan, resulted in the largest mass migration in human history and profound geopolitical shifts. Despite historical diversity, leaders advocated for separate nations, leading to heightened tensions and widespread violence, particularly in Punjab. Women bore a disproportionate brunt of the violence, with sexual violence weaponized as a means of retaliation and dishonor. This paper investigates the role of nationalism in driving sexual violence during the Partition and its impact on gender roles in modern-day Punjab. It delves into the historical roots and consequences of sexual violence, exploring the intersectionality of gender, nationalism, and violence. The dominance of male perspectives in historical narratives silences women's experiences, perpetuating marginalization and oppression. The enduring impact of the Partition on women's lives underscores the need for a more inclusive examination of historical events. The subtle influence of Purdah persists, hindering women's empowerment and perpetuating societal norms. This research sheds light on the complex relationship between historical trauma, nationalism, and gender dynamics.

**Sastry, Rishi**
University of Oregon
Mentor(s): Chundi Xu, Chris Doe
Poster #150

## Validating RNA-Seq Data with HCR in Drosophila Lamina Neurons

RNA Sequencing (RNA-seq) is a powerful biological technique that provides insights into gene expression. Using RNA-seq data, researchers can classify unique expression patterns into different cell types and compare different gene expression levels in varying conditions. Though RNA-seq provides comprehensive information regarding gene expression patterns, it is vital to confirm the results. Innovative methods like Hybridization Chain Reaction (HCR) help validate the data by visualizing RNA in situ. HCR works by utilizing probes that detect and hybridize target mRNA transcripts. Subsequently, hairpin-shaped amplifiers attach to the probes, starting a chain reaction to amplify the signal. Combined with genetics, HCR enables visualization of RNA expression patterns within specific cell types, providing a valuable tool for studying gene expression. In this study of Drosophila lamina neurons, RNA-Seq was performed, identifying five unique lamina neuron types (L1-L5). Using HCR, the expression of the following genes was examined: ninaE, arre2, dscam2, grd, and dip-beta. HCR confirmed that dscam2 is expressed in the lamina, while Dip-B is uniquely expressed in

L4 neurons. Future implications include exploring the role of homeodomain transcription factors (HDTFs) in initiating and maintaining neuron identity. RNA-seq can discover global changes in expression patterns after knocking down HDTFs, and HCR can confirm RNA expression changes of candidate genes within specific cell types.

**Sathya, Ashish**
University of Oregon
Mentor(s): Dasa Zeithamova, Troy Houser
Poster #96

## Differences in Categorization Strategy when Correlated with Political Affliction

Co-Author(s): Dasa Zeithamova, Troy Houser

As American politics become increasingly polarized, there have been questions regarding how people group information depending on their political beliefs. Fundamentally, there are two theories of how humans generalize concepts in our memory: prototypical, that there is an amalgamation that people compare novel objects to, or exemplar, unique representations of concepts to compare novel objects to. This study aims to bridge this concept, to see if there is a trend in how political groups categorize concepts. We administered a three-part categorization task, asking participants to determine which location a novel-stimuli enjoyed more. First was training, where participants would receive feedback if they determined the correct location. Next is recognition, to see if they can recognize the stimuli from before. Third, there is the categorization task, which is the same as training, but they receive no feedback. The last part contained a political typology test to see where they fall on the political spectrum. We expect to find that one side of the political spectrum is going to rely on one categorization strategy rather than the other. The direct implication of this would be the way people group headlines into being their conservative or liberal. By understanding how different political parties' group real world objects, we can hope to find methods to avoid creating headlines that trigger political stigma, decreasing polarization in the headlines we view.

**Scannell, Simon**
University of Oregon
Mentor(s): Frost Stephen
Poster #188

## Primate taxa discrimination using Morphometric analysis of fragmented Landmark Data.

Geometric morphometric (GM) analysis has been successful at distinguishing mandibular shapes of Cercopithecid monkeys. However, complete mandibles are scarce in the fossil record. To evaluate how well GM

distinguishes fragments, we began with a sample of 34 3-D landmarks on 495 Cercopithecid mandibles from 30 species within 13 genera. We then artificially reduced landmarks to represent only regions of the mandible commonly recovered in fossils: the corpus, the right side of the corpus, and 6 molar points in the right quadrant. Generalized Procrustes Analysis was performed in Morpheus, and Principal Components Analysis (PCA), Linear Discriminant Analysis (LDA), MANOVA and ANOVA were performed in PAST. The corpus showed that different genera were distinct according to MANOVA (P < 0.0001), with a jackknifed classification rate of 88% for the LDA. For smaller areas, like just the right or posterior quadrant, the rate decreased to 85% and 50%, respectively. Accuracy increased with the inclusion of the natural log of centroid size, especially for smaller fragments like the molar quadrant which increased accuracy to 65%. While fragmentary specimens are distinguished more accurately when they provide a broader range of features, GM shows potential for distinguishing Cercopithecid taxa. Also, including size improves resolution for distinguishing species. We predict that future research on sliding semilandmarks along the inferior corpus will improve these rates even further.

**Schmidt, David**
**University of Oregon**
**Mentor(s): Peng Lu**
**Oral Panel SiMuLaTiON: Discussions on simulations and chemistry**

## Adaptation of Asymptotic Bishop-Gromov Theorem to Manifolds with Density

In essence, a manifold is an abstract space that looks locally like Euclidean space. When a manifold is equipped with enough structure that one can do geometry (that is, measure lengths and angles) it is called a Riemannian manifold. Despite locally looking like Euclidean space (which is flat), Riemannian manifolds may be curved. Curves on Riemannian manifolds that are as straight as possible are called geodesics. In general, it is difficult to measure the volume of a "geodesic ball" in a Riemannian manifold. The Bishop-Gromov theorem allows one to place an upper bound on the volume of such a geodesic ball by considering the volume of a ball of the same radius in a space whose curvature is more uniform (such a space is called a "space form"). In general, this bound is not necessarily tight. In 2023, Michael Freedman and Adam Brown proposed a way to tighten the bound by accounting for what's called the "shear." I have adapted the Freedman-Brown bound to the context of a smooth metric measure space, which is a Riemannian manifold whose volume measure is weighted (these are also referred to as manifolds with density). In particular, I have shown that, by assuming a lower bound on the Bakry-Emery Ricci tensor, a bound that is asymptotically tighter than the Bishop-Gromov bound can be achieved on manifolds with density by adapting the Freedman-Brown bound.

**Schmitt, Kyla**
University of Oregon
Mentor(s): Dave Sutherland
Virtual

## Exploring the impact of estuarine conditions on native eelgrass (Zostera marina) in the Coos Estuary

Co-Author(s): Dave Sutherland

This research operates on the working hypothesis that there may be a significant discrepancy between water parameters as collected by SSNERR instruments and as experienced in the shallowly situated eelgrass beds of the Coos Estuary in Oregon. Thus, one key goal of this project is to audit the data collected by the SSNERR stations via a matched-pairs test, by testing water parameters such as temperature, salinity, and turbidity–all theorized stressors of Z. marina–in nearby intertidal eelgrass beds. My sampling included more densely spaced horizontal surveying, providing richer data with which to contextualize the SSNERR readings and to more broadly characterize the greater Coos Estuary. Additional goals of the project included mapping Z. marina and Zostera japonica (an introduced, invasive species of eelgrass) populations in the South Slough; locating and flagging Z. marina and Z. japonica populations in the South Slough will help scientists monitor the native eelgrass's periods of recovery and decline, track the invasive eelgrass's impacts and spread, and better understand competitive dynamics between the two species. The project focuses on the mid-estuary portion of South Slough–near Valino Island and Charleston Bridge, where the largest eelgrass decline was observed–using the knowledge gained there to infer how estuarine conditions vary over smaller spatial scales across the South Slough.

**Schneider, Zoe**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
Oral Panel KIDD Artistic Echoes

## Poolside

A pulp noir short story presenting the internal turmoil of a cool-headed hard-boiled alcoholic criminal in 1920s Los Angeles. Written in multiple drafts over the course of a few months. Picture a softened, worn-down paperback with painted cover art and weathered pages. Break the spine. Bend back the paper, fold it and jam it into a pocket. Doggy-ear it. Stay a while. Implied, but not pictured, are highball glasses, pinstripes, and pool tables. Cast Cary Grant, Humphery Bogart, Errol Flynn, or James Stewart, and give them each a light. Bossa nova and heavy, trumpet jazz--the sweet black-and-white days when you could smoke inside.

**Schoettler, Kai**
University of Oregon
Mentor(s): Edward Davis, Lyzzy Coultley
Poster #191

## Using Mortality Profiles to Interpret the Cause of Death for Dromomeryx in Red Basin, OR

The Red Basin locality in eastern Oregon records a large population of one of the strangest ungulates to ever live: Dromomeryx. This deer-like mammal lived in sub-tropical to temperate Miocene environments. Red Basin records the middle Miocene, about 12.5–15 million years ago. This age saw uncharacteristic warmth and humidity due to insulating volcanic gasses released by the Columbia River Flood Basalts. Warming expanded the habitats of Dromomerycids; the family's diversity peaked in the Barstovian. Red Basin records a whole population during this peak, which is rare given the inconsistency of fossilization. Previous studies on the Dromomeryx of Red Basin have used individuals to study the species; the population itself has been neglected. This thesis uses dental wear to determine the relative ages of Dromomeryx specimens in order to construct mortality profiles, which reflect the pressures that killed the population. Mortality profiles are often either catastrophic (where individuals die regardless of fitness) or attritional (where only the weakest members die), though other patterns may occur. This research finds that the Dromomeryx population at Red Basin is dominated by prime-age adults. This is interpreted as a catastrophic deadly flood, where waters preferentially washed away younger individuals. This research shows how Dromomeryx adapted to the Miocene, and provides insight into their environment with implications for our own climate crisis.

**Schroeder, Esben**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #155

## High Fidelity 3D Rendering of Myonuclear Accretion and Shape changes in Single Muscle Fibers

Co-Author(s): Adam Fries, Jake Searcy

We aim to develop high-fidelity 3D rendering of single muscle fibers imaged on the Leica Thunder widefield microscope to quantify myonuclear number, shape, and spatial orientation along the length of each single fiber. Previous analysis protocols utilized a 2D imaging process that required manual analysis using FIJI/ImageJ to methodically assess myonuclear numbers in each cell. This method required an excessive time commitment and failed to fully characterize the myonuclei orientation and 3D morphology. New research suggests that myonuclear number and shape is influenced by exercise status with exercisers

having predominantly spherical nuclei whereas sedentary muscle have elongated, non-spherical nuclei. Through an 8-week protocol involving 2 weeks of blood flow restriction training and essential amino acid supplementation designed to increase myonuclear numbers, we sought to quantify myonuclear accretion and changes in shape. Single fibers were fixed, stained for myonuclei and fiber type composition, and imaged using a widefield fluorescent microscope. Myonuclei and fiber type image stacks were first acquired along the focal axis on a Leica Thunder in the DAPI and TRITC channels, then deconvolved to de-blur and reverse light dispersion generated during image acquisition. Processed stacks were then analyzed in Imaris software using Surface Creation tool to 3D render myonuclei and measure myonuclear number and morphological features. This work is ongoing.

**Schumann, Mia**
University of Oregon
Mentor(s): Lisa Munger
Oral Panel Unveiling Nature's Rhythms
Poster #65

## Phonic richness on a new artificial coral reef in Indonesia

In recent years, coral reefs globally are experiencing increasing impacts due to factors such as warming average temperatures and anthropogenic activities. Reef restoration efforts have found passive acoustic monitoring to be a helpful tool for measuring ecological health during recovery. The purpose of this study was to utilize audio data to investigate reef health within Misool, Raja Ampat, Indonesia, located in a region of high marine biodiversity.

In May 2023, the Kenari, a former pearl aquaculture service ship was situated less than 0.5 miles south of the Misool Eco-Resort to create an artificial reef. A hydrophone was placed on this shipwreck one week after sinking, and 30 second audio files were recorded every 5 minutes over a 3.5 month period. Data were analyzed by 20 students in the Winter 2024 HC301 class, "Coral Reef Acoustic Ecology." We identified more than 20 unique sounds, the majority of which are likely from fish. We measured phonic richness, i.e. the number of distinctive individual biological sounds during an hour at dawn, midday, dusk, and night. We only focused on days that fell as a new, quarter or full moon. Our results will contribute to conservation efforts and inform our understanding of reef growth and biodiversity over time.

**Scott, Lucille**
University of Oregon
Mentor(s): Sarah Ebert
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Music's Impact on Workouts; Mental Benefits

Listening to music while working out has benefits to improving how you feel while exercising. Being involved in the gym and our love for being active is what has inspired us to learn about effective ways to workout in a healthy form. In the research we conducted over the span of a month, we have achieved our goal to gain a deeper insight and find reasoning in how music is capable of enhancing our mental performance when it comes to being active. We hope that our project will provide a new sense of knowledge when it comes to listening to music and why we feel as though listening to music is a barrier for a safe workout environment as well as a motivator. Working out or being active is a big part of our discourse community here at the U of O so bringing awareness as well as a new profound love for physical activity is a big accomplishment. Our primary findings consist of how different genres of music have the ability to impact many unrecognizable concepts such as positive association, distraction from discomfort, increased enjoyment, and reduced perception of effort. These effects prove how music is a great thing to incorporate in any physical activity, and anyone's preference can make a difference. We have known and had the opportunity to learn more about why music makes our workouts better and much more motivating. Listening to music is a healthy way to find natural motivation and improvements when it comes to physical exercise.

**Seagoe, Seth**
University of Oregon
Mentor(s): Adam Glass
Poster #123

## Color Tunability of Benzofulvenes

Benzofulvenes and their derivatives have implications as synthetic precursors, molecular materials, and in medicinal applications. The interesting conjugation-based properties of benzofulvenes raises the possibility of color tunability and other optical properties. Our work focuses on the synthesis of various benzofulvenes and investigations into their optical effects through absorbance and fluorescence spectrometry. We are specifically looking to explore push/pull dynamics related to different substituents on our title compounds with regard to conjugation and optical effects. This will allow us to determine HOMO-LUMO energy gaps that may become tunable based on which substituents are involved. Overall, our goal is to increase the reproducibility of benzofulvene synthesis, optimize yield, and manipulate the compounds with varying substituents in order to gain a better understanding of their optical properties and implications in applied scenarios.

**Seagoe, Tharusha**
University of Oregon
Mentor(s): Kana Suzuki, Emily Sylwestrak
Poster #145

## Role of LHbTac1 neurons in RPE responses to conditioned reward-predictive stimuli

Co-Author(s): Kana Suzuki, Emily Sylwestrak

Animal survival requires reliably predicting where to find rewards in the environment. The lateral habenula (LHb) is a brain region that plays a key role in reward learning and signals reward prediction errors (RPE), or the difference between obtained and expected rewards. Studying how the LHb encodes RPE can help uncover the neural circuitry underlying reward learning. However, the LHb contributes to a wide range of behaviors including aversion, anxiety, and stress, making it difficult to isolate reward-related LHb activity. Previous work in the Sylwestrak Lab suggests that LHb tachykinin 1-expressing ("LHbTac1") neurons encode RPE in contexts where reward expectation is informed solely by previous outcomes. Animals also rely on reward-predictive cues that offer information about upcoming rewards; however, it is unclear how LHbTac1 neurons encode predictive cues. Here we investigated how LHbTac1 neuron activity encodes RPE when the reward expectation is defined by predictive cues. Recording neural activity from mice using fiber photometry during a cue-based reward task revealed that LHbTac1 activity at withheld rewards is modulated by predictive cue information. LHbTac1 neurons did not show responses to the cues themselves, suggesting distinct LHb subpopulations may encode predictive information and reward outcomes. Together these results provide insight to how precise LHb subpopulations facilitate reward learning and how RPE drives learning across multiple reward contexts.

**Seeley-Burton, Maddie**
Lane Community College
Mentor(s): Stacey Kiser, Colin Phifer
Poster #74

## Between Boundaries: A Student Survey of Large Mammals Near College Campus and City Park

Co-Author(s): Rachel Burrington, Ashleen Kaur, Sarah Nicolson

Effective population monitoring stands as a significant aspect of gaining information regarding local wildlife. Our study aimed to monitor Black Bear (Ursus americanus) populations around the southern Lane Community College (LCC) campus and Suzanne Arlie Park. We utilized Bushnell game cameras and data collection spanned five weeks. Cameras were strategically placed in various locations alongside established pathways. The

camera's data was collected from 4-32 GB SD cards and reviewed once a week. The captured footage revealed multiple sightings of coyotes, dogs, humans, deer, and bears, with humans and dogs making up 91.5% of the sightings. The limited amount of bear sightings could be attributed to multifarious factors, including human presence, seasonal influences, weather conditions, camera placements, camera theft, and data tampering. Our population monitoring endeavor, employing game cameras, discerned a nominal bear presence encircling the southern LCC campus and Suzanne Arlie Park. It is pertinent to acknowledge the constraints inherent in our research methodology that might have contributed to these observations.

**Segars, Benjamin**
University of Oregon
Mentor(s): Ari Purnama
Asian Studies Research Event Poster

## Comparing Ghosts, Monsters, and Spirits of South East and East Asian Horror Films

South East and East Asian horror films contain ghosts, spirits, and monsters unique to their area, encompassing similar elements. Several of these elements have strong connections to those found in Buddhist teachings. These supernatural entities also contain elements from other sources, such as Daoism, Confucianism, and local pre-existing religious systems. This can be partially attributed to Buddhism's syncretist nature, or ability to exist with other religions in a sort of symbiotic nature. South East Asian and to a lesser extent East Asian academic texts surrounding the topic have scarcely been translated or involved in Western academic discussion of film. In my research, I will explore the spread of Buddhism and its influence on the depictions of supernatural entities. Additionally, I will look into why these particular supernatural entities appear in the narrative and themes of horror movies. To achieve this, I will closely analyze horror films from South East and East Asian film-producing nations and involve academic sources discussing horror films and their use of these supernatural entities. I hope my research will reveal how similar elements in supernatural entities impact contemporary narratives and themes in South East and East Asian horror films while tracing the different religious systems' influence on them. Additionally, I hope this will involve the scholarly work surrounding the topic from South East and East Asia into Western discussion.

**Serrano, Madison**
University of Oregon
Mentor(s): Christopher Minson, Brendan Kaiser
Poster #169

## Effects of Exercise & Heat Therapy on the Blood Pressure of Adults with Untreated Hypertension

Co-Author(s): Parker Daniel, Rayna Davis, Larkin Lucy Jillian Maglio, Polina Privorotskiy

**Background:** Cardiovascular disease (CVD) remains a leading cause of death worldwide. Hypertension (HTN), or high blood pressure, is a primary yet modifiable risk factor for CVD. Exercise (EX) is considered the gold-standard lifestyle intervention for improving blood pressure (BP), but many do not engage in traditional EX training. Heat therapy (HT) is a potential alternative to EX. **Purpose:** This study looked to compare the efficacy of hot water immersion (HWI) to EX in improving the BP of adults with untreated HTN. **Methods:** 41 adults with HTN were block randomized between intervention groups; HWI and EX. Subjects completed 24-hour ambulatory blood pressure monitoring (ABPM) before intervention, after 15 sessions, and after 30 sessions. Statistical analysis included a series of two-way repeated measures analysis of variance with main effects of group and time (alpha=0.05). **Results:** Total 24-hour ABP was not significantly different between or within groups over time (p>0.05). SBP was reduced to a lesser extent from waking to sleeping following EX in post data compared to mid (p<0.05). The mid-point awake SBP of dippers (D) in EX were higher than mid-point data of D in HWI. Asleep SBP of non-dippers (ND) were significantly higher in post data compared to pre (p<0.01). Asleep DBP of ND were significantly higher in post data compared to pre (p<0.05). **Conclusion:** Neither EX nor HWI proved to be statistically significant interventions for lowering BP in adults with untreated HTN.

**Serwin, Liam**
University of Oregon
Mentor(s): Persimmon Lumban-Tobing
KIDD Artistic Echoes

## A Girl's World

Liam Serwin studies Creative Writing at the University of Oregon within the KIDD Creative Writing Program. Their work has been featured in Unbound, the campus literary journal, along with many zines. A Girl's World is a comedic and irreverent satire on the status of celebrities within our society, and the many gossip magazines and tabloids who exploit both celebrities and readers alike. The work highlights the enticing narratives strung along by tabloids for their reader's attention, without any consideration for the consequences of those narratives on the celebrities they choose to antagonize.

**Seymour, Shelly**
University of Oregon
Mentor(s): Peg Boulay, Lydia Lapporte
Oral Panel Green Futures in Habitat and Material Science

## Pollinator Monitoring and Riparian Restoration at Whitewater Ranch

Riparian habitats support terrestrial and aquatic ecosystems by providing water filtration services, water temperature regulation, and habitats for numerous organisms. These ecologically complex riparian systems are sensitive to changes in climate, invasive species, and degradation in vegetation. Intense ecosystem changes also adversely affect nearby pollinator populations, threatening the ecosystem services they provide. We will assess and monitor pollinator plantings from Dr. Lauren Ponisio and the Ponisio Lab to understand their implementations in restoring riparian and pollinator habitats decimated by the 2020 Holiday Farm Fire. We will monitor plant health determined by height, vigor, water temperature, survival rates, and competition levels within active riparian restoration areas. We will study native pollinators to gain insight into the mechanisms driving biodiversity and agricultural productivity – contributing to the ongoing restoration project that began on Whitewater Ranch in 2014. After compiling data, we will compare our findings to previous ELP data to analyze the success of restoration efforts. Our research on pollinator conservation, riparian restoration, and sustainable land management practices will aid in informing policymakers, farmers, and ecologists in making decisions and developing plans that promote the integrity of interdependent ecosystems and further agricultural sustainability.

**Shaffer, Gabby**
University of Oregon
Mentor(s): Scott Fitzpatrick
Poster #189

## Material Culture of Chelechol ra Orrak: The Longest Continuously Occupied Site in Micronesia

Co-Author(s): Scott Fitzpatrick

Over the last 25 years, archaeological investigation of Chelechol ra Orrak, a large rockshelter in the Palauan archipelago of western Micronesia, has revealed important evidence for human use and occupation that spans three millennia. This study seeks to demonstrate the diversity of material culture found in Chelechol ra Orrak by examining artifacts from previous collections in new ways. The earliest stage is represented by human mortuary activities dating between ca. 3000-1700 BP, which is one of the oldest and demographically diverse cemeteries in the Pacific. The site was also used for fishing and camping prior to sustained European contact in 1783 and quarried by Yapese islanders for their famous stone money. In each of these stages,

peoples left behind a rich material record comprising artifacts made from shell, bone, stone, and glass. The work in this study provides the first synthesis of these finds which highlight both the diversity and complexity of Palauan subsistence, ornamentation, and exchange relationships over the course of three thousand years.

**Shah, Nikhil**
University of Oregon
Mentor(s): Josh Skov
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Hot Spots Project: Connecting Extreme Heat, Worker Exposure, and Corporate Supply Chains

The Hot Spots Project is creating a searchable database for identifying worker exposure to extreme heat risk in wide range of corporate supply chains, along with action items for companies, policymakers, and civil society organizations. The database is a collaborative student research effort among the project partners: the Center for Sustainable Business Practices (in LCB) and the student organization Net Impact. The effort also receives technical support from staff in the Sustainability, Energy and Climate Change practice of WSP, a global consulting firm. The Hot Spots team team has accumulated a handful of reports on a plethora of industries such as rice in Thailand, dairy in California, and cobalt mining in the DRC. These industry reports contain aim to raise awareness about the increasingly important environmental justice issue of extreme heat, and to inform adaptation strategies to improve worker health and wellbeing outcomes internationally. Each report focuses on workers in a particular industry and geography, with information on labor force composition, extreme heat details, and features of the relevant policy environment.

**Sheaman, Gracie**
University of Oregon
Mentor(s): Peg Boulay
Oral Panel Green Futures in Habitat and Material Science

## Balancing Wildlife Habitat, Recreation, and Human Impact in Park Management

The cities of Eugene and Springfield have created parks and natural areas for recreational use, such as Georgia Pacific Natural Area and Howard Buford Park which provide habitat for target species such as the Oregon Vesper Sparrow (Pooecetes gramineus affinus) and Northwestern Pond Turtle (Actinemys marmorata). These public natural areas are designed to increase human interaction with nature while minimizing disturbance to wildlife. Northwestern Pond Turtles and Oregon Vesper Sparrows are species native to Oregon that inhabit these areas and serve as wildlife attractions for visitors. Through conducting visual encounter

surveys on Northwestern Pond Turtles and point count surveys on birds, including the Oregon Vesper Sparrow, our research aims to inform future park management practices. Our study sites are Georgia Pacific Natural Area and Mt. Pisgah at Howard Buford Recreation Area. Our goal is to understand the effects that human interactions have on wildlife and recommend future management practices to enhance visitors' experiences with nature while emphasizing wildlife conservation. In partnership with Friends of Buford Park and Willamalane Parks and Recreation District, this project will explore how the management of parks can benefit both wildlife habitats and provide the desired visitor experience.

**Shehab, Annalisa**
University of Oregon
Mentor(s): Peg Boulay
Oral Panel Green Futures in Habitat and Material Science

## Balancing Wildlife Habitat, Recreation, and Human Impact in Park Management

The cities of Eugene and Springfield have created parks and natural areas for recreational use, such as Georgia Pacific Natural Area and Howard Buford Park which provide habitat for target species such as the Oregon Vesper Sparrow (Pooecetes gramineus affinus) and Northwestern Pond Turtle (Actinemys marmorata). These public natural areas are designed to increase human interaction with nature while minimizing disturbance to wildlife. Northwestern Pond Turtles and Oregon Vesper Sparrows are species native to Oregon that inhabit these areas and serve as wildlife attractions for visitors. Through conducting visual encounter surveys on Northwestern Pond Turtles and point count surveys on birds, including the Oregon Vesper Sparrow, our research aims to inform future park management practices. Our study sites are Georgia Pacific Natural Area and Mt. Pisgah at Howard Buford Recreation Area. Our goal is to understand the effects that human interactions have on wildlife and recommend future management practices to enhance visitors' experiences with nature while emphasizing wildlife conservation. In partnership with Friends of Buford Park and Willamalane Parks and Recreation District, this project will explore how the management of parks can benefit both wildlife habitats and provide the desired visitor experience.

**Sherman, Ian**
University of Oregon
Mentor(s): James Imamura, Scott Fisher
Poster #131

## A Field of Lost Giants: Deeper Analysis of Open Cluster NGC 752

Co-Author(s): Katie Linnenkohl, Owen Mitchem, Calvin Ajizian Masayuki Itoh, Hiroki Konosu

New data collected by the 0.35m 'Robbins' telescope at the Pine Mountain Observatory (PMO) allows for refined estimations of the age and distance of the open cluster New General Catalogue (NGC) 752. Color-magnitude diagrams constructed using Sloan g', r', and i' filters were produced via: the SIMBAD astronomical database for cluster members, Aperture Photometry Tool (APT) for photometric study, the Dartmouth Stellar Isochrone Generator (DSIG) for modeling, and custom written code using Python and related packages for analysis, yielding a distance of 447±10 parsecs and age of 1.9±0.1 Gyr from the resultant main sequence turnoff. This project is a continuation of last year's collaboration with Kobe University in Japan and improves upon the analysis by increasing the dynamic range of the exposure, broadening the target list to include the missing red giant stars and proposed blue straggler, and improving the systematics for magnitude calculations and isochrone fitting. The project serves as an introduction for students into data processing, fitting, calibration, and managing large data sets while providing assurance in PMO's ability to produce high-quality data on photometric nights.

**Sherman, Ian**
University of Oregon
Mentor(s): Scott Fisher, James Imamura
Poster #135

## Farm-to-table Photons: Observational Techniques and Data Reduction at the Pine Mountain Observatory

Research at the University of Oregon's Pine Mountain Observatory (PMO), a research-grade facility nestled in the heart of Central Oregon, is an involved and undergraduate-led endeavor. Using PMO's 0.35m 'Robbins' Telescope, students are engaged in a wide array of research activities. To make their projects possible, students work under the supervision of PMO Director Dr. Scott Fisher with guidance of on-site operations staff, to build a familiarity with the equipment, procedures, and techniques needed to collect high signal-to-noise imaging data. From using their firsthand knowledge of the telescope system and its CCD detector to find research targets and plan observations, to the operation of the observatory during data collection and the implementation of the systematic error analysis and noise reduction techniques standard to the field, students at PMO gain valuable exposure to nearly every aspect of research in astronomy. Moreover,

students at PMO are left with a robust and hands-on appreciation of what may be considered outwardly dull, but nonetheless incredibly important aspects of research such as keeping intricate and comprehensive observing logs and dedicating entire nights of observing to taking flat, dark, and bias calibration images. For research at PMO, understanding instrumentation and data calibration serves as an equal partner to specialized project specific analysis techniques in the pursuit of high quality results.

**Shetty, Anya**
University of Oregon
Mentor(s): Shade Abdul
Oral Panel Delving Deeper

## Broadwater Farm: An Urban Study of London's most Notorious Housing Estate

The Broadwater Farm estate has stood as London's most dangerous and infamous housing estate. Located in the heart of Tottenham, riots, protests, and long-standing tensions with the police has lead to a sizzling atmosphere. Who is the most impacted? Broadwaters Youth.

In my study, I aim to examine the role creativity, especially engagement in graffiti and visual arts, plays in youth development and social mobility.

**Shim, Jake**
University of Oregon
Mentor(s): Tuong Vu
Oral Panel Asian Studies Research Event

## Analyzing Cultural Symbolism in North Korean Propaganda

**Purpose:** Propaganda is widely acknowledged for shaping ideologies and public opinion, particularly evident in North Korea where it plays a pivotal role in advancing regime ideologies and reinforcing authority. This research paper aims to explore the cultural symbolism within Rodong Sinmun, focusing on its portrayal of political leaders, historical events, and ideological themes to illuminate the influence of propaganda in promoting the regime's ideologies.

**Methodology:** Case studies are conducted based on two individual articles chosen from Rodong Sinmun to examine the symbolic meanings behind iconic slogans and narratives. The project delves into specific propaganda instances through case studies, exploring their impact on diverse population segments, from factory workers to farmers and women, thereby unraveling the complex interplay between propaganda and societal dynamics.

**Potential Findings:** The analysis revealed that despite limited exposure to external information, individuals align with socialist values, deriving their sense of efficacy from propaganda. The propaganda

portrays individual work and neighborhood units as instrumental in enforcing conformity and surveillance, thereby depicting workers as the stalwarts of the collective, shaping its identity and resilience.

**Policy Implications:** This understanding can serve as a foundation for policymakers and international organizations to develop more nuanced strategies and policies for engaging with North Korea.

**Shlesinger, Daniel**
University of Oregon
Mentor(s): Austin Ricci, Damien Callahan
Poster #157

## Acute Fatigue Modifies Ultrasound-Based Patellar Tendon Stiffness by Sex

Co-Author(s): Austin Ricci, Damien Callahan

Tendons play a vital role in transmitting muscle force to generate movement and may be crucial for understanding musculotendinous performance limits and predicting injury risks under extreme loads. Clinical ultrasound techniques, including B-mode and, more recently, shear wave elastography (SWE), offer insights into tendon stiffness. This study aimed to explore how fatigue and biological sex affect tendon stiffness, measured using both B-mode and SWE ultrasound techniques. Twenty-six young, healthy males (12) and females (14) performed three maximum voluntary isometric contractions (MVIC) of the knee extensors. An ultrasound transducer measured patellar tendon (PT) elongation during ramped contractions. A subset of participants underwent passive measurements to assess tendon mechanical properties using SWE. Participants were then instructed to fatigue their muscles by performing a bout of repeated maximum voluntary knee extensions with isotonic load set to 30% MVIC until task failure. A two-way repeated measures ANOVA assessed differences in tendon stiffness by fatigue and sex across all contraction levels. Results showed no sex-based difference in PT stiffness. PT active stiffness measured by B-mode was reduced by fatigue (p<0.001), but to a lesser extent in females (p=0.044). Active and passive SWV was reduced by fatigue (p=0.002), but only in males. This study uncovers vital insights into how connective tissue responds dynamically to fatigue, possibly influenced by sex.

**Shrestha, Shreeya**
University of Oregon
Mentor(s): Mattias Vogel
Poster #241

## Resonance of South Asian Pop Culture in America

This research project explores the multifaceted influence of South Asian pop culture on various aspects of American media. Beginning with examining historical events such as the 1947 partition and extending

to the post-9/11 era, the study delves into how South Asian creatives have woven their narratives into the fabric of American pop culture. From the diverse styles of South Asian music, cuisine, fashion, and cinema, to the representation of cultural values, the project navigates through the nuanced intersections of these two vibrant cultural spheres. Multicultural societies allow for more heritages to thrive and fusions between cultures are created for a more rich and accepting environment. Additionally, the research scrutinizes instances of cultural appropriation, revealing the challenges and controversies that arise when elements of South Asian cultures are adopted without due acknowledgment. By drawing on academic sources and real-world examples, the project aims to provide a comprehensive understanding of South Asia's profound impact on shaping the American cultural landscape.

**Simmons, Pippa**
University of Oregon
Mentor(s): Nicki Swann, Kelsey Schultz
Poster #158

## Collecting Global Movements Using Standard Electroencephalography Methods

Electroencephalography (EEG) is a non-invasive measure of electrical activity from the human brain that is commonly used to study the motor system. The majority of EEG research focuses on simple ballistic movements (like a button press) over more complex motions. This is because larger movements introduce motion artifacts and reduce the signal-to-noise ratio. Due to this, there is a prominent lack of research on more global movements, such as walking. Our lab was interested in determining whether it's possible to study global movements with a standard EEG. With a group of 21 university students, we used a standard, wired EEG system to study cortical activity while participants walked on a treadmill. We performed data ICA decomposition and a high-pass filter as part of our cleaning process. Given that the literature consistently shows decreases in brain waves in the beta frequency range (13-30Hz) at the onset of movement, we expected that if our protocol is successful in gathering usable data, we would observe a relative decrease in beta waves before movement onset. We will be performing analysis and expect to see beta decreases aligned with walking, supporting our methods. Here we provide proof of the principle that EEG can be used to investigate brain activity during walking without extensive processing.

**Singh, Harman**
University of Oregon
Mentor(s): James Brau, Chris Potter
Poster #132

## Highly Granular Calorimetry in Reconstructing Jets with Electromagnetic Energy at Linear Colliders

Co-Author(s): James Brau, Chris Potter

The International Linear Collider is the most mature option for a Higgs Factory capable of probing new physics. Precision measurements will be crucial to its mission, which will be achieved through exceptionally accurate detectors like the Silicon Detector. An upgrade has been proposed for the Electromagnetic calorimeter, replacing the current analog pixel model with a higher granularity one with digital pixels. This analysis considers the potential improvements to physics studies with this upgrade by considering the capabilities of separating dijet events from W and Z hadronization with the current detector model and potential improvements with a high granularity upgrade.

**Small, Sachin**
University of Oregon
Mentor(s): Mathias Vogel
Poster #230

## Effects of Colonization on Central Africa.

Central Africa, a region abundant in natural resources yet riddled in poverty. Central Africa's massive reservoir of minerals, and lush forest stands in stark contrast to its socio-economic struggles. Central Africa has extremely high levels of poverty, lack of infrastructure, and political instability. We hope to examine the historical, political, economic, and social factors contributing to this situation facing Central Africa. We will discuss colonial legacies, resource extraction, governmental failures, corruption, and conflicts to show the challenges that central africa faces. Through utilizing existing research and offering insights from international perspectives. Through this analysis we hope to shed light on the issues that Central Africa faces today and in the future.

**Smelser, Braden**
University of Oregon
Mentor(s): Alexander Dracobly
Poster #236

## The Experience of World War One

Our research project is based on the book "The Beauty and the Sorrow" by Peter Englund. Englund's novel takes personal narratives of twenty individuals who were impacted by the first world war, all from many different backgrounds and all impacted in very unique and different ways, and allows the reader to imagine what it was like to exist day to day during this global conflict. As a class, we took on the task of finding even more of these narratives to emulate Englund, and to put ourselves in the shoes of these very real people who experienced such a momentous, life-altering historical event.

**Smith, Brynn**
University of Oregon
Mentor(s): Laura Desban, Judith Eisen
Poster #70

## Using Zebrafish to Understand the Role of Social Behavior on Microbiome Transmission

Impaired social interaction is a hallmark of neurodevelopmental disorders such as Autism Spectrum Disorder. Our observations in zebrafish and growing literature reveal that microbes play a critical role in such behaviors. However, how these microbes are acquired and their impact on social behavior remains unknown. We are using zebrafish and their associated bacteria to investigate bacterial transmission between two fish during social interactions. We analyzed the time course of transmission, testing 1, 3, 6, and 8-hour time points of interaction. We found the number of transmission events increased with time, with up to 40% transmission after 8 hours of interaction. We found that transmission differed between the skin and gut. We also found that these events were often unilateral, which could result from non-reciprocal social interactions between individuals. Literature shows that social deficits can occur due to a lack of microbes in an organism's environment. Fish embryos are treated in a germ-free environment through the first 7 days of their development to produce potential deficits. We have categorized deficient behavior in germ-free fish such as diminished tail rubbing, circling, and head butting, using tracking software. We aim to connect this to a lack of transmission between fish with deficits. This would promote future experiments to investigate the gut-brain connection, determining if the lack of microbes and transmission cause deficits in wild-type zebrafish.

**Smith, Ivy**
University of Oregon
Mentor(s): Christina Karns
Oral Panel Exploring Educational Environments

## The Effects of Educational Architecture on Childhood Development

Learning environments are positioned to adapt in tandem as the understanding of childhood cognitive development continuously evolves. The current educational infrastructure is inconsistent, but rigid, leaving little room for newer educational styles that arose as our understanding of childhood cognitive development continues to grow. Intentional architectural design that considers adaptable programming may provide more opportunities for these new educational styles to flourish, supporting and propelling such changes. However, addressing the intersection of children's cognitive development and the physical environment in which that development is fostered is a multidisciplinary concept requiring a diverse set of perspectives. The lack of studies dedicated to this intersection exploring interactive education and the importance of indoor and outdoor exploration leads us to question; How do environmental stimuli affect cognitive development in children?

This project is a collaborative effort between students specializing in architecture and psychology to develop a systematic approach to answering these questions. We plan to conduct a systematic literature review, allowing us to identify potential measures and conclude whether a meta-analysis is feasible by examining potential barriers. These include relevant published research available for conduction, validity to constructs, and inconsistency between the terminology and methodology of the fields in question. In a potential met

**Smith, Kayla**
University of Oregon
Mentor(s): Mike Hahn, Alex Denton
Poster #177

## Asymmetry changes during distance running in recreational runners

Co-Author(s): Mike Hahn, Alex Denton, Rachel Robinson

Bilateral asymmetry is a difference in shape, size, and form on two sides of a given axis [1]. As fatigue increases during running, there is greater metabolic energy cost and lower mechanical efficiency [2], which may be associated with increased asymmetry. This study aimed to determine asymmetry changes between right and left foot peak accelerations and at the sacrum during an outdoor run. Twenty-four runs from 8 participants were analyzed. Participants wore inertial measurement units and ran self-selected routes (13.7±4.5 mi) and pace (9:24±0.05 min/mi). Asymmetry was calculated using symmetry angle (SA) expressed

as a percentage, where 0% is perfect symmetry [3]. Runs were grouped into lower mileage (LMG) (<13.5 mi) or higher mileage groups (HMG) (>13.5 mi) and SA was averaged over quarters of each run. Significance was tested for using a one-way ANOVA. SA was not significantly different over quarters of LMG or HMG runs or between groups. However, there was a trend in all runs of average SA at the feet increasing during each quarter. Additionally, average SA tended to be larger in the HMG compared to the LMG. Samples showed great variance in SA size indicating that individual participants may have significant changes in asymmetry. Understanding running mechanics in the natural running environment can provide useful insight into running technique and injury prevention.

1. Maloney et al., JSCR, 2019
2. Mizrahi et al., Hum Mov Sci, 2000
3. Zifchock, et al., Gait & Posture, 2008

**Smith, Madissyn**
University of Oregon
Mentor(s): Judith Raiskin
Poster #218

## Music and Spirituality in Southern Oregon's Lesbian Land Communities

Through archival research completed in WGS 410: Women, Gender and Sexuality in the Archives, we are exploring the nuanced ways in which Southern Oregon lesbian communities of the past interacted with music and spirituality in their intentional communities. Our research aims to uncover how music and spirituality intersected in shaping the identities and social dynamics within Southern Oregon's Lesbian communities. Our research will include primary documentation found within the University of Oregon Special Collections and Archives; We seek to illuminate the cultural, social and personal significance of these intersections.

**Snell, Kayla**
University of Oregon
Mentor(s): Ahmar Zaman
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Incorrigibility law, policy, and procedure in the United States of America

Co-Author(s): Allison Mcallister, Loren Walker

Current research on early intervention strategies aims to target the cross-section of mental health issues and delinquent behavior in the United States. Clinical, forensic, and correctional psychologists intend to improve prosocial behavior(s), mitigate the severity and duration of contact with the juvenile justice system, and prevent (re)traumatizing events. The current study evaluates the relationship between socioeconomic

status, juvenile mental health, and the type of charge(s) administered on a state-to-state basis. Specifically, the study examines the current statutes of all 51 states and the major US territories that define deviant or delinquent behavior with a particular focus on Michigan's demographic of court-involved youth. In utilizing data collected in 2018, we analyze the following variables to assess the impact of state policy on the adjudication of court-involved youth: mental health diagnoses, socioeconomic status, and demographics (age, gender, race). The results implicate a need for further exploration of the impact of state policies and procedures on youth, as well as assist in creating intervention practices that aim to end discriminatory patterns of youth involvement with the criminal justice system.

Keywords: Incorrigible, status offender, juvenile delinquency

**Snell, Kayla**
University of Oregon
Mentor(s): Ahmar Zaman
Poster #34

## Isolated and ill: Prevalence of mental illness amongst court-involved youth in solitary confinement

Co-Author(s): Katie Fortlander, Sonoma Frederick, Kit Wooler Carlie Crowther

Empirical research shows that solitary confinement is detrimental to one's mental health through the exacerbation of Post-Traumatic Stress Disorder (PTSD), severe social isolation, and lack of proper treatment (Grassian, 1983; Reiter et al., 2020). This study considers if there is a relationship between the prevalence of mental illness and justice-involved youth who spent time in solitary confinement. Using data collected from the National Survey of Youth in Custody (NSYC) (2018), this study was administered to 6,910 youth in 332 juvenile facilities across the nation. Preliminary results of a Chi-square analysis suggest that there is a significant group difference in youth with mental health diagnoses and those without who have experienced solitary confinement (Attention Deficit and Hyperactivity Disorder) X2 (1, N=5926) = 90.262, p < .001, (Post-Traumatic Stress Disorder) X2 (1, N=5921) = 106.246, p < .001, (Major Depressive Disorder) X2 (1, N=5934) = 59.498, p < .001. The mental health diagnoses used in this study are preexisting and may not be representative of the current mental state of justice-involved youth. The results implicate that there is a need for further exploration of how segregative practices are used to respond to court-involved youth and the impacts these practices have on those presenting with mental illness.

Keywords: Solitary Confinement, Attention Deficit and Hyperactivity Disorder, Major Depressive Disorder, Post-Traumatic Stress Disorder

**Sneller, Jodie**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## Lane Community College Poetry Reading

The poet's purpose is as dynamic and diverse as the poets themselves. Come sit in on a reading and enjoy the expression of 8 Lane Poetry Alliance students as they share original poems. It is a unique opportunity to hear the words committed to a page spoken aloud by their creators. This group will reflect on identity, redemption, counter-narrative, advocacy, resistance, grief, language, faith, healing, connectivity, and many other nuanced, universally human, and individually unique experiences.Writing poetry is a necessary task; sharing it is brave. To risk understanding and reap the reward of connectivity in art. The poets will explore forms such as free verse, haibun, lyrics, spoken word, and translations.

**Sneller, Jodie**
Lane Community College
Mentor(s): Ce Rosenow
Echoes of Expression at Lane Community College

## The Lane Poetry Alliance: The Process of Poetry

The Poetic Process Session will include 8 LCC poetry students introducing and sharing the poetic process. The poetic process explores the myriad of ways and reasons a poet comes to their craft. Poetry is a necessary and pivotal method of expression within any culture and time in history. We will hear from students with a broad array of intersectional identities expressing their work and methods via representative poems and a brief talk from each, exploring everything from identity, voice, counter-narratives, and redemption to advocacy, nostalgia, language, and translation. From poetic forms like haibun and haiku to free verse, lyric, and elegy, each poet will allow the listener into their language and expression, confirming for all who witness the essential need for this form of voice to contribute to our current cultural foundation.

**Snyder, Sophie**
University of Oregon
Mentor(s): Angela Long
Poster #64

## Healthy Minds Study Pre- and Post-COVID: University of Oregon Student Mental Health Needs and Access

The University of Oregon (UO) participated in the 2017, 2019, 2021, and 2023 Healthy Minds Study (HMS), a survey-based assessment of mental health status and service utilization among college students. A trend analysis of HMS data was done by UO University Health Services and Student Services and Enrollment Management Research and Assessment teams. This trend analysis includes two pre- and two post-COVID onset years.

A qualitative review of UO data suggests increased student need for mental health services, decreased student flourishing when comparing survey results pre- and post-COVID onset years, and increased student self-efficacy to seek services. Increases in anxiety and depression rates, academic impairment, and need for mental health support when comparing survey results pre- and post-COVID onset demonstrate an increased need for mental health services. Already low flourishing levels decreased after COVID onset. Increased rates of help seeking behavior and desire to access services since COVID onset illustrate higher self-efficacy rates.

The Health Equity Action Project of the Student Health Advisory Committee recommends UO implement changes to increase access of on campus mental health resources given that students need and actively seek care to create a community of students who are supported and share resources with others.

**Sorenson, Tapley**
University of Oregon
Mentor(s): Kevin Zumwalt, David McCormick
Works in Progress: Lightning Rounds

## Assessing Cortical Noradrenergic Activity Across the Sleep-Wake Cycle in a Mouse Model

Activity in the noradrenergic system is critical for modulating an animal's levels of attention and arousal while awake, though far less research has been carried out by examining noradrenergic activity during sleep.. While the understanding of the functional organization of the noradrenergic system is still evolving, it has been established that it is capable of broadcasting information both globally, to all the regions of the central nervous system that it innervates, as well as locally, only to specific destinations. Additionally, female animals have been shown to experience systemic disruptions to their sleep due to hormonal fluctuations when compared to males. We will use two-photon microscopy and genetically encoded calcium indicators

(GECI) to record noradrenergic axons across brain states throughout the cerebral cortex, categorizing sleep states with EMG, EEG, and pupillometry. We will retrospectively compare the results to determine whether there is a significant difference in noradrenergic synchrony across sleep states by biological sex. Two-photon microscopy allows for simultaneous measurement of activity between individual neurons, such that we can assess the heterogeneity of sleep patterns across multiple cortical regions of interest. Sleep patterns are generally conceptualized as broad oscillatory signals, but that is based on global recordings suggesting that there could exist a greater variance in activity across localized brain regions.

**Sowles, Alanna**
University of Oregon
Mentor(s): Noah Dillon, Chris Doe
Poster #151

## Identifying candidate temporal transcription factors in Drosophila Type 2 neuroblasts

Complex behavior requires equally complex neural circuits composed of diverse neuronal populations. The underlying mechanisms of how neural stem cells generate neuronal diversity are poorly understood. Drosophila neuroblasts (NBs), or neural stem cells, sequentially express temporal factors that give rise to distinct neuronal populations. The adult central complex, a region containing neural circuits that regulate sensorimotor integration, originates from Type 2 NBs. Existing knowledge on the patterning mechanisms of this lineage is not sufficient to generate the cellular diversity observed in this region. Thus, we performed a screen to identify novel temporal transcription factors in Type 2 NBs. Screening across three timepoints within each Type 2 NB lineage revealed temporally graded expression of several transcription factors. We found transient co-expression in mid-stage neuroblasts of factors Squeeze and Nab, known to produce diverse cell fates in other NB lineages. Expression of factors Grainyhead and Tailless was observed in early and late NBs, respectively. Each factor exhibited a narrow expression window in Type 2 NBs, providing novel candidate temporal transcription factors to investigate. Interestingly, factors Apterous and Sequoia showed continuous expression in Type 2 NBs–an unexpected and novel finding. Our future work will functionally test the role of these candidates within the Type 2 lineage in producing diverse neuronal populations.

**Spear, Quinn**
University of Oregon
Mentor(s): Chanel Meyers, Gretchen Nihill
Poster #57

## Internalized racism and traditional views of gender among black men.

Co-Author(s): Chanel Meyers

Research on internalized racism and its effects on individual mental health has shown that internalized racism increases feelings of anxiety and depression, in addition to decreasing the regard one has for their own racial group. (Maxwell et al., 2014; Willis et Al., 2021). However, the correlation between internalized racism and traditional views surrounding gender and sexuality among Black men has yet to be explored. The current research investigates whether Black men who score high on internalized racism also hold stigmatized views on their gender and sexuality. Historically, Black men have been depicted as hyper-masculine compared to their White counterparts (Gindrow, 2023), which may suggest a pressure to adhere to these depictions causing them to feel "less Black" if they also appear "less masculine." This study seeks to explore possible correlations between internalized racism and traditional views of masculinity among Black men. Further research into this topic may examine if these traditional views are associated with higher rates of homophobia, sexism, transphobia, and other forms of discrimination.

**Sridhar, Mahathi**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #154

## EAA+BFR Therapy to Stimulate Myonuclear Accretion as Quantified from Single Muscle Fibers

Muscle memory refers to the occurrence where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. This is attributed to retained myonuclei gained during training, enabling quicker initiation of protein synthesis and muscle regeneration. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will remain elevated 4 weeks post-treatment. Fiber bundles were fixed in 4% PFA/PBS for 48 hours, moved to PBS, and separated in 40% NaOH with agitation for 2 hours to shed single fibers from the bundle. We immunostained nuclei using DAPI, 1nM, by fiber type using anti-MyHC I for 90 minutes. Single fibers were imaged using a Leica Thunder widefield microscope equipped with a HC PL APO

CS2 40x/1.10 N.A. water immersion objective. Lasers with emission wavelength 390 nm were used at 27% intensity at 100 msec, captured with a Ki8 camera with x-y resolution of 300 nm x 300 nm with a z-step of 0.39 µm. Images were deconvolved using Huygens Essential software package followed by 3D reconstruction and quantification using Imaris. This work is ongoing.

**Staben, Alex**
University of Oregon
Mentor(s): Anne Brown, Marc Schlossberg
Oral Panel Delving Deeper

## Exploring Barriers and Solutions to Active Travel to School at River Road/ El Camino del Río

Active travel, or transportation modes requiring physical movement, builds physical activity into daily life, and for young children, much of their travel is to and from school. Active travel to school (ATS) improves physical, mental, and social health, as well as classroom behavior. However, since the 1970s, ATS has rapidly declined as more students ride to school in a vehicle. Transportation is inherently place-based, hence, this study focuses on one of the two Spanish-English dual immersion elementary schools in the Eugene (OR) 4J school district, River Road/El Camino del Río (RRECDR). Like schools across the nation, very few RRECDR students use ATS. To understand why, I distributed a survey and completed follow-up interviews with parents of RRECDR students assessing the elements, including barriers, that factor into transportation choices and what needs to change to see a rise in ATS at RRECDR. Results indicate the need for a diverse multi-sector sustainable leadership team focused on ATS, increased ATS encouragement through group activities such as walking school buses (WSBs), and infrastructural improvements including crosswalk enhancements and advisory bike lanes in specific locations. Findings also suggest further research into the complex relationship between ATS and accessibility of heritage language immersion education and ATS (and active travel more generally) and the housing crisis.

**Stetson, Emily**
Umpqua Community College
Mentor(s): Mick Davis
Oral Panel SiMuLaTiON: Discussions on simulations and chemistry

## VPython Simulations of Systems Involving Oscillatory Motion and Waves

When researching physics, simulations are often created so that variables can be manipulated in a controlled environment and behaviors can be visualized. We created four simulations using VPython in the Glowscript web application to investigate properties of oscillations and waves. Individually, we created simulations of

orbital motion, sound propagation in a one-dimensional solid, diffraction from a single slit, and instantaneous velocities during rolling. To create our simulations, we started with a fundamental physics concept, used the concept to develop pseudocode, and worked from this pseudocode to create a working simulation. Through this, we gained a better understanding of physics and scientific computing, starting from minimal experience with programming. The simulations produce results that are consistent with the real-life behavior of these systems. Features of the simulation programs include user interfaces to control inputs and displays of results in graphical or numerical formats. Our simulations are significant in that they allow us to investigate natural phenomena that would otherwise be too small or too fast to view with the naked eye.

**Stevenson, Heidi**
University of Oregon
Mentor(s): Maxwell Foxman, Alex Segrè Cohen
Poster #22

## Newsgames: How Interactive Digital Games About News Affect Comprehension, Trust, and Empathy

Newsgames, a gamified journalistic medium, have become increasingly implemented to address the challenges posed by fragmented platforms and audiences, and the demand for digital interactivity. Research suggests newsgames promote comprehension by allowing users to engage with the systems and interrelated variables that shape social issues, which are translated into multilinear narratives and the rule-based system of a game. The intended message is instantiated as users experience stakeholders' perspectives and make decisions that expose the underlying causal mechanisms. While studies have explored newsgames' content, production, role, and technical affordances, research on audience reception are sparse. Newsgame engagement remains underexplored, with scholars calling for more research quantifying emotional, attitudinal, and cognitive effects on audiences. This experimental survey assesses the impact of presenting a news topic through a newsgame on comprehension, perceived trustworthiness, and state empathy, compared to a traditional news article. Participants (n=1155) are randomly assigned to one of two treatment groups (a newsgame and news article) or the control group. Findings are expected to contribute to the current scholarship by empirically examining newsgames' impacts. Results may inform newsgame design and encourage adoption by news organizations to foster comprehension of social issues and related public policy, as well as to promote prosocial beliefs and behaviors.

**Stith, Ashton**
University of Oregon
Mentor(s): Melissa Brunkan, Brian McWhorter
Virtual

## "Il tuo bel nome eterno:" A Choral Performance of Women Composers

This thesis aimed to bring to light the beautiful choral works of women composers from various countries and time periods. Music by women makes up as little as 7-9% of classical performances. I chose to not only research and write about these six composers but also to present a performance of their work. In many performances music by women is added as an afterthought, but my aim was to uplift and present the work of these often unnoticed composers. The program included two pieces, "Song of Our Savior" by Julia Perry and "Aura, che mormorando al bosco intorno" by Maddalena Casulana, which had no recordings available online, making them available to the public for the first time.

**Stokes, Hanna**
University of Oregon
Mentor(s): Noora Azadvari
Poster #106

## High-throughput permeability assay for the discovery of cell-penetrating peptides

Cell-penetrating cyclic peptides (CPPs) are a promising tool in the delivery of therapeutic drugs to cells and can act as therapeutics themselves. These therapeutic agents are aimed at the treatment of diseases such as HIV, cancer, and multidrug-resistant bacterial diseases. Their large surface area and higher conformational rigidity and stability relative to their linear counterparts potentiate them to have a higher affinity and specificity for any target of interest. Additionally, CPPs have higher resistance to degradation, unlike their linear counterparts. Thus, for innovational developments in the peptide therapeutics field, it is paramount to have tools for studying and accelerating the discovery of CPPs. In this project, we aim to unravel the underlying rules of cell permeation of cyclic peptides and develop novel high-throughput methods for the screening of their cell penetration. Additionally, we aim to develop computational methods to predict the permeability of cyclic peptides based on their sequence. Understanding the core features of cell-penetrating peptides will allow for great advancements in the field of therapeutics and the development of less invasive oral bioavailable treatments.

**Stow, Caitlin**
University of Oregon
Mentor(s): Erin Hanna
Oral Panel Exploring Gender Frontiers: Media, Ethics, and Empowerment

## Teen Movies of the Early 2000s and the Commodification of Girlhood

John Hughes and his run of youth comedies in the 1980s are often identified with the start of a new era of teens on screen. Teen films only grew in popularity and critical acclaim through the '90s. The success of Clueless (1995) taught executives that teen girls were a market worth pursuing, and the teen films of the early 2000s went after that market with a rabid and unveiled aggression. By the early 2000s, teen films fell into a swamp of shallow acting, repetitive plotlines, safe messaging, and unabashedly consumerist marketing. "Cheap, colorful, and easy to market, they were the cinematic equivalent of shopping at Target" says Dana Harris writing for Variety in 2004. What all these films have in common is that girls were at the center. For the first time in cinema history, teen girls were given not just a movie here and there to latch onto, but an overwhelming host of options.

My research explores the relationship between femininity and consumerism in teen movies from the years 2000 to 2005, touching on issues of politics, race, LGBTQ+ identities, and of course feminism. This project asks what these movies were selling to their audience, in terms of both messaging and products. How was girlhood commodified in the early 2000s? What forces led to this strange avalanche of movies – which appeared and disappeared in equal rapidity? And how did they change the teen film moving forward?

**Suárez, Alejandro**
University of Oregon
Mentor(s): Chanel Meyers, Gretchen Nihill
Poster #61

## Identity-Safe in STEM: The Importance of Valuing Diversity for Students with Marginalized Identities

Stigma consciousness (Pinel, 1999), or the extent to which an individual anticipates being stereotyped, has been found to influence minority individuals' feelings of trust and belonging in STEM (Pietri et al., 2018). Providing identity-safe cues can mitigate these fears, signaling a person's identity is welcome in historically discriminatory settings (Avery et al., 2013). The present study examines how student's engagement and anticipated experience in university STEM classes is moderated by their professor's identity and the degree to which diversity is explicitly valued in syllabi. Participants were randomly assigned to view syllabi paired with the face of a professor that varied in race and gender. Stigma consciousness, concerns of fair treatment, sense of belonging, evaluation concerns, and anticipated performance were measured (Pinel,

1999; LaCosse et al., 2021). Syllabi valuing diversity paired with professors who resembled participants were hypothesized to decrease stigma consciousness, concerns of fair treatment, and evaluative concerns, and increase sense of belonging and anticipated performance for students with marginalized identities. Our objective is to prove that having diverse faculty acts as an identity-safety cue for students with marginalized identities, and suggest that explicitly valuing diversity in course materials leads to more positive outcomes for female students and students of color.

**Sverdrup, Emily**
University of Oregon
Mentor(s): Nick Pancheri, Nick Willett
Oral Panel From Mind to Molecule

## Microgels for sustained encapsulation and delivery of osteoarthritis therapeutics

Co-Author(s): Josh Miller

A common consequence of joint injury is post-traumatic osteoarthritis (PTOA) which is a source of chronic pain and poor joint mobility for many patients. Clinical interventions for PTOA focus on symptom management as there are no FDA-approved drugs that modify disease progression. The rapid degradation and clearance of potential drugs from the joint tissue is thought to limit therapeutic potency. Polyethylene glycol (PEG) microgels are covalently crosslinked polymeric spheres that have the potential to improve drug stability in local tissue. The objectives of this study were to: 1. assess the size dispersity of PEG microgel fabrication and 2. quantify the loading efficiency of model drugs into PEG microgels and 3. quantify the diffusion rate of drug from the microgels into free solution. Engineered microfluidic chips directed the formation of drug-loaded PEG microgels with water in oil emulsion. The microgels were loaded with either a specialized pro resolving mediator or a representative growth factor (PDGF). Upon resuspension of the gels into neutral buffered saline, samples were stored at either 4 °C or 37 °C and aliquots were collected at 0-, 0.5-, 4-, 18-, 24-, 48-hour, and 1-week timepoints. Enzyme linked immunosorbent assays (ELISA) were used to quantify drug loading efficiency and demonstrated successful drug encapsulation. Brightfield microscopy of saline aliquots demonstrated gel size uniformity and sustained gel stability to at least 1 week.

**Sverdrup, Emily**
University of Oregon
Mentor(s): Nick Pancheri, Nick Willett
Poster #107

## Therapeutic effects of exercise and viscosupplements on post-traumatic osteoarthritis progression

Post-traumatic osteoarthritis (PTOA) develops following joint injury and causes a lifetime of disease burden. The standard of care for PTOA is physical rehabilitation but outcomes are variable. Viscosupplements are often prescribed alongside exercise, but this lacks rigorous empirical rationale. This study characterized the therapeutic effects of mild exercise and intra-articular delivery of Hyalgan (HA), a common viscosupplement, following an ACL rupture in a preclinical rodent model. We hypothesized that exercise with HA would reduce spontaneous and evoked pain related behaviors more so than exercise alone. Adult male Lewis rats received a non-invasive ACL rupture or a sham injury (n=6-10/group). All animals participated in exercise pretraining with a running regimen of 10 m/min daily for 30 minutes on a custom treadmill; treatment groups resumed exercise 5-weeks post injury and one group received an intra-articular dose of HA 4-weeks post injury. Bioseb Dynamic Weight Bearing and the von Frey assay assessed spontaneous and evoked pain-related behavior respectively, once weekly. ACL rupture significantly reduced weight bearing behavior at all timepoints regardless of treatment compared to sham controls. All injured groups exhibited significantly or trended towards significantly increased sensitivity compared to sham from 3- to 6- weeks. Heterogeneity in treatments suggest that the applied exercise regimen should be modified for a more potent, homogenous effect.

**Swenson, Jonathan**
University of Oregon
Mentor(s): Rori Rohlfs
Poster #19

## Optimizing Crisis Response: Anonymized CAHOOTS Case Narratives for Effective Resource Allocation

In today's data-driven world, safeguarding personal information is crucial. This research project focuses on developing an anonymizer script using Microsoft Presidio to protect personally identifiable information (PII) in case narratives. By anonymizing data sourced from CAHOOTS (Crisis Assistance Helping Out On The Streets), a city-funded service, we aim to train a machine learning model to categorize narratives into 4 assistance categories: behavioral, medical, both, or neither. This classification will encourage effective resource allocation.

CAHOOTS provides timely stabilization and assistance during psychological crises, operating on a hybrid model with both behavioral assistants and EMTs. Our collaboration with CAHOOTS aims to assess the efficacy of this model using natural language processing (NLP) and machine learning techniques. By analyzing anonymized case narratives, we intend to provide insights to enhance CAHOOTS' service efficiency and crisis response protocols. Once anonymized, the case narratives will serve as valuable training data for the machine learning model, enabling it to accurately categorize cases and support timely and effective crisis assistance. Through this research collaboration, we seek to contribute to the advancement of crisis response strategies by using data-driven insights. By enhancing the efficiency of services like CAHOOTS, we can better support individuals experiencing psychological crises and promote safer communities.

**Tamerhoulet, Ayisha**
**University of Oregon**
**Mentor(s): Caitlin Fausey, Kayla McComb**
**Poster #43**

## Baby Sing-along: How Music Structures Opportunities for Infants to Babble and Learn Words

**Co-Author(s): Caitlin Fausey, Kayla McComb**

How can an infant's musical environment influence their babbling? Is everyday musical experience related to word learning? This GRAMMY funded project uses the Mendoza Music Corpus, a collection of everyday audio recordings of 35 6- to 12-month-old infants, to explore the relationship between daily musical experiences and babbling. Infants' caregivers also completed vocabulary inventories (MB-CDI) at the time of recording and then monthly until the infants reached 30-months-old.

Musical experiences in the corpus are characterized as live, recorded, instrumental, and/or vocal. We identified infants' vocalizations before, during, and after each musical episode: canonical babbles contain consonants and vowels (e.g., "baba"), non-canonical babbles contain isolated vowels or consonants (e.g., "eeee"), laughs, and cries.

On average, infants learned a lot of words over time: from 14 words known at age 7 months to 414 words known at age 30 months. The 30-month-olds' vocabularies varied a lot, ranging from 41 to 644 words known. Interestingly, infants also varied a lot in the proportion of their vocalizing that was speech-like canonical babbling. Ongoing research, including detailed annotations of infants' vocalizations in this very large corpus, tests hypotheses about associations among infants' opportunities to "sing along" to live vocal music, speech-like babbling, and subsequent word learning. We will share examples of such opportunities during this presentation.

**Tavernier, Austyn**
University of Oregon
Mentor(s): Jeremy Collings, Jeff Diez
Oral Panel Unveiling Nature's Rhythms

## Drought Response of Plant Coexistence are Mediated by Arbuscular Mycorrhizal Fungi

Co-Author(s): Jeremy Collings, Jeff Diez

Climate change is predicted to alter interannual precipitation patterns and increase drought severity and frequency. Although, we lack robust and generalizable predictions of future plant community dynamics in a shifting precipitation regime. An obstacle for making these predictions is understanding how species in these communities, as well as the interactions between them, respond to drought. One biotic player in structuring plant communities is arbuscular mycorrhizal fungi (AMF) which have been shown to contribute to plant responses to drought at an individual and community level. However, the mechanisms of drought-dependent mycorrhizal effects on plant competition have yet to be empirically assessed. To explore this, we conducted a greenhouse competition experiment within a two-by-two factorial manipulation of soil moisture and AMF presence. The results of this study suggest that drought and AMF singularly and/or interactively influence the demographic parameters and interaction coefficients underlying plant community dynamics. Differences in coexistence probability between our treatments may implicate AMF as a key factor on if species are able to coexist during increases in drought frequency. Future studies on the interactive effects of mycorrhizae and droughts on plant competition should aim to identify axes for plant species variation that may underlie the species-specific interactions between mycorrhizal mutualisms and water availability.

**Taylor, James**
University of Oregon
Mentor(s): Lisa Redford
Poster #27

## Effect of neurotype identity of conversational partners on speech behavior and communicative success

Co-Author(s): Lisa Redford

Independent Autistic individuals communicate differently from non-Autistic individuals, a key finding in literature on communication disorders. Milton (2011) proposed that Autistic have different, not deficient, communication strategies compared to non-Autistic individuals, leading to communicative inefficiencies. Milton's framework predicts that Autistic individuals will understand one another better than non-Autistic people understand Autistic individuals. The current study builds on prior work (Crompton et al. 2021) to test for differences in communicative success due to neurotype differences in turn-taking behavior and speaking

style. In this study, each participant completes three rounds of a spot-the-difference game, in two different conditions: a 'same' condition with two participants of the same neurotype (non-Autistic or Autistic); and a 'mixed' condition with both participants having different neurotypes. A spot-the-difference game (the Diapix task, Baker & Hazan, 2011) guides participants' speech, so it is natural but comparable. Participants also record sentences in casual and clear manners containing keywords in the Diapix images. Three measures of communicative success are analyzed from 40 participants' data (20 Autistic): task completion speed, task completion accuracy, and participants' perception of the interaction. Communicative success measures are analyzed against acoustic measures of turn-taking behavior and speaking style.

**Taylor, Lou**
University of Oregon
Mentor(s): Judith Raiskin
Poster #216

## Erotic Odyssey: Tee Corinne's Sensual Revolution of the 70s

This research project examines the powerful impact of Tee Corinne's erotic photography on mainstream and queer cultures during the 1960s and 1970s on both a cultural and intimate level. Through an analysis of Corinne's work within the context of the queer-sexual liberation movement of the era, my research explores how her photographs challenged societal norms and contributed to the visibility and empowerment of lesbian communities. By examining the reception of Corinne's work within feminist and queer activist communities, as well as its influence on broader cultural attitudes towards sexuality and gender, this research seeks to illuminate the transformative power of erotic imagery in shaping cultural narratives of liberation and identity during a pivotal moment in history.

**Taylor, Tommy**
University of Oregon
Mentor(s): Rob Porch, Stilianos Louca
Poster #77

## Plastic Degradation by Prokaryotes: Potential Microbial Solution to Plastic Pollution?

Plastic pollution is becoming a significant concern and has created a litany of ecological problems, many of which have adverse effects on human health. The nature of plastic materials ensure that they remain in the environment, undegraded, for upwards of hundreds of years and this is especially concerning given that much of the world's plastic remains in landfills – allowing for environmental degradation to release microplastics and other pollutants into the natural environment. For this reason, it has become increasingly necessary that alternative methods of eliminating or degrading plastic waste from the environment be

elucidated. Microbial degradation–the degradation of plastic by microscopic organisms – is showing particular promise as an eco-friendly method of eliminating plastic waste. In particular, the degradation of plastics by prokaryotes is a promising new avenue of bioremediation but current information and insights into future applications currently remain underexplored and unknown and this is of special concern given that the number of microbial species predicted to be capable of degrading plastic is rapidly increasing. Thus, the goal of this project is to then synthesize much of the major known biochemical, genetic, and taxonomical information regarding the degradation of plastics by prokaryotes and explore some of the existing literature regarding bioremediation in order to provide a comprehensive resource for future investigation of plastic bioremediation.

**Tenenbaum, Max**
University of Oregon
Mentor(s): Sterin Neelima Satheesan, Felix Deku
Poster #152

## Enabling High-Density Brain-Computer Interfaces: CMOS-Integrated Thin-Film Microelectrode Arrays

Co-Author(s): Sterin Neelima Satheesan

With the increasing complexity of questions being asked by the field of neuroscience, the demand for devices enabling higher-resolution interactions with the nervous system is ever-growing. Advances in materials science and microfabrication have enabled the development of high channel count devices with better electrochemical properties than ever before. The potential of these devices for high-resolution neural recording is bottlenecked by back-end data transmission, as only a handful of channels can be used at a time. We propose the integration of Complementary-Metal-Oxide-Semiconductor (CMOS) technology with thin-film microelectrode arrays to increase channel utilization, data transmission speeds, and signal-to-noise ratio, while decreasing power consumption, heat production, and overall device size. Our preliminary work has developed a new method for integrating CMOS technology with thin-film arrays, where T/Au/In spikes are created on a polyimide substrate to facilitate thermal bonding of CMOS sensors. Our initial characterization of this new method for CMOS-thin-film integration has shown a robust electrical connection between thin-film devices and test arrays. This new approach shows promise in maximizing the potential of high-channel count thin-film microelectrode arrays, enabling coordinated concurrent stimulation and recording and wireless data transmission; and opens new avenues for research and clinical applications.

Thomas, Christina
University of Oregon
Mentor(s): Kirby Brown
Oral Panel Voices of Resilience: Lessons in Race & Culture

## Honoring Indigenous Perspectives: Reimagining Resources and Programs at the University of Oregon

This abstract introduces the pressing need for Indigenous research methodologies in evaluating the effectiveness of initiatives supporting Indigenous students at the University of Oregon (UO). Despite increasing efforts to enhance Indigenous student experiences, there remains a gap in research assessing the impact of these initiatives. Drawing from Indigenous scholars, this study advocates for the active involvement of Indigenous students in research processes to uphold their right to self-determination. Through qualitative analysis, it will explore the challenges Indigenous students encounter nationally, statewide, and at UO, emphasizing the importance of Indigenous voices in shaping policies and practices. By centering Indigenous perspectives, this research aims to provide a comprehensive understanding of the effectiveness of UO's initiatives and promote collaborative approaches between the university and Indigenous communities.

**Thomas, Christina**
University of Oregon
Mentor(s): Kirby Brown
Poster #240

## Highlighting Indigenous voices in Academia through a lens using qualitative data

Co-Author(s): Yazzie Chee

The research that Yazzie Chee and I are working on currently expresses the significance of incorporating Indigenous research methodologies into the qualitative data collection while working with Native students. We are aiming to highlight Indigenous experiences on campus; both good and bad. Despite the University's attempts to create an inclusive campus, Native students often do not receive the support they need to thrive in a primarily white institute. Through this qualitative analysis, we plan to explore these challenges, and offer insight to how we can create a safer, more equitable experience for not only the Native American students at the University Of Oregon, but statewide, in all Western academia settings.

**Thomas, Maia**
University of Oregon
Mentor(s): Judith Raiskin, Linda Long
Poster #209

## Ecofeminism and Spirituality

Rootworks, OWL Farm, and Cabbage Lane were separatist lesbian commune in Southern Oregon that were established throughout the 1960-1970's. They were secluded rural spaces where lesbians lived off the land and integrated nature with feminist politics within their communities. These communities of lesbians rejected patriarchal culture and used the space to form spiritual connections with nature as a form of self-expression. Paganism was widely practiced by women on these lands resulting in self-exploration, the building of community and exploration of divine femininity and goddesses. Women on lesbian lands practiced spirituality that was influenced by the intersection of feminism and environmental conscious practices. They created rituals and ceremonies based on pagan beliefs to worship nature resulting in environmental conservation, self-exploration, and community building.

**Thurston, Colin**
University of Oregon
Mentor(s): Brandon Gibson, John Halliwill
Poster #178

## Measurement strategies for 1-methylhistamine: Potential new biomarker of exercise responses

Co-Author(s): Brandon Gibson, Kieran Abbotts, Hope Cursetjee Karen Needham, John Halliwill

Histamine produced in skeletal muscle facilitates acute and chronic adaptations to exercise. Detection of 1-methylhistamine (1-MH) has been proposed as a biomarker of histamine's release. However, gold standards for detection have not been established. Therefore, the reliability of two measurement techniques, high-performance liquid chromatography (HPLC) and enzyme-linked immunoassay (ELISA), were assessed to determine 1-MH concentrations following two forms of exercise. Twelve healthy adults [11M, 1F; age: 18-35] were recruited to complete, on separate days, 6 sets of 10 repetitions of back-squat exercise (RE) and 30 min of cycling at 70% VO¬2 Peak (AE). Urine samples were collected 24h before (BL), immediately after 2h of recovery (2h), and for 24h after exercise cessation (24h). Concentration of 1-MH (ng/mL) was quantified using HPLC and ELISA at each interval. A Bland and Altman plot was used to assess concentration difference [HPLC-ELISA] against summated averages [(HPLC+ELISA)/2] between techniques. Upper and lower bounds were determined by 95% confidence intervals (CI). The line of equality fell within CI of average differences, indicating good agreement across the mean concentration range reported between techniques; however,

average HPLC concentrations were +17.5 units higher compared to ELISA. We conclude use of 1-MH as an indicator of histamine's release following exercise can be measurable via HPLC and ELISA, although there is some bias between the methods.

**Tirrill, Audrey**
University of Oregon
Mentor(s): Judith Raiskin, Linda Long
Poster #209

## Ecofeminism and Spirituality

Rootworks, OWL Farm, and Cabbage Lane were separatist lesbian commune in Southern Oregon that were established throughout the 1960-1970's. They were secluded rural spaces where lesbians lived off the land and integrated nature with feminist politics within their communities. These communities of lesbians rejected patriarchal culture and used the space to form spiritual connections with nature as a form of self-expression. Paganism was widely practiced by women on these lands resulting in self-exploration, the building of community and exploration of divine femininity and goddesses. Women on lesbian lands practiced spirituality that was influenced by the intersection of feminism and environmental conscious practices. They created rituals and ceremonies based on pagan beliefs to worship nature resulting in environmental conservation, self-exploration, and community building.

**Tokos, Lauren**
University of Oregon
Mentor(s): Gretchen Soderlund, Carol Stabile
Virtual

## A Peer-Review of Peer-Review: Analyzing Differing Methodologies Across Communication Journals

While many media studies and communication scholars discuss their research in mainstream media, scholarly publications are the primary mechanism used to disseminate academic research findings. This project analyzes the journal publishing ecosystem in media studies and communication, focusing on journals' peer-review methods and relationships with governing entities. Semi-structured, phenomenological interviews are the main method of investigation for this project, followed by thematic coding using the qualitative data analysis platform, Dedoose. Eleven, 60–90-minute interviews were conducted between November 2023 and February 2024. Participants were editors at generalized and specialized journals in media studies and communication; 73% of journals interviewed are owned by corporate publishers, while 27% are owned by not-for-profit publishing entities. The associative demographics of project participants

informs the results of the investigation. Though many journals rely on the 'traditional' double-anonymous peer-review method, journals in media studies and communication are experimenting with open-review and triple-anonymous alternatives. Other journals combat industry norms through mentorship and organizational process – prioritizing publication timeline, author growth, manuscript quality, and transparency.
Many journals expressed noticeable resistance to these initiatives – scholarly publishing practices in communication ideologically at-odds with the corporate structure?

**Tom, Eliot**
**University of Oregon**
**Mentor(s): Katie Lynch, Dehlia Wolftail**
**Oral Panel Pathways to Environmental Empowerment**
**Environmental Leadership Program:**

## Inspiring Future Climate Leaders Through Environmental Education

In the face of the looming climate crisis, young people need to be given the tools to take action. Research shows that nature exposure through environmental education (EE) creates a better learning context in which students excel academically, experience personal growth, and practice land stewardship. EE fosters skills that go beyond the classroom, so students have the tools they need to navigate the climate crisis. The scenic old-growth forests of the McKenzie River watershed are an instrumental resource for educating youth. In recognition of this, the University of Oregon Environmental Leadership Program partnered with H.J. Andrews Experimental Forest to create a climate science curriculum for local middle schools.

Following the U.N. Tbilisi Declaration's Awareness to Action framework, our curriculum explores phenology, microclimate, wildfire ecology, and tree identification, employing hands-on, place-based learning aligned with Next Generation Science Standards. We focus on building skills such as observation, critical thinking, and data collection. Each aspect of our program meets the North American Association for Environmental Education guidelines for excellence. Targeting over 400 students in Lane County, our initiative aims to foster a positive learning environment conducive to lifelong learning, leadership, and action. By the end of our program, students will have an increased awareness of climate change, improved scientific thinking, and a sense of personal growth.

**Tommeraason, Cami**
University of Oregon
Mentor(s): Margaret Boulay, Holly Amer
Oral Panel Green Futures in Habitat and Material Science

## Riparian Revegetation and Soil Protection Experimentation for Carbon Sequestration

Currently, a wide variety of anthropogenic forces contribute to climate destabilization, which adversely affects the health and quality of ecosystems worldwide. The terrestrial portions of these ecosystems can sequester carbon from the atmosphere and store it within the soil, the most significant terrestrial carbon sink. Riparian environments are one of the ecosystems that are important for carbon sequestration and crucial for sustaining biodiversity. Unfortunately, due to the over-extraction of terrestrial resources, riparian environments require restoration to efficiently utilize their carbon sequestration capabilities. The revegetation of these areas provides benefits for the soil in the form of amplifying the health of microorganisms and stabilizing the soil. Reforesting these areas and surveying their success will also create a suitable habitat for the avian population to thrive and aid in rehabilitating the hydrologic characteristics of the ecosystem. Through deploying soil and forestry management methods, this research project seeks to understand and efficiently employ the mechanisms of riparian woodland restoration that accentuate the ecosystem's ability to sequester carbon within the soil and biomass above and below ground.

**Trail, Maggie**
University of Oregon
Mentor(s): Genevieve Romanowicz
Oral Panel From Mind to Molecule
Poster #110

## Vascularized bone-like micro-organoids as an in-vitro model for osteogenesis

Co-Author(s): Genevieve Romanowicz, Ethan Dinh, Robert Guldberg

Until recently, the highly mineralized character and cellularity of bone has been difficult to mimic in-vitro. Our lab developed a method to form nanoscale mineralized collagen constructs that can induce mature bone cell differentiation without additional growth factors. We seek to understand how supplementing these mineralized constructs with microvascular fragments (MVFs) will impact their cellular mineralization patterns, viability, and osteogenic development. To fabricate our bone-like organoids, we incorporate human bone marrow mesenchymal stromal cells (MSCs) and rat MVFs into rat tail type I collagen, pipe the solution into 2 μL hemispheres via high-throughput bioprinting, and culture the hydrogels in a biomimetic media to catalyze contraction and mineralization. Using fourier transform infrared spectroscopy, we found the MSCs with MVFs resulted in a higher mineral to matrix ratio than MSCs alone; crystallinity remained similar.

Microcomputed tomography showed no difference in average mineral density between groups with and without MVFs. Histology revealed complex pore networks that filled with osteocyte-like cells (mineralized) or vasculature (non-mineralized) upon adding MVFs. Our bone-like organoids have around half the mineral density of human trabecular bone by day 9. Adding MVFs had no overt impact on average density and was beneficial to osteocyte-like cell formation. These micro-organoids may be adapted to further study in-vitro osteogenesis and angiogenesis.

**True, Mary-Jane**
University of Oregon
Mentor(s): Mariah Kornbluh, Sherry Bell
Oral Panel Exploring Educational Environments

## Defining Civics

Civic education plays a crucial role in shaping individuals' understanding of their rights, responsibilities, and participation within society. This nationwide study delves into the multifaceted dimensions of civic education, drawing insights from interviews (n=75) conducted across politically diverse stakeholders, including educators (administrators, n=16; teachers, n=26) and brokers (n=33). Qualitative findings demonstrated that among teachers, there is a recognized emphasis on educating youth about the different branches of government, with attention to education regarding their roles and responsibilities as citizens and future voters. Administrators contribute to this discourse by emphasizing the government's role and function within civic education while also recognizing the significance of being an active and responsible citizen in their local communities. While brokers emphasize the role of citizenship as a central theme of civic education, they also advocate for a culturally relevant curriculum that incorporates the history of marginalized communities. The current study underscores the diverse perspectives of defining civics and how these definitions inform curriculum development. Understanding the diverse perspectives about a nationwide definition of civics will aid in creating a tool to help educators develop more inclusive and effective strategies when implementing civics into their curricula..

**Tuleya, Megan**
University of Oregon
Mentor(s): Nicole Ngo, Kristen Yarris
Poster #63

## Healthcare for All Immigrants: A Case Study of Healthier Oregon

Immigrants are a vulnerable population that faces significant barriers to healthcare access and coverage due to their legal status. In 2021, Oregon passed Healthier Oregon, a program that opened state Medicaid

benefits to all who qualify, regardless of immigration status. This study reviews the national healthcare options for low-income immigrants, framing Healthier Oregon's implementation as a case study. This study collected qualitative data through two sets of interviews: 1) brief interviews with state officials to understand their programs and efforts to expand coverage to this population and 2) in-depth interviews with community partners across Oregon to identify the successes of implementation and remaining barriers. Anticipated findings suggest that Healthier Oregon is a significant step forward in providing comprehensive healthcare coverage to immigrant populations, underscoring the importance of community partners. However, persistent barriers such as fear, language barriers, difficulty navigating medical systems, and capacity limitations may impede optimal enrollment and utilization. This research aims to inform future policy decisions to foster equitable healthcare access for all residents, irrespective of documentation status.

**Underwood, Alex**
University of Oregon
Mentor(s): Judith Raiksin, Linda Long
Poster #208

## "Taste Me, I'm Good": Queer Dissemination and the Influence of Zine Culture

The late 1960s marked the start of an extremely influential period of medical and social developments for the transgender community, with 1966 being especially notable for the release of Dr. Harry Benjamin's book "The Transsexual Phenomenon," as well as the establishment of the Johns Hopkins University Gender Identity Clinic. As trans bodies became a site for medical discourse, tight restrictions were put on gender affirming care that made it nearly impossible to access, increasing the relevance for the trans community to discuss and disseminate information regarding sustainable avenues of care, survival, and joy. By the end of the 60s, a broader push for queer liberation had gained momentum.

Renowned author and recipient of multiple literary awards Jessica Amanda Salmonson was an active figure in the speculative fiction fandom and an even bigger influence in the realm of fanzines. Zines have historically acted as a forum of expression and information dissemination within marginalized communities, making them especially popular within queer circles. In 1975, Salmonson released a revolutionary zine sharing the details of her medical transition, making public not just her trans knowledge but her optimism and trans joy. My research into Salmonson's personal archives reveals the ways in which speculative fiction zines functioned as a distributor of medical, social, and sexual knowledge for trans and queer individuals through intricate rituals of communication and performance.

**Urban, Soren**
University of Oregon
Mentor(s): Mathias Vogel
Poster #230

## Effects of Colonization on Central Africa.

Central Africa, a region abundant in natural resources yet riddled in poverty. Central Africa's massive reservoir of minerals, and lush forest stands in stark contrast to its socio-economic struggles. Central Africa has extremely high levels of poverty, lack of infrastructure, and political instability. We hope to examine the historical, political, economic, and social factors contributing to this situation facing Central Africa. We will discuss colonial legacies, resource extraction, governmental failures, corruption, and conflicts to show the challenges that central africa faces. Through utilizing existing research and offering insights from international perspectives. Through this analysis we hope to shed light on the issues that Central Africa faces today and in the future.

**Uzoekwe, Colleen**
University of Oregon
Mentor(s): Emma Reed
Poster #171

## Far-infrared to the muscle bed: muscle temperature during sauna bathing

Co-Author(s): Emma Reed, Christopher Minson, John Halliwill

**Introduction:** The benefits of exercise and passive heating (hot tubs, saunas) may be due in part to increases in skeletal muscle temperature. Far-infrared saunas are a newer sauna technology increasing in popularity and accessibility, however, there is limited evidence for the effects of far-infrared saunas on skeletal muscle temperature.
**Purpose:** The purpose of this study was to quantify the skeletal muscle temperature response during a single far-infrared sauna session in healthy, young adults.
**Methods:** Participants were instrumented with equipment to measure heart rate, core temperature, and skin temperature. Skeletal muscle temperature was measured with a multi-sensor thermocouple placed into the lateral thigh. The thermocouple sensors were at depths of about 2, 3, and 4 cm into the thigh. Participants were then seated in a far-infrared sauna for 45 minutes. Heart rate and temperature measurements were obtained every 5 minutes during the sauna session.
**Results:** We anticipate increases in skeletal muscle temperature as far-infrared waves in the sauna have been reported to penetrate 3 to 4 cm deep into peripheral tissues. We anticipate the temperature response will be dependent on the depth of the thermocouple sensors (2, 3, or 4 cm).

**Conclusion:** Quantifying the temperature response in skeletal muscle during far-infrared sauna bathing allows for the comparison to other passive heating modalities and the application of these saunas in future research and real-world settings.

**Valadez, Lesley**
University of Oregon
Mentor(s): Kathryn Lynch
Oral Panel Pathways to Environmental Empowerment

## A Bilingual Environmental Education Project Linking Culture and Ecology Through Migratory Birds

Co-Author(s): Manuela Mena, Anneliese Bishop-Perdue, Irene Garcia-Chavez Ava Magnabosco, Zo Hill Sparks

Migratory birds are an invaluable link between ecology and culture. In the Environmental Leadership Program at the University of Oregon, Aves Compartidas provides elementary aged students with a framework to connect with nature and culture through shared migratory birds. With our partner, the Willamette-Laja Twinning Project, we ignite the spark of science and awaken ecological awareness. Fostering students' educational outcomes in bilingual lessons prepares the next generation of environmental stewards. Nature-based education contributes to the improved mental and physical well-being of students. Our curriculum is guided by the Next Generation Science Standards, which help our students become well-rounded scientists. We prepared to lead environmental education by drawing on resources that promote children's curiosity for the natural world to guide their learning. When this program ends, the team will have served over 300 El Camino del Rio students via five classroom lessons and a field trip at Mount Pisgah Arboretum. This allows students to recognize their place in ecological systems and provide them with tools to become involved. Aves Compartidas' goal is to encourage lasting gratitude for nature by connecting with our shared bird species in Oregon and Guanajuato. We not only focused on scientific curriculum but inspired students' genuine connection and brought awareness of environmental issues, resulting in lifelong appreciation of nature– the cornerstone of stewardship.

**Van Fleet, Darby**
University of Oregon
Mentor(s): Sarah Wald
Poster #203

## Who is Natural? How the reality TV show Survivor alters perceptions regarding who belongs in nature

Despite reality TV's long standing presence in popular culture, the consideration of the impact it may have on how audiences perceive their own reality is rather unknown. Due to reality television's 'real' nature, audiences often echo observed dynamics in their own realities. This study analyzes the reality effect on the show Survivor, a reality show set in nature, and the ways that contestants are selected and eliminated from participation, how these patterns echo racist dynamics, and how this portrayal risks skewing audiences' perceptions of beings existing in their own realities. This research is gathered from analysis of different literatures and the TV show Survivor. Through this analysis I was able to decipher a dynamic that echoes racist structures as the contestants selected to participate on Survivor were overwhelmingly white. By presenting this curated demographic to audiences it is communicated that other demographics do not belong in nature. Presentation in the form of a reality show intrudes on preconceived notions of who belongs in individual realities. This does harm to people existing within the realities of others as well as personal realities. It is important to identify how these portrayed dynamics are harmful and how they communicate exclusionary practices to audiences because this cannot be perpetuated. It must be identified, analyzed and understood in order to change this practice and to uplift and encourage participation in nature across demographics.

**Vaughn Brown, Mason**
University of Oregon
Mentor(s): Damien Callahan, Julissa Ortiz-Delatorre
Oral Panel No Pain, All Gain: Innovations in Human Physiology and Bioengineering

## Muscle cell stretch during dissection can be used to predict fiber type in human tissue

Myosin heavy chain (MHC) isoforms are used to characterize muscle fiber types which have a large impact on a cell's function. It would be useful to identify fiber type during single fiber dissection, allowing intentional bias or to avoid imbalanced sample distributions. Based on a priori data collections in which passive tension was greater in fibers expressing MHC I (as opposed to MHC II), we hypothesized MHC isoform could be predicted by their relative stretch during dissection. 7 young and 3 healthy older adults participated in the research, providing muscle biopsy samples from the vastus lateralis. Single muscle fibers were dissected from bundles of tissue under microscope and measured. Initial bundle lengths were measured prior to fiber

extraction and remeasured every 10 fibers or after every 15 minutes. Fiber length was expressed as a percent of bundle length to capture fiber stretch at dissection and assessed using receiver operator characteristic (ROC) curves to assess whether length predicted fiber type (MHC I or not MHC I). In younger adults MHC I fibers were shorter in length vs. MHC II fibers (P < 0.01). Fiber lengths in older adults were shorter all around. MHC I were still shorter than non-MHC I fibers, but the predictions were consistent with younger type fibers. Even though samples from older populations resist stretching more than young adults, prediction accuracy did not change. Informing us that morphological changes do not affect MHC isoform prediction.

**Vernacchio, Mary**
University of Oregon
Mentor(s): Kathryn Lynch
Oral Panel Pathways to Environmental Empowerment

## A Bilingual Environmental Education Project Linking Culture and Ecology Through Migratory Birds

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**Versteeg, Liam**
University of Oregon
Mentor(s): Lisa Munger
Poster #73

## The Efficacy of Reintroducing Enhydra lutris to the Oregon Coast

From the 1700s to the early 1910s the Sea Otter, Enhydra lutris, was hunted to extinction off the Oregon Coast. The absence of this keystone species has caused significant disruption to nearshore kelp forests due to the lack of top-down pressure on organisms like the kelp-grazing Pacific purple sea urchin, Strongylocentrotus purpuratus. From 1970 to 1971, a concerted effort to reintroduce the otters back to Oregon and unite northern and southern otter populations along the West Coast took place but ultimately failed to establish a long-term population in the area. Recently, renewed discussions amongst organizations on the local, state, and federal levels have sparked interest in a potential new attempt at reintroduction. This study aims to provide advisory information for this latest effort by identifying patterns in past reintroduction methodologies and their levels of relative success. Through a comprehensive literature review of academic and governmental reports on the reintroductions and translocations of sea otters and other comparable species, this research will create a list of previously effective strategies and ineffective strategies to avoid. Learning from past reintroduction efforts could increase the chances of success of the latest attempt to return sea otters to the Oregon Coast, enhancing the stability of nearshore ecosystems and supporting global sea otter populations.

**Viles, Laurel**
University of Oregon
Mentor(s): Margaret Boulay, Holly Amer
Oral Panel Green Futures in Habitat and Material Science

## Riparian Revegetation and Soil Protection Experimentation for Carbon Sequestration

Currently, a wide variety of anthropogenic forces contribute to climate destabilization, which adversely affects the health and quality of ecosystems worldwide. The terrestrial portions of these ecosystems can sequester carbon from the atmosphere and store it within the soil, the most significant terrestrial carbon sink. Riparian environments are one of the ecosystems that are important for carbon sequestration and crucial for sustaining biodiversity. Unfortunately, due to the over-extraction of terrestrial resources, riparian environments require restoration to efficiently utilize their carbon sequestration capabilities. The revegetation of these areas provides benefits for the soil in the form of amplifying the health of microorganisms and stabilizing the soil. Reforesting these areas and surveying their success will also create a suitable habitat for the avian population to thrive and aid in rehabilitating the hydrologic characteristics

of the ecosystem. Through deploying soil and forestry management methods, this research project seeks to understand and efficiently employ the mechanisms of riparian woodland restoration that accentuate the ecosystem's ability to sequester carbon within the soil and biomass above and below ground.

**Voyles, Katie**
University of Oregon
Mentor(s): Sara Cotton, Frances White
Poster #44

## A new field method of collecting bonobo urine for estradiol hormonal analysis

We tested new methodology for non-invasive hormone analysis of primate urine samples. Collection of urine samples in the field is challenging when access to temperature-controlled storage is not available. We tested if urine can be dried onto filter paper and stored at room temperature for future analysis without a loss of information. This study used frozen urine samples previously collected from bonobos at the Columbus Zoo. We compared creatinine and estradiol measurements taken from our dried and rehydrated filter paper samples to previously collected hormonal data from the thawed frozen samples. We pipetted urine onto a 5mm piece of filter paper, dried completely, rehydrated the samples, and followed standard Arbor Assays kit protocols. We found that there is both a minimum quantity of urine needed to be dried on filter paper and a minimum hormonal concentration that can be detected. Linear regressions showed that the original estradiol and creatinine values were highly predictive of values collected from filter paper (F=49.49, p<.001; F=30.41, p<0.001). These results show that filter paper is a promising, convenient field methodology for urine sample collection. Our future research on this topic will be focused on further refining the methodology and ascertaining the effect of time on the dried samples with the hopes of being able to use this methodology to study urinary estradiol in future field studies.

**Wakil, Rigel**
University of Oregon
Mentor(s): Siobhan Rockcastle
Poster #6

## Measuring Human Emotional Response to Architectural Materials in Daylighting Conditions

This architectural research aims to survey human emotional responses to variations in daylight and material conditions. Over the past several years, daylight research has prioritized task-related comfort conditions and energy conservation, with a more recent push towards the photobiological benefits of eye-level light exposure. The field has a research gap in understanding, measuring, and predicting the human-centric

experience of daylight and materials. This research aims to measure the effect of daylight conditions (orientation, sky condition, and façade/roof openings) and material composition (wood, brick, concrete, white-painted drywall) on human emotional responses using subjective ratings in an online survey. The methodology places a 360-degree camera within a physical room model to capture material and daylighting variations. The panoramic images are transferred into an immersive eye-level web-based survey, asking participants to describe their emotional responses through numeric appraisal ratings. The anticipated benefits from this research are improved understandings of human perceptions of space, material, and light interactions within the built environment. This project opens a new frontier for analyzing how people visually respond to materials and spaces from the human perspective. By further understanding emotional response, this research can help inform material choices and lighting designs to promote human well-being in architecture.

**Walton, Kaiden**
University of Oregon
Mentor(s): Kelly Sutherland
Poster #68

## The architectural drivers of salp colony hydrodynamics and locomotion

Co-Author(s): Anneliese Bishop-Perdue, Alejandro Damian Serrano

Salps are a clade of marine planktonic tunicates with a dual life cycle, which includes a solitary oozoid that asexually buds colonies of genetically identical clones of sexually-reproducing blastozooids. These blastozooids are connected both physically and neurologically, and move together as a singular animal through multijet propulsion. There are seven distinct colony architectures that a colony can develop into, depending on its species. The speeds that these colonies can achieve underwater are partially dependent on their hydrodynamic efficiency, which we hypothesize is in turn driven by size and shape of the colony. To do this, we are analyzing in situ underwater stereoscopic video footage using EventMeasure to gather data on the 3D speed of colonies and the pulse rate of individual zooids. In addition, we are using ImageJ to estimate the size of entire colonies and individual zooids. We expect that more streamlined colony architectures will be the fastest, while architectures with bulkier, less optimal frontal drag scaling designs will be slower on average. Studying salp locomotion opens understudied avenues of the biomechanics and ecology of these animals. Salp locomotion can contribute to the design of underwater robotic vehicles, in the understanding of how their colony shape affects their speed and how the individual zooids interact to move. It can also provide insight into the importance of vertical migration, for predator evasion and overall mobility of salps.

**Watts, Warren**
University of Oregon
Mentor(s): Thomas Pedroza
KIDD Life in Stories

## Warren Watts Reading of "Before We Grow Old"

While I have the privilege of being in the Kidd Creative Writing Workshops for short fiction, I decided to challenge myself by using unfamiliar writing techniques like nonlinear structure and different points of view, and by exploring diverse subject matter. This piece is my biggest challenge so far. When writing, I start with a pen and paper–in this case, it was over a few weeks and scattered in various notebooks–then transcribe it onto the computer. Next, I print it, read it aloud, and revise revise revise. This story was influenced by my best friend of twelve-years and how our relationship might look after being apart during college. Writing this story has been a way to process the joy of our reunion, but also the fear of its inevitable changes.

**Weisel, Peter**
University of Oregon
Mentor(s): Ken-ichi Noma, Sanki Tashiro
Poster #84

## Roles of TBP1 N-Terminus in 3D Genome Organization and Gene Regulation

The general transcription factor, TATA box-binding protein (TBP), plays a crucial role in gene transcription by converting genetic information from DNA to RNA. Although this factor is one of the most important transcription factors involved in every type of gene expression and is evolutionarily conserved in eukaryotes, the role of TBP in three-dimensional (3D) genome organization remains unclear. To this end, our recent research has highlighted the multifaceted functions of the TBP N-terminus in transcriptional regulation and 3D genome organization. Here, we show that the N-terminus deletion of TBP (TBPΔN) impairs cell growth at several culturing conditions. Also, our genomics analysis using next-generation sequencing technology reveals that a specific 3D genome structure(gene-sized small chromatin domains), is disrupted in the TBPΔN mutants. Furthermore, we show that the TBP NΔ mutants display a global suppression of gene expression, although there were no significant changes in protein binding of wild-type and mutant TBP proteins across the fission yeast genome. Considering these findings, we propose that the TBP N-terminus is an essential factor in producing proper stress responses in fission yeast cells, which is critical for maintaining faithful segregation of transcribed genes, in addition to their expression and localization across the genome.

**Welburn, Aubrey**
University of Oregon
Mentor(s): Angela Long
Poster #64

## Healthy Minds Study Pre- and Post-COVID: University of Oregon Student Mental Health Needs and Access

The University of Oregon (UO) participated in the 2017, 2019, 2021, and 2023 Healthy Minds Study (HMS), a survey-based assessment of mental health status and service utilization among college students. A trend analysis of HMS data was done by UO University Health Services and Student Services and Enrollment Management Research and Assessment teams. This trend analysis includes two pre- and two post-COVID onset years.

A qualitative review of UO data suggests increased student need for mental health services, decreased student flourishing when comparing survey results pre- and post-COVID onset years, and increased student self-efficacy to seek services. Increases in anxiety and depression rates, academic impairment, and need for mental health support when comparing survey results pre- and post-COVID onset demonstrate an increased need for mental health services. Already low flourishing levels decreased after COVID onset. Increased rates of help seeking behavior and desire to access services since COVID onset illustrate higher self-efficacy rates.

The Health Equity Action Project of the Student Health Advisory Committee recommends UO implement changes to increase access of on campus mental health resources given that students need and actively seek care to create a community of students who are supported and share resources with others.

**Wesson, Lucy**
University of Oregon
Mentor(s): Will Johnson
Poster #229

## Peace and Empowerment in Historical and Modern Women's Cooperatives: A Comparative Case Study

As cooperatives, both the Women's Cooperative Guild and the Nyamirambo Women's Center share commonalities in their dedication to promoting women's rights, fostering economic empowerment, and advancing positive peace. Despite operating in distinct historical and cultural contexts, the organizations exemplify the transformative potential of women-led cooperatives in challenging traditional gender norms and addressing socio-economic disparities in conflict environments.

As such, NWC and the Guild are best understood together as peacebuilding organizations that utilize the tenets of cooperation to directly account for the needs and aspirations of women. Within these

organizations, women can engage in peace processes, build community, and gain a degree of economic independence, resulting in greater empowerment. This empowerment enables cooperative members to occupy dual cultural expectations as domestic workers and participants in the formal labor force during and after conflict. Although they promote women's empowerment, cooperatives still operate under the pressures of nation-building and longstanding patriarchal structures in conflict environments. These organizations thus exist within the dichotomy of patriarchal social and cultural expectations while simultaneously promoting women's agency and equity through the cooperative model. NWC and the Guild function as sites of negotiation, allowing women to both resist and operate within the limitations of conflict-induced patriarchy

**Westerdahl, Giselle**
University of Oregon
Mentor(s): Ahmar Zaman
Poster #37

## How Standards for Competency Unjustly Impact Juvenile Defendants

Competency to stand trial is important to evaluate with respect to juveniles as current practices are tailored to adults and do not account for differences in competency due to age. In the United States, the laws regarding competency automatically assume that all defendants, including juveniles, are competent to stand trial. This assumption disregards how a juvenile's developmental immaturity may negatively impact their cognitive abilities. This research focuses on how the criminal justice system's standards of competency are unfair to juvenile defendants. The content of this research is based on peer-reviewed articles and journals, utilizing the method of a literature review to connect findings and deepen understanding of the topic.
The anticipated results of this research should validate the negative impact adult-centered standards of competency have on juvenile defendants regarding punishment and recidivism. A comprehensive review of the literature will provide research-based ways to evaluate and improve juvenile competency while considering development. This is significant in its application as having more encompassing standards of competency for juveniles would lessen the rate at which they are unjustly convicted.

**Wilborn-Pilotte, Olivia**
University of Oregon
Mentor(s): Jeff Diez, Emily Cook
Oral Panel Unveiling Nature's Rhythms

## Pollination strategy as an evolutionary response to changing climate in Erythranthe cardinalis

Co-Author(s): Jeff Diez, Seema Sheth, Emily Cook Katelin Kutella

Anthropogenic climate change has increased the severity and duration of droughts in the Western United States. Numerous studies have demonstrated plants' ability to adapt to rapid environmental change. Floral traits influencing a species' pollination strategy (outcrossing or selfing) are also likely to adapt. However, the impact of drought on floral traits across the entire range of a species is unclear. Outcrossing demands more energy to develop pollinator-attractive traits but enhances genetic diversity while selfing conserves energy but results in genetically homogeneous populations. We require further research across species' entire ranges to understand these evolutionary trade-offs. This study examines the impact of drought on floral traits related to pollination strategy in populations of Erythranthe cardinalis from Oregon and California. Seeds were collected before and after drought in northern, central, and southern regions along the range of E.cardinalis and planted in a common garden. Nectar volume, sugar content, and anther-stigma distance were measured for plants from each region and year to determine the evolutionary preference toward selfing or outcrossing. Our findings suggest a preference for outcrossing in the northern post-drought population, with significant trait variation among populations, emphasizing local climate influence. This underscores the importance of understanding how floral adaptations to drought affect population fitness and resilience.

**Williams, Julia**
University of Oregon
Mentor(s): Jennifer Ablow, Jeffrey Measelle
Poster #62

## Coping with COVID-19: Mindfulness and Perinatal Mental Health

Co-Author(s): Jennifer Ablow, Jeffrey Measelle

Although mindfulness and meditation have ancient origins, recent research has underscored their significant physical and mental health benefits. Defined as a cognitive skill involving self-regulating attention and genuine acceptance of one's experiences, mindfulness has emerged as a valuable tool for individuals in the perinatal stage, encompassing pregnancy and the postpartum period. Individuals within the perinatal stage can benefit from mindfulness as a trait as well as mindfulness as a coping strategy. Several mindfulness-based interventions during the perinatal period have been shown to significantly reduce perinatal depression

and anxiety. Mindfulness may help reduce the harmful effects of poor perinatal mental health on infant development. In this dual-site questionnaire study, we aim to examine the effects of perinatal mindfulness on pregnancy-related mental health difficulties within the context of the COVID-19 pandemic.

**Williams, Vincent**
University of Oregon
Mentor(s): Josh Skov
Oral Panel Intersections of Change: Innovative Strategies in Policy, Environment, and Social Equity

## Hot Spots Project: Connecting Extreme Heat, Worker Exposure, and Corporate Supply Chains

The Hot Spots Project is creating a searchable database for identifying worker exposure to extreme heat risk in wide range of corporate supply chains, along with action items for companies, policymakers, and civil society organizations. The database is a collaborative student research effort among the project partners: the Center for Sustainable Business Practices (in LCB) and the student organization Net Impact. The effort also receives technical support from staff in the Sustainability, Energy and Climate Change practice of WSP, a global consulting firm. The Hot Spots team team has accumulated a handful of reports on a plethora of industries such as rice in Thailand, dairy in California, and cobalt mining in the DRC. These industry reports contain aim to raise awareness about the increasingly important environmental justice issue of extreme heat, and to inform adaptation strategies to improve worker health and wellbeing outcomes internationally. Each report focuses on workers in a particular industry and geography, with information on labor force composition, extreme heat details, and features of the relevant policy environment.

**Williams, McKenna**
University of Oregon
Mentor(s): Sedona Epstein, Frances White
Poster #183

## Identifying Bonobos (Pan paniscus) in a Captive Population at the Columbus Zoo

Identifying individuals (IDs) is an essential part of primate research, both in zoos and the field, because it allows researchers to distinguish between individuals to observe and record their behavior. Methods traditionally used for IDs include fur shaving or dying, tattoos, tags or microchips, and collars, but these require capture. The Behavioral Ecology Lab has a database of over fifty hours of videos of bonobo behavior collected over three months at the Columbus Zoo in 2011. Given the difficulty in acquiring primate behavioral data in the U.S., videos like these are an important resource to increase accessibility of primate research, allowing students to participate in research without needing to observe behavior in-person. To properly study

behavior from these videos, students need to reliably identify individuals. Using the intermittent narration from the videos, we created a guide for identifying individuals in this database through detailed descriptions and images of individuals. This guide includes information on body shape/size, hair growth pattern, hairline, and sexual swellings. We also identified areas for improvement in the initial recording of the videos that, if implemented in future video collection, could make the task of identifying individuals much easier for future students. These areas include consistent positioning of cameras to cover the entire range of habitat and clear narration of who each individual is in every video.

**Wilson, Katherine K'iya**
University of Oregon Many Nations Longhouse
Mentor(s): Mitchell Block, Katherine K'iya Wilson
URS Film Screening

## Native Students Learn how to Captivate the Cultural Treasures of Elder's Stories with Film Cameras.

Co-Author(s): Jordan Herrington, Princess Mason, Kimo Emary Anais Wilson, Roger Haney

Our submission is a compilation of interviews and films that were produced at the very first Native Student Documentary Film Camp and Film Festival ever at the University of Oregon. UO Indigenous Students comprised of Klamath, Western Shoshone, Pacific Islander and Powhattan worked with Film Professional & Mentor Katherine K'iya Wilson to document their own Cultural Heritages, including a group project directed by Senior Jordan Herrington last Spring. It was titled the Lost Story of the UO Mother's Day Powwow; and was entered into the 2023 CURE Symposium. Later, the film was also selected as a finalist by the Klamath Independent Film Festival and the Seattle area's Tulalip Film Festival in the Fall.

Summer Term, the students attended a Documentary Film Camp with K'iya and several other film professionals as mentors, along with Professor Mitchell Block, the UO's SOJC Jon Anderson Chair of Documentary Production. Inspired, they traveled to Klamath Falls to attend the Klamath Tribes Restoration Powwow and to shoot footage for their own films. In the Fall they presented their productions at the Native Student Film Festival at the UO Many Nations Longhouse, to accolades from family and tribal members as well as UO Faculty and Staff. The films were then shown along with these student's interviews for Native Heritage Month in November on Capital TV in Marion County, Oregon.

**Wilson, Nex**
University of Oregon
Mentor(s): Matthias Vogel
Poster #221

## Feminism in 20th Century Chinese Literature

In this project, I will explore the use of feminism in 20th century literature to help support the rise of Chinese nationalism. The 20th century saw dramatic changes in both China's political and social climates. With the end of the dynastical period, there came a call for more equality between men and women. This call was especially prominent in the literature of the time, where feminism was used to help support the rising/new idea of the "nation". This project will primarily revolve around the use of feminism in 20th century literature to help support the rise of both the idea of a Chinese nation and the nationalism that comes with it. To thoroughly explore this topic, I looked into a variety of different essays surrounding this time period while also analyzing the historical events that shaped the literature of the time. I looked into a variety of different authors and their writings throughout the post-dynastical era of China to the Cultural Revolution. I found that there seems to be a strong connection between feminist writings of the 20th century and the idea of the nation. It seems that feminism was often used to help solidify the Chinese nation as what it is today. In the end this research will help gain a greater understanding of how literature can help shape society and social interactions. This research will also help gather a better understanding of the impact feminism had in the rise of the Chinese nation.

**Wilson, Waverly**
University of Oregon
Mentor(s): Cassandra Gonzalez, Parisa Hosseinzadeh
Poster #108

## Computational Design of Protein Pathway Inhibitors

Co-Author(s): Jenny Nguyễn, Hannah Siegler

Protein Protein Interaction (PPI) networks are vital to the function of the cell. They are composed of individual proteins that interact with each other in a cascading manner. The maintenance of these networks regulates cellular homeostasis, and the normal state of the cell. There are occasions when the network can be disrupted, leading to a disease state. An in depth understanding of the PPI network in normal and diseased states can help to accurately develop therapeutics and treatments. Current methods of understanding PPI networks are static and lack specific information on the protein interactions. For this reason, we are using de novo protein design and computational modeling to predict the kinetics of the interactions within PPI networks. We are using the P53 signal pathway as a model for this work. P53 is a

heavily researched hub protein that has a c-terminal disordered region (CTD) that can bind several regulatory proteins and can take on different conformations. This research will be exploring the effects on the PPI network when the regulatory proteins that bind to P53 are inhibited. To this end, this project focuses on designing de novo inhibitors to S100B, a regulatory protein in this pathway. These potential inhibitors were designed using machine learning models. Future steps include expressing the inhibitor and experimentally validating its binding affinity.

**Winz, April**
University of Oregon
Mentor(s): Dean Mundy
Poster #23

## Ethics and Values in the Public Relations Professional World: A guide for those entering the field

This research project explores ethics in professional practice within the public relations and communications field, particularly in the context of higher education. Through qualitative one-on-one interviews, it investigates how practitioners navigate ethical considerations in their daily work and overall career. Findings reveal a gap between ethical parameters valued in the field and their practical implementation, highlighting a lack of training and support systems. As a result, participants have felt compelled to independently navigate ethical dilemmas throughout their career, and that college didn't fully equip them with the tools they needed to do so. Drawing from these findings, the project proposes practical strategies such as mentorship, interactive and discussion-based workshops, and an integration of diversity, equity, and inclusion (DEI) values to foster ethical decision-making in the field. The culmination of this research is encapsulated in a user-friendly guide tailored for college students, recent graduates, and new professionals entering the public relations and communications field. This guide offers actionable insights and advice drawn from real-world experiences, aiming to equip emerging professionals with the tools to find and uphold ethical standards throughout their careers.

**Wise, Phoebe**
University of Oregon
Mentor(s): Christopher Michlig
Poster #25

## History and Significance of Trademarked Colors

Have you ever wondered why UPS trucks are always that same shade of brown? Or what's so significant about Louboutin's iconic red soles? Both of these companies believe that these colors are so symbolic of their

brand that they took action to legally protect it and prevent competitors from using them as well. Trademark protections are granted by the United States Patent and Trademark Office and give companies sole ownership over the images that represent them in the marketplace. When thinking about trademarks, most people may naturally think about brand names, slogans, and logos, but many people are surprised to find out that trademark protections can extend to sounds, scents, shapes, and even colors as well. In 1946 Congress passed the Lanham Act, establishing a national trademark registration system and clarifying trademark legislation of the time. To be recognized under the Lanham Act, a trademark must meet two criteria, 1) the mark must be used in commerce and 2) the mark must be distinct and recognizable. The goal of this project is to explore the legal history of trademarked colors starting with the passage of the Lanham Act and the Owens-Corning Pink case, summarize pivotal cases regarding this issue, and explain the significance of trademarking specific colors according to experts in the field.

**Wolf, Emily**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #153

## EAA+BFR Therapy to Stimulate Pax7 Cell Proliferation and Promote Muscle Memory

Muscle memory refers to the phenomenon where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. Mechanistically, this is theorized to be due to myonuclei gained during training being retained with atrophy/disuse, enabling initiation of protein synthesis and muscle regeneration without waiting for new nuclei to form. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells; Pax7+) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will persist following four weeks of no treatment. Muscle biopsy cross-sections (7 μm) were immunostained with antibodies directed at Pax7+ cells (satellite cells), laminin (for cell/fiber boundaries), and slow-type muscle fibers (MyHC I). Nuclei were labeled with DAPI. Images were captured with a Leica fluorescence microscope (DM4000B) equipped with a Leica DFC 360FX camera using a 20x/0.50 objective. We are currently analyzing tissue cross-sections to quantify Pax7 cell proliferation and central nuclei numbers, and degree of myonuclear accretion.

**Wolf, Emily**
University of Oregon
Mentor(s): Hans Dreyer, Helia Megowan
Poster #154

## EAA+BFR Therapy to Stimulate Myonuclear Accretion as Quantified from Single Muscle Fibers

Muscle memory refers to the occurrence where a previously trained muscle exhibits faster strength and size recovery after atrophy compared to an untrained muscle. This is attributed to retained myonuclei gained during training, enabling quicker initiation of protein synthesis and muscle regeneration. Research shows that essential amino acid (EAA) and blood flow restriction (BFR) exercise can stimulate muscle resident stem cells (satellite cells) to proliferate, which give rise to new myonuclei. We hypothesized that 2 weeks of EAA+BFR will induce myonuclear accretion by activation of satellite cells. We further hypothesize that myonuclei gained with EAA+BFR will remain elevated 4 weeks post-treatment. Fiber bundles were fixed in 4% PFA/PBS for 48 hours, moved to PBS, and separated in 40% NaOH with agitation for 2 hours to shed single fibers from the bundle. We immunostained nuclei using DAPI, 1nM, by fiber type using anti-MyHC I for 90 minutes. Single fibers were imaged using a Leica Thunder widefield microscope equipped with a HC PL APO CS2 40x/1.10 N.A. water immersion objective. Lasers with emission wavelength 390 nm were used at 27% intensity at 100 msec, captured with a Ki8 camera with x-y resolution of 300 nm x 300 nm with a z-step of 0.39 µm. Images were deconvolved using Huygens Essential software package followed by 3D reconstruction and quantification using Imaris. This work is ongoing.

**Woo, Evelyn**
University of Oregon
Research Mentor(s): Dan Buck
Oral: Asian Studies Event

## Assessing Economic Espionage Allegations Against Huawei and Protecting U.S. Cybersecurity

This presentation investigates long-standing allegations against Huawei Technology Co., Ltd., a Chinese telecommunications giant, for receiving support from the Chinese Communist Party (CCP) to commit economic espionage against the United States Government. By analyzing Huawei's public statements, U.S. federal documents, news articles, and scholarly articles, the project examines evidence from both sides of the debate on whether or not Huawei has spied against the U.S. to advance its fifth-generation (5G) technology. In addition, the project evaluates the global impact of the U.S. government's actions in response

to Huawei's espionage allegations. Furthermore, the paper proposes the next steps that the U.S. should take to strengthen its high-technology sector and promote its national security interests.

**Woolf, Julia**
University of Oregon
Mentor(s): David Garcia, Abigail Vaaler
Works in Progress: Lightning Rounds

## Investigating Genes Involved in the [*BIG*$^{+}$] Prion Protein Structure

Co-Author(s): David Garcia, Abigail Vaaler

The function of a protein is dictated by its structure. One way a protein's structure can be changed is through the formation of a prion. A prion is an alternate folding pattern of a protein that self-templates its folding pattern onto other proteins with the same amino acid sequence. Prions propagate from parent to daughter cells following patterns of protein-based inheritance. This mechanism can provide the cell a rapid, epigenetic response to stress. One yeast prion termed [*BIG*$^{+}$], for Better In Growth, provides an alternative folding pattern for the protein PUS4. A well-studied role of PUS4 is that it performs a conserved isomerization of uridine at position 55 on tRNA to pseudouridine, a modification believed to be important for stabilizing tRNA-ribosome interactions. When in its prion form, the protein maintains its well-studied activity, while also inducing faster growth and a shorter lifespan in nutrient rich conditions. While data has shown this likely occurs through an increased rate of translation, it is not known what pathways or genes are involved in the induction or propagation of the prion. This project aims to identify pathways and genes necessary to see a [*BIG*$^{+}$] phenotype.

**Wright, Alexa**
University of Oregon
Mentor(s): Michael Wehr, Aldis Weible
Poster #51

## Ketamine does not alter correlated plaque load and gap detection in Alzheimer's model mice.

Co-Author(s): Olivia Estes

Alzheimer's disease (AD) is a treatment-resistant neurodegenerative disease characterized by impairments in memory, cognition, and communication. Early intervention is crucial to avoid the deleterious effects associated with AD progression. However, the current therapeutic options are limited, emphasizing the need to assess the efficacy of novel interventions before pathology becomes severe using biomarkers we already

understand. Ketamine is a dissociative hallucinogen and non-selective N-methyl-D-aspartate (NMDA) receptor antagonist. Ketamine and other NMDA antagonists have shown an ability to aid in the clearance of amyloid-ß in rodents (Companys-Alemany et al., 2022; Wang et al., 2018; Zhu et al., 2015).

Ketamine has also been shown to promote synaptic plasticity (Phoumthipphavong et al., 2016). Ketamine may be an effective intervention for AD pathology due to these synaptogenic and Aß clearance effects. The present study aimed to investigate the impact of a subanesthetic dose of ketamine on AD pathology in 5XFAD mice using both chronic and single-dose administration modalities. Behavioral pathology was assessed using an auditory gap detection paradigm and plaque load was quantified in auditory cortex and the caudal pontine reticular nucleus after completion of data collection. We found strong correlations between plaque load and gap detection deficits, but ketamine did not affect the strength of these correlations, nor any effect on plaque load.

**Wuthrich, Andreas**
University of Oregon
Mentor(s): Peg Boulay, Lydia Lapporte
Oral Panel Green Futures in Habitat and Material Science

## Pollinator Monitoring and Riparian Restoration at Whitewater Ranch

Riparian habitats support terrestrial and aquatic ecosystems by providing water filtration services, water temperature regulation, and habitats for numerous organisms. These ecologically complex riparian systems are sensitive to changes in climate, invasive species, and degradation in vegetation. Intense ecosystem changes also adversely affect nearby pollinator populations, threatening the ecosystem services they provide. We will assess and monitor pollinator plantings from Dr. Lauren Ponisio and the Ponisio Lab to understand their implementations in restoring riparian and pollinator habitats decimated by the 2020 Holiday Farm Fire. We will monitor plant health determined by height, vigor, water temperature, survival rates, and competition levels within active riparian restoration areas. We will study native pollinators to gain insight into the mechanisms driving biodiversity and agricultural productivity – contributing to the ongoing restoration project that began on Whitewater Ranch in 2014. After compiling data, we will compare our findings to previous ELP data to analyze the success of restoration efforts. Our research on pollinator conservation, riparian restoration, and sustainable land management practices will aid in informing policymakers, farmers, and ecologists in making decisions and developing plans that promote the integrity of interdependent ecosystems and further agricultural sustainability.

**Yang, Guansan**
University of Oregon
Mentor(s): Sarah Ebert, Chantelle Russell
Oral Panel Thrive Together: Cultivating Engagement and Inclusivity

## Generating Awareness–Mitigating Food Insecurity at the University of Oregon

Many college students across the nation face food insecurity, meaning they have insufficient access to quality food. The University of Oregon (UO) food insecurity rates are triple, almost quadruple, the national rate (Brian Clark), which is a huge discrepancy and prompted our research question: "With the provided food insecurity resources at the University of Oregon, how can we improve their accessibility to students?" To find a solution, we consulted experts in food insecurity and resources in Eugene as to why the UO rates of food insecurity are disproportionately high and how we can fix them. A common insight was that UO has the resources to reduce food insecurity; however, students either are unaware of them or don't use them. With more awareness, reduced stigma, and more resource accessibility the lower the food insecurity rates will be. We wanted to generate more awareness by creating mandatory food insecurity training for Freshmen before their first term, including interactive modules, requiring students to watch, read, and learn about food insecurity and the provided resources at the UO. A required quiz at the end would ensure that students are engaged and interacting with the modules. By requiring all new incoming and transfer students to be aware of food insecurity, how prevalent it is at UO, and the resources the university offers, we can create a more aware, food-secure, and tighter-knit future student body.

**Yannello, Bella**
University of Oregon
Mentor(s): Jarod Forer, Nick Willet
Poster #109

## Semi-Automatic Cell Quantification Methods in Hematoxylin and Eosin-Stained Rat Achilles Tendons

Co-Author(s): Nick Willett, Kait Link, Mike Hahn, Jarod Forer

The Achilles tendon is an anatomical structure essential for daily mobility, and injury to this structure impairs functional capacity and degrades quality of life. Tendon heals poorly because of its lack of vascularization, so there is a need to understand tendon structure as a result of injury and healing processes. We investigated methods of semi-automatically quantifying cellularity in histological samples of rat Achilles tendons. We hypothesized that we would identify a single methodology that provides accuracy and precision suitable for subsequent investigative work. We developed 6 analytical methods with FIJI (ImageJ) using previously collected hematoxylin and eosin-stained tendon images. Tendon samples were stained, imaged, and analyzed.

The accuracy and precision of each was assessed by comparing semi-automated counts to manual counts, with a perfect accuracy score being 1 and most precise method having a SD of 0. The split color channels method (F) had an accuracy closest to 1 (1.02 ± 0.38). The color deconvolution method (B) was the most precise method (0.90 ± 0.13). Determining both an accurate and precise method for cell quantification is crucial for understanding the structural composition of tendons. We identified that method B achieved the highest precision while remaining very accurate. Future work will utilize method B on samples collected at various stages post injury to understand changes in cellularity throughout the injury and healing process.

**Yin, Ethan**
University of Oregon
Mentor(s): Stephanie Wiley
Poster #35

## The process is the punishment, A Study on Plea Bargaining in the Lane County Criminal Justice System

Plea bargaining in the American criminal justice system has become a shortcut to convictions with major implications as nearly every criminal case is resolved through this process. My primary research question is how does the plea bargaining system operate in the Lane County, Oregon criminal justice system? The main method of data collection involved eleven qualitative interviews with local public defenders and district attorneys which were recorded and then transcribed. This research will attempt to provide insight into the plea bargaining process as well as how the system affects various groups and populations. The process of plea bargaining in Lane County reveals areas of agreement around certain flaws of the system and disagreement between the opposing sides with a major point of contention around coercion and the gravity of prosecutorial discretion. While there are limitations, this project has the potential to advance understanding of the closed-door bargaining process and guide reform on the most prominent issues.

**Young, Patricia (Trish)**
University of Oregon
Mentor(s): Katelyn McDonough, Joan Spencer
Gallery Room

## Weaving History: An Anthropological Perspective on PNW Quilting & Femininity, 1930s & Today

This quilt is a representation of 99 letters from farmwives of the Great Depression. Based on a sampler pattern book, the quilt largely uses pre-owned scrap fabric and incorporates modern materials and tools (cottons and a modern sewing machine) with methods and styles that have been in use for decades (piecing

a quilt top, choosing colors that represent people or events in the maker's life). As part of my CHC honors thesis, I made this quilt in tandem with a study on the connection between quilting and femininity in the Pacific Northwest both in the 1930s and 2020s. Each block represents something different and each has its own unique name and color combination.

**Zarate, Rilynn**
University of Oregon
Mentor(s): Dylan Wood
Poster #1

## How to Tie a Wood Knot

Co-Author(s): Dylan Wood

Woods anisotropic nature can lead to defects in lumber creating a curvature that is typically avoided or prevented via odd numbers of cross laminations. This actuation is activated by fluctuations in moisture content within the wood cells leading to a shrinking and swelling motion that does not require additional energy. Laminating two layers of wood veneer, one dry (passive layer) and one with a high moisture content (active layer), creates a predictable, strong, and scalable self-actuating curvature. This study sought to choreograph these wood bilayers to self-tie into a knot by honing the 2D geometry used to laser cut veneers prior to the lamination process. Programable actuation is well studied, but choregraphing wood to tie a knot is difficult due to natural inconsistencies in the material and challenges with digital simulation of a knots bending and torsion action. Actuation speed was found to be controllable by varying width of bi-layers that resulted in several wood knots. The increase in elasticity of the veneer in its final curved form opens new possibilities for improving the performance of wood products by taking advantage of woods "physical intelligence". With such complex single curvature being possible without needing high energy steam bending, combined with the scalability of the process from veneer to wood boards, this method could be applied to organic furniture, high performance CLT wall panels, or deployable building cladding systems and beyond.

**Zawacki, Tyler**
University of Oregon
Mentor(s): Katelyn McDonough, Richie Rosencrance
Oral Panel Delving Deeper

## Late Holocene Toolstone Use and Group Mobility at the Connley Caves, Oregon

This research investigates patterns of hunter-gatherer mobility based on the identification and analysis of late Holocene arrow points from the Connley Caves archaeological site in central Oregon. Looting and expedient excavation in the 1960s left the late Holocene upper deposits of the Connley Caves that contained

arrow points highly disturbed. Because projectile points are time diagnostic, this research thus addresses the gap in knowledge concerning site use during the last 2000 years. To investigate these patterns, each arrow point collected through excavation at the Connley Caves was identified using the Monitor Valley Key, and the obsidian from which they are composed was sourced. This was done using an X-ray fluorescence spectrometer, which determined the geochemical signature of the obsidian and matched it to the origin of its procurement. Previous research in the region suggests that following the introduction of the bow and arrow (~2000 years ago), human groups increased the frequency and distance of their movement to procure resources. I hypothesize that late Holocene arrow points from the Connley Caves should then exhibit a higher average transport distance and a greater diversity of sources than dart points that preceded bow and arrow technology. Primary findings suggest that late Holocene inhabitants of the Connley Caves procured toolstone from primarily local sources (<20 km), likely due to the high concentration of obsidian flows within the local radius.

**Zupo, Declan**
University of Oregon
Mentor(s): Emily Scott
Works in Progress: Lightning Rounds

## Towards A Second Oregon Experiment

The Oregon Experiment was written by architect Christopher Alexander as a response to the exponential growth of students at the University of Oregon in the late 1960s. Alexander writes at the intersection of theory and design, proposing a radical alternative to a master plan that would democratize the university spatially and expand student involvement. This research seeks to revitalize Alexander's work and bring it into conversation with the privatization and neoliberalism that has drastically transformed our campus since its publishing. To accomplish this comparative analysis, a literature review encompassing the movement toward the commodification of knowledge and away from state funding in the American University is necessary. A contextualist reading of The Oregon Experiment will provide a holistic understanding of the tenets Alexander outlines and assist in their application to our current moment. Institutionally, a revitalization of Alexander's ideas may offer a foothold for student voices in contentious issues such as the East Campus Development Plan and the Climate Action Plan at University of Oregon. More broadly, this examination seeks to identify how ideology is manifested in the built environment and to consider the ramifications of increasingly private interests in universities.