



2023

**UNDERGRADUATE  
RESEARCH SYMPOSIUM  
EVENT PROGRAM**

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2023

# UNDERGRADUATE RESEARCH SYMPOSIUM

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# The Research University Open House

May 25, 2023

## Welcome to the 13th Annual Undergraduate Research Symposium!

As a top-tier liberal arts and sciences research institution, discovery and inquiry 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 witness the promise and impact of their ideas and work for society.

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 12 years the symposium has hosted 3,840 student presenters and 1,043 research mentors.**

Despite the continuing recovery from the profound disruptions to research and creative work experience by students and faculty over the past three years, we are inspired to celebrate the work of 454 presenters and their 307 research mentors at the 2023 symposium. We also wish to acknowledge the unprecedented number of 70 graduate student mentors this year.

The 357 presentations encompass all eight colleges and schools, the Phil and Penny Knight Campus for Accelerating Scientific Impact, 67 majors, 65 minors, and 27 institutes and centers. A record 233 presenters received funding to support their research and creative work from 69 different sources.

In response to the pandemic we shifted to a virtual symposium in 2020 and 2021 allowing 667 students to continue to present their research and creative work with expanded reach to families, alumni, donors, and the community. This opportunity to record these presentations catalyzed the creation of a permanent digital exhibit of UO undergraduate research. The [symposium YouTube channel](#) is currently curating more than 1,000 research presentations.

This year the symposium proceeds with a hybrid format to accommodate 341 students choosing to present in-person in the EMU, Allan Price Science Commons and Research Library, and Aasen-Hull Hall in the School of Music and Dance, and 16 preferring virtual presentations. The reach of the symposium continues to expand through the hybrid platform, creating new avenues for engagement with families, friends, alumni, donors, high school students and teachers, and community members who have traditionally been unable to participate in the on-campus event.

In the spirit of an open house, the symposium is privileged to partner with the Student Academy to Inspire Learning (SAIL), which has developed a robust pre-college collaboration day, including a welcome ceremony, interactive sessions with poster presenters, lab and studio visits, campus tour, and panels with undergraduates. SAIL will host 120 high school students and their teachers at the event this year.

Our community college network grew this year as well, and we anticipate hosting more than 25 presenters and attendees from Central Oregon Community College, Lane Community College, and Umpqua Community College. The UO Alliance for Diversity in Science and Engineering and the Center for Science Communication Research will host discussion panels on research funding and STEM careers with outreach to transfer students.

The UO Ronald E. McNair Scholars Program is also partnering with the symposium to host visiting McNair Scholars from Southern Oregon University and University of California San Diego.

The Symposium and its campus partners will also offer more than 60 presenter awards totaling nearly \$16,000.

We welcome visitors from far and near and hope that this showcase of undergraduate research and creative work can inspire hope, curiosity, innovation, and exploration. Our alum keynoter this year exemplifies this spirit. Manju Bangalore earned her BS from the UO in 2018 with a physics major and math minor. She is a physicist, actor, model, poet, and the founder of two nonprofits, **Operation Period** and **Painting With Parkinson's**. During her undergraduate career, Manju worked at two NASA centers, Marshall Space Flight Center, and Johnson Space Center, on propulsion and the cockpit displays for the Orion spacecraft, as well as in the White House under President Obama on science policy. In October 2022, Manju was crowned Miss Oregon USA and will represent her state at Miss USA in 2023.

We hope you can visit our open house and explore the research university through the research, scholarship, and creative work of our undergraduates.

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



**Kevin Hatfield**

Chair, Undergraduate Research Symposium Planning Committee



The University of Oregon is an equal-opportunity, affirmative-action institution committed to cultural diversity and compliance with the Americans with Disabilities Act. This publication will be made available in accessible formats upon request. Accommodations for people with disabilities will be provided if requested in advance by emailing [ugresearch@uoregon.edu](mailto:ugresearch@uoregon.edu).

# LAURE

UO Libraries' Award  
For Undergraduate  
Research Excellence

## Congratulations on your research project!

Now you have a chance to explain and win an award based on your research experience with the **Research Process & Scholarly Growth Essay**.

**\$1,500**  
Award

UO Libraries' Award for Undergraduate Research Excellence recognizes **students who demonstrate excellent library research skills and high-quality academic work.**

LAURE winners will receive a monetary award of \$1,500. Project submissions can include:

- \* Single term papers and projects from a 200-level or above course
- \* Theses or multi-term papers and projects
- \* Group paper or project

An equal-opportunity, affirmative-action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.

**Due Annually**  
June 15, 2023



To learn more,  
visit [bit.ly/uo-laure](https://bit.ly/uo-laure) or  
email [nancyc@uoregon.edu](mailto:nancyc@uoregon.edu)



**Libraries**



## Alliance for Diversity in Science and Engineering

Alliance for Diversity in Science and Engineering is a nationally recognized undergraduate and graduate student organization at the University of Oregon that serves to provide professional development opportunities for underrepresented minorities in STEM and allies as well as to disseminate scientific knowledge to the greater Oregon community.

**Previous Events:**

Science Communication workshop & seminar series, Diversity in the Sciences seminar series, Lane Community College workshops and tours, STEM Careers and graduate student panels, elementary school outreach.

### Research and Funding Opportunities Panel

EMU Diamond Lake Room  
25 May 2023, 2:30 – 3:30 PM

New to the University of Oregon or thinking of transferring? Join us to learn about the different programs designed to promote your success throughout undergrad and beyond!



**Stacey York**  
KCGIP & Oregon  
Pathways to Industrial  
Research Careers



**Karl Reasoner**  
Undergraduate  
Research Opportunity  
Program



**Ian Winbrock**  
Science Communication  
Research Program  
Lead



**Bryan Rebar**  
Associate Director STEM  
Careers through Outreach,  
Research, and Education

### STEM Career Panel

EMU Diamond Lake Room  
25 May 2023, 3:30 – 4:30 PM

Looking for perspective post graduation? Join recent UO alumni to learn about their career pathways in STEM!



**Thaís de Faria**  
Ph.D. UO 2022  
Chemist @ Thermo  
Fisher, Eugene OR



**Karly Knox**  
M.S. KCGIP 2022  
Polymer Scientist @  
Lawrence Livermore  
National Lab



**+ MORE**  
B.S. alumni from the  
School of Journalism



**@uoadse**  
Learn more about ADSE!



## Agenda Overview

Visit our [schedule web page](#) for full symposium schedule. Visit our [symposium home page](#) for full schedule with oral presentation, creative work, and poster locations for the EMU, Alan Price Science Learning Commons and Library, and Aasen-Hull Hall, as well as presenter names and abstract titles.

### May 25

7:00 a.m.	Individual poster presentation videos released for viewing on the <a href="#">YouTube channel</a>
8:00 a.m.	Symposium Welcome Video: Remarks from Interim Provost and Executive Vice President Janet Woodruff-Borden and Vice President for Research and Innovation Anshuman (“AR”) Razdan on the <a href="#">YouTube channel</a>
9:30 a.m.-noon	SAIL Pre-College Collaboration Day
9:00-10:30 a.m.	Concurrent Sessions
10:45 a.m.-12:15 p.m.	Concurrent Sessions
12:15-1:15 p.m.	Keynote Reception: Manju Bangalore, Alum Keynote Speaker
1:15-2:45 p.m.	Concurrent Sessions
3:00-4:30 p.m.	Concurrent Sessions
4:30-5:30 p.m.	Poster Session 1
5:30-6:30 p.m.	Poster Session 2
6:30-9:30 p.m.	Creative Work Session

### May 28

All remote presentation videos will be available on the symposium [YouTube channel](#) as an ongoing digital exhibit of undergraduate research and creative work. Videos are organized into thematic playlists and are keyword searchable.



# Alumni Keynote Speaker

## Manju Bangalore Journey to the Stars

**Thursday, May 25, 2023, 12:15-1:15 p.m., EMU Redwood Auditorium**  
**Also available on the [symposium YouTube channel](#)**

In a world telling us we must stay in one lane, Manju will explore what it means to be a multi-hyphenate. As a physicist and aspiring astronaut, actor, model, nonprofit founder, and Miss Oregon USA 2023, Manju has found strength in her multiple careers and hopes to leave others with a sense of inspiration and motivation to live without limits and reach for the stars too.

Since dreaming about becoming an astronaut when she was a child, Manju has worked at two NASA centers and in the White House. She is now enrolled in a postgraduate program training her to go to space one day. In addition to her scientific accomplishments, her acting and modeling careers have taken her from working with Beyoncé to shooting with *Sports Illustrated*. She is most inspired by the work of her nonprofit [Operation Period](#).



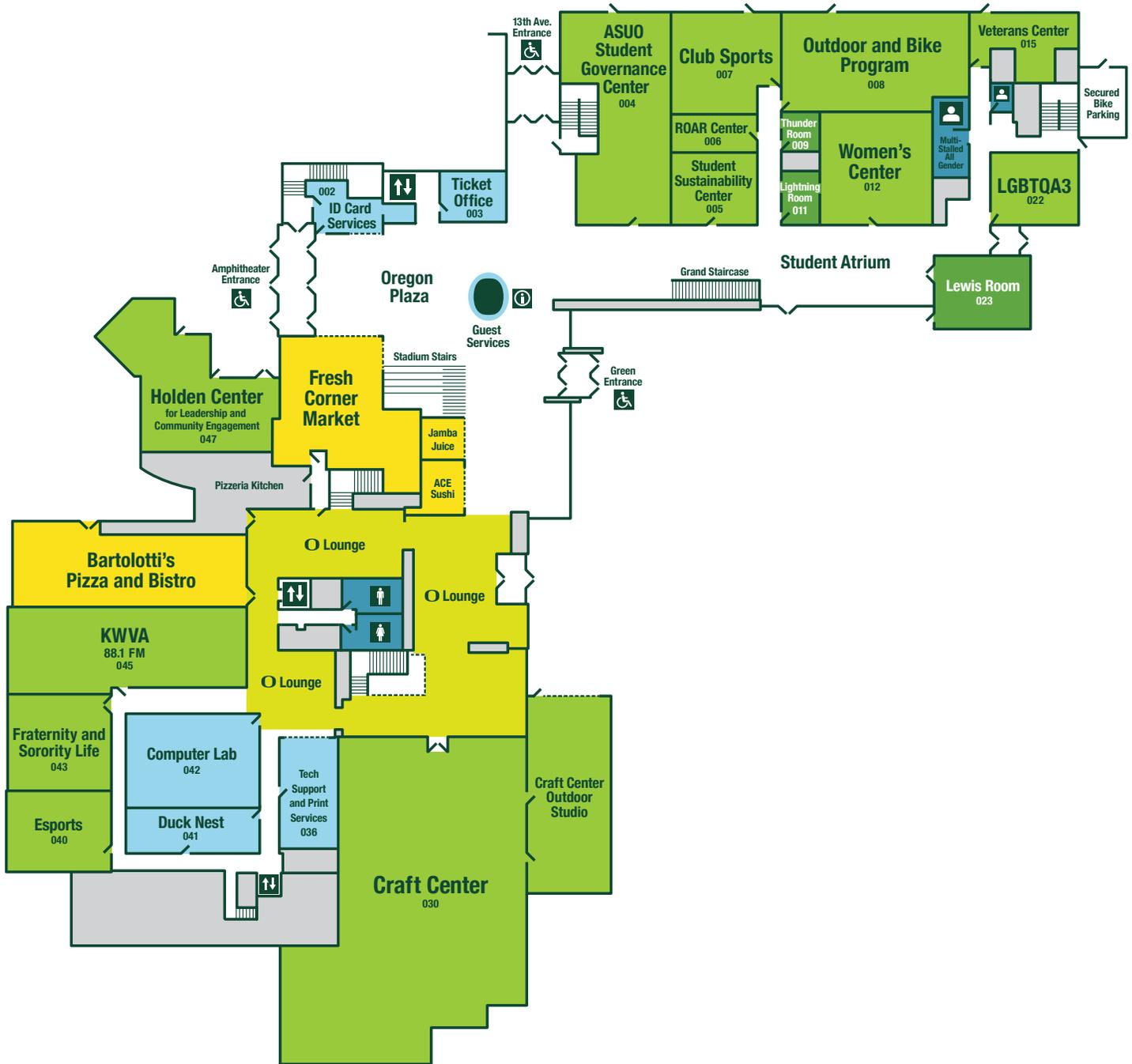
**Manju Bangalore**

# Symposium Locations

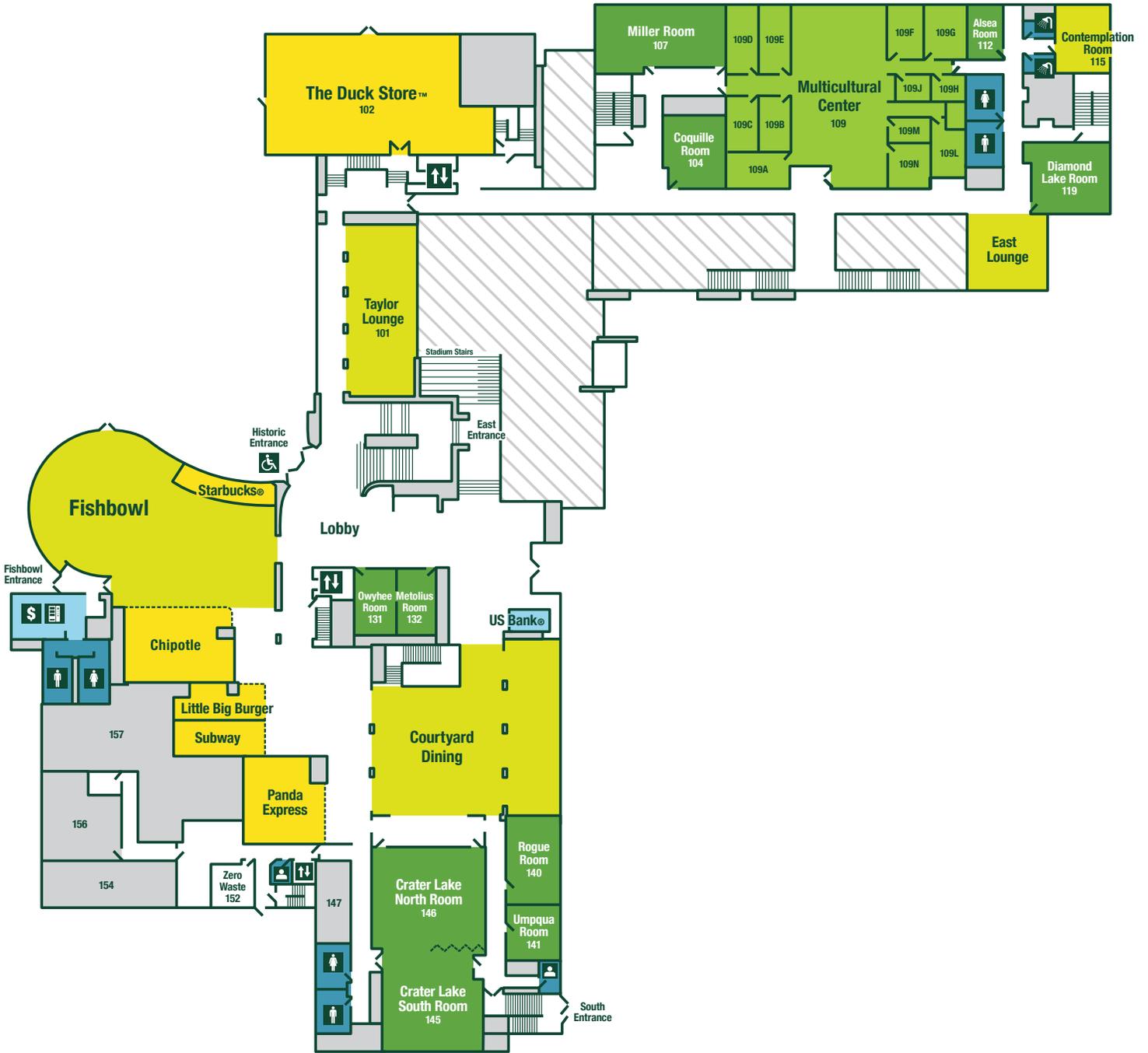


- A** Aasen-Hull Hall
- EMU** Erb Memorial Union
- P** Price Science Library

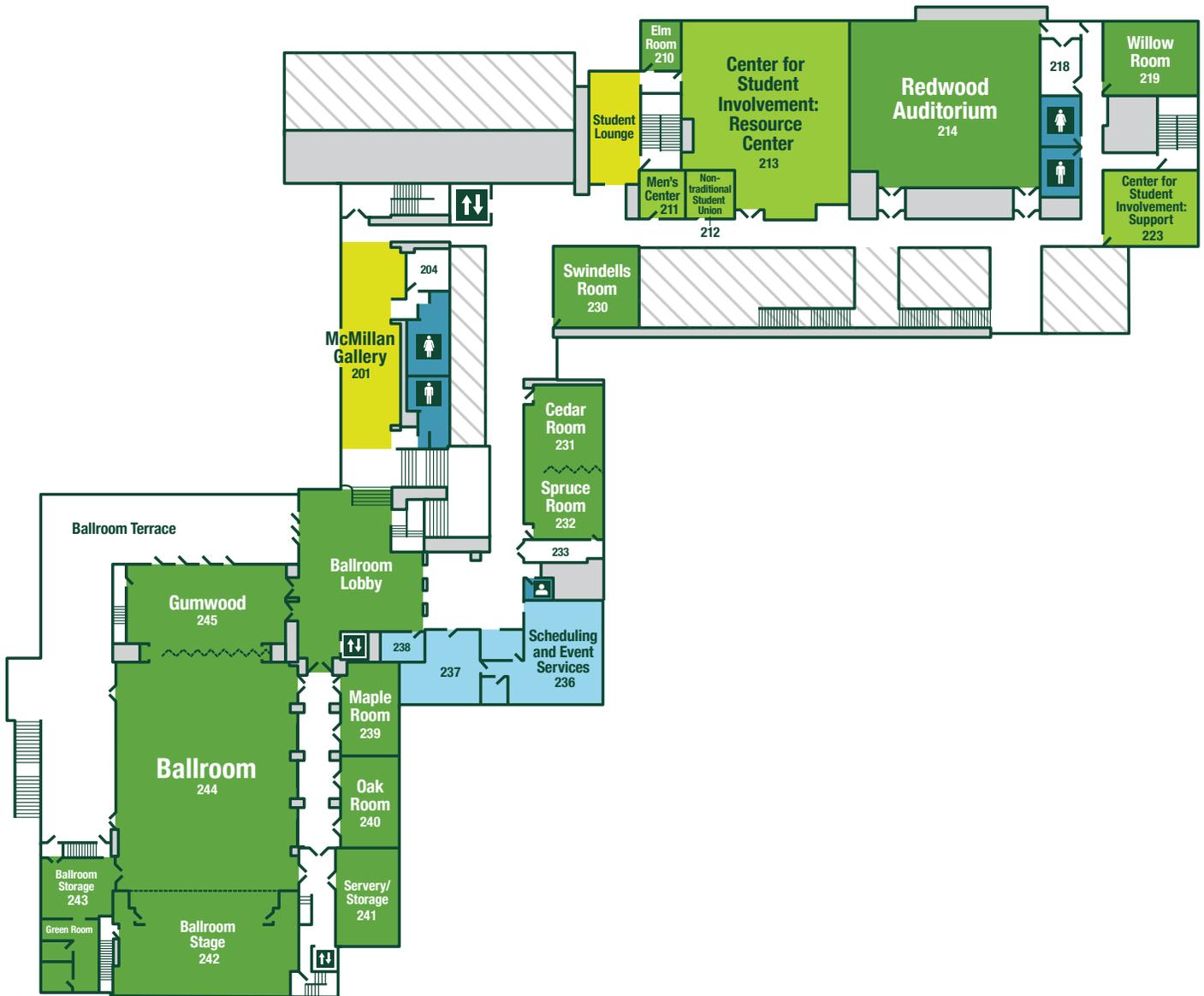
# Erb Memorial Union Ground Floor



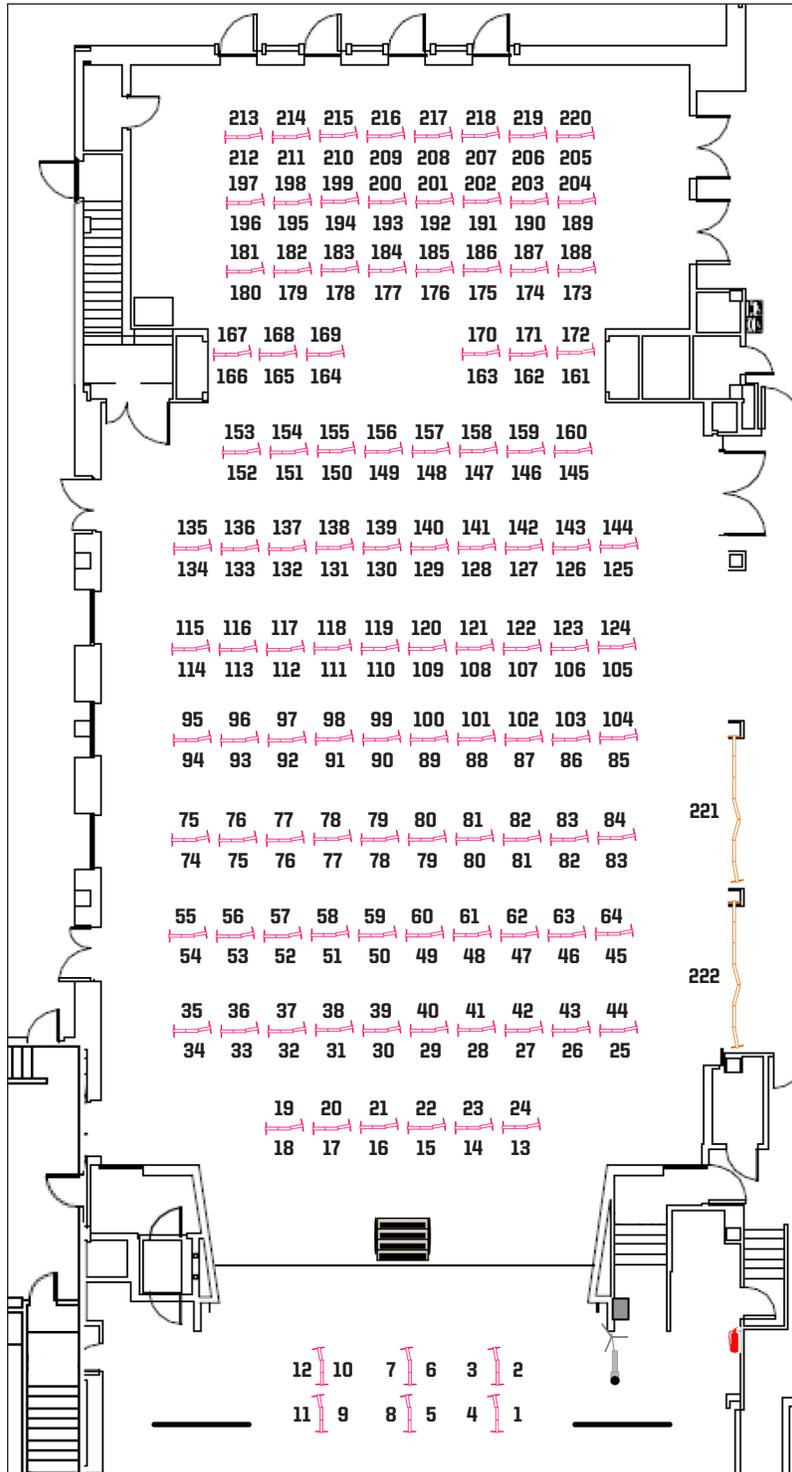
# Erb Memorial Union Level One



# Erb Memorial Union Level Two



# Erb Memorial Union Ballroom





# Acknowledgements

## Sponsors

Division of Undergraduate Education and Student Success

Center for Undergraduate Research and Engagement

Office of the Vice President for Research and Innovation

Institute of Neuroscience

University Housing

University of Oregon Libraries

Robert D. Clark Honors College

Ronald E. McNair Scholars Program

Undergraduate Research Opportunities Program

We wish to recognize the University of Oregon Libraries, the Institute of Neuroscience, and the Robert D. Clark Honors College for funding the printing of all 242 presenter posters.

## Undergraduate Research Symposium Planning Committee

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### **Charlie Litchfield**

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## Special Thanks

### Joe Black

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Multicultural Academic Counselor and ADPI Retention Specialist, Center for Multicultural Academic Excellence (CMAE)



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 25 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.

[sail.uoregon.edu](https://sail.uoregon.edu)



## 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.

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## Presenter Profile

Total presentations.....	357
Total presenters.....	454
Total faculty mentors .....	307

## All Colleges: Major and Minor Programs Represented

Colleges .....	8
Campuses .....	2
Majors.....	67
Minors.....	65

## Institutional Profile

UO–FTFT students .....	349
UO–Transfer students.....	49
UO–First Generation .....	73
ARC students (former and current).....	97
Lane Community College students .....	4
Umpqua Community College students .....	3
Souther Oregon University (McNair) .....	5
Univ. of California San Diego (McNair).....	2

## Class Standing

First-year (0-44.99 credits) . . . . .	50 (11%)
Sophomores (45-89.99 credits) . . . . .	54 (12%)
Juniors (90-134.99 credits) . . . . .	118 (26%)
Seniors (≥135 credits) . . . . .	232 (50%)

## Presentation Type

Poster . . . . .	242 (68%)
Oral . . . . .	79 (22%)
Creative works . . . . .	31 (9%)
Works in progress . . . . .	5 (1%)

## Research Area by Presentations

Natural/physical sciences . . . . .	189 (53%)
Social science projects . . . . .	118 (33%)
Humanities projects . . . . .	39 (11%)
Fine/performance arts projects . . . . .	11 (3%)
Design . . . . .	1 (<1%)

## UO Major and Minor Programs Represented by College

### College of Arts and Sciences

<b>Majors . . . . .</b>	<b>44</b>
Human Physiology . . . . .	39
Psychology . . . . .	36
Biology . . . . .	32
Environmental Science . . . . .	25
Anthropology . . . . .	24
English . . . . .	24

Neuroscience . . . . .	22
Biochemistry . . . . .	21
Environmental Studies . . . . .	20
Physics . . . . .	19
Political Science . . . . .	18
Multidisciplinary Science . . . . .	13
Chemistry . . . . .	12
History . . . . .	10
Spanish . . . . .	9
Marine Biology . . . . .	8
Global Studies . . . . .	6
Mathematics . . . . .	6
Sociology . . . . .	6
Theater Arts . . . . .	6
Cinema Studies . . . . .	5
Economics . . . . .	5
Linguistics . . . . .	5
Exploring . . . . .	4
Folklore and Public Culture . . . . .	4
Women’s, Gender, and Sexuality Studies . . . . .	4
Computer Science . . . . .	3
Data Science . . . . .	3
Pre-Global Studies . . . . .	3
Mathematics and Computer Science . . . . .	3
Asian Studies . . . . .	2
Comparative Literature . . . . .	2
Earth Sciences . . . . .	2
French . . . . .	2
General Social Science . . . . .	2
General Science . . . . .	2
Geography . . . . .	2

Humanities . . . . .	2	History . . . . .	4
Indigenous, Race and Ethnic Studies . . . . .	2	Philosophy . . . . .	4
Romance Languages . . . . .	2	Chinese . . . . .	3
Classics . . . . .	1	Criminology . . . . .	3
Japanese . . . . .	1	Economics . . . . .	3
Medieval Studies . . . . .	1	English . . . . .	3
Philosophy . . . . .	1	Ethnic Studies . . . . .	3
<b>Minors . . . . .</b>	<b>51</b>	Physics . . . . .	3
Chemistry . . . . .	40	Arabic Studies . . . . .	2
Biology . . . . .	21	Climate Studies . . . . .	2
Global Health . . . . .	19	Computer Information Technology . . . . .	2
Spanish . . . . .	17	Digital Humanities . . . . .	2
Creative Writing . . . . .	16	Folklore and Public Culture . . . . .	2
Psychology . . . . .	10	Forensic Anthropology . . . . .	2
Writing, Public Speaking and		French . . . . .	2
Critical Reasoning . . . . .	10	Global Service . . . . .	2
Geography . . . . .	9	Latinx Studies . . . . .	2
Biochemistry . . . . .	7	Theater Arts . . . . .	2
Environmental Studies . . . . .	7	Women’s, Gender and Sexuality Studies . . . . .	2
Food Studies . . . . .	7	Classical Civilization . . . . .	1
Anthropology . . . . .	6	Commerce and Society . . . . .	1
Earth Sciences . . . . .	6	Global Studies . . . . .	1
Mathematics . . . . .	6	Interdisciplinary Cognitive Sciences . . . . .	1
Computer Science . . . . .	5	Judaic Studies . . . . .	1
Disability Studies . . . . .	5	Korean . . . . .	1
Ethics . . . . .	5	Latin American Studies . . . . .	1
Political Science . . . . .	5	Middle East–North African Studies . . . . .	1
Sociology . . . . .	5	Native American and Indigenous Studies . . . . .	1
Black Studies . . . . .	4	Scandinavian . . . . .	1
		Southeast Asian Studies . . . . .	1

**Robert D. Clark Honors College**

**Students** ..... 122

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

**Minors** ..... 1

Bioengineering ..... 3

**College of Education**

**Majors** ..... 4

Family Human Services ..... 5

Communication Disorders and Sciences ... 4

Curriculum and Teaching (UO Teach) ..... 1

Educational Foundations ..... 1

**Minors** ..... 2

Special Education ..... 1

Leadership + Administrative Skills ..... 1

**College of Design**

**Majors** ..... 6

Planning, Public Policy and Management ... 2

Pre-Planning, Public Policy  
and Management ..... 3

Architecture ..... 2

Art ..... 2

Art and Technology ..... 1

Landscape Architecture ..... 1

**Minors** ..... 4

Art ..... 5

Planning Public Policy and Management ... 4

Art History ..... 1

Nonprofit Administration ..... 1

**School of Music and Dance**

**Majors** ..... 3

Dance ..... 1

Music ..... 3

Music Performance ..... 1

**Minor Programs** ..... 4

Audio Production ..... 2

Music Technology ..... 2

Dance ..... 1

Music ..... 1

**School of Journalism and  
Communication**

**Majors** ..... 7

Journalism: Public Relations ..... 2

Journalism ..... 7

Journalism: Advertising ..... 6

Journalism: Media Studies ..... 3

Pre-Journalism: Media Studies ..... 1

Pre-Journalism: Public Relations ..... 1

Pre-Journalism ..... 3

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Science Communication ..... 13

Media Studies ..... 2

## Lundquist College of Business

### Majors ..... 2

Business Administration ..... 4

Pre-Business Administration..... 6

### Minor Programs..... 4

Business Administration .....12

Entrepreneurship.....2

Sustainable Business .....2

Sports Business.....1

### Minors ..... 3

Business Administration .....4

Entrepreneurship.....2

Sports Business.....2

## School of Law .....1

### Minor Programs.....1

Legal Studies.....7

## Research Centers and Institutes

Bowerman Sports Science Center ..... 10

Center for Global Health.....2

Center for High Energy Physics (CHEP) .....3

Center for Science Communication

Research .....2

Center for Translational Neuroscience.....1

Early Dual Language Development Lab .....1

Environmental Leadership Program.....1

Glacier Lab.....1

Global Health Biomarker Lab.....2

Hallett Lab.....1

Institute of Fundamental Science.....2

Institute of Ecology and Evolution.....19

Institute of Molecular Biology .....14

Institute of Neuroscience .....19

Institute of Theoretical Science .....3

Lewis Center for Neuroimaging .....1

Materials Science Institute .....3

Oregon Center for Optical, Molecular, and

Quantum Science.....3

Oregon Center for Electrochemistry .....2

Oregon Humanities Center.....7

Oregon Institute of Marine Biology.....5

Phil and Penny Knight Campus for

Accelerating Scientific Impact..... 30

Pine Mountain Observatory.....1

Prevention Science Institute .....2

Soil, Plant, Atmosphere Research Lab.....1

Stress Neurobiology and Prevention Lab ....1

Wu Tsai Human Performance Alliance.....1

## Sponsored/Funded Research Sources

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American Society of Mass Spectrometry

Undergraduate Travel Award .....1

Andrew Mellon Foundation Summer

2022 Ice and Environmental Justice

Undergraduate Research Award.....1

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Baja Basins International Research Experiences for Students . . . . .	1	Laboratory of Epidemiology and Research on Cardiovascular diseases . . . . .	1
Bernice Callison Scholarship . . . . .	1	Latinx Studies Experiential Learning Fellowship . . . . .	2
Brenda McGowan Grant . . . . .	1	LeapFrog Design . . . . .	1
Center for Science Communication Research . . . . .	1	Mellon Foundation . . . . .	1
Clark Honors College Mentor Research Program Funds . . . . .	2	Merle S. and Emma J. West Scholarship . . . . .	1
College of Arts and Sciences Continuing Student Scholarship . . . . .	1	Meyer Memorial Trust . . . . .	1
CURE Conference Travel Award . . . . .	6	National Institute of General Medical Sciences . . . . .	1
CURE FYRE (First Year Research Experience Fellowship) . . . . .	7	National Institutes of Health– National Research Service Award (NRSA) Fellowships . . . . .	1
CURE Small Grants Award . . . . .	3	National Institutes of Health (NIH) . . . . .	11
CURE SURF (Summer Undergraduate Research Fellowship) . . . . .	8	National Science Foundation (NSF Research Experience for Undergraduates (REU) . . . . .	7
DucksRISE Research Fellowship (DRRF) . . . . .	24	Noyce MASTERIt Scholarship . . . . .	1
Eunice Kennedy Shriver National Institute of Child Health and Human Development Grant . . . . .	1	O’Day Fellowship in Biological Sciences . . . . .	3
Hui Undergraduate Research Scholars Program . . . . .	1	OHSU Knight Cancer Institute . . . . .	1
Human Physiology Undergraduate Research Stipend Award . . . . .	1	OURS Oregon Undergraduate Researchers in SPUR . . . . .	5
Humanities Undergraduate Research Fellowship (HURF) . . . . .	7	PChem Undergraduate Fellowship . . . . .	1
Jim Oelschlager Scholarship . . . . .	1	Phil and Kim Asmundson . . . . .	1
Just Futures Institute . . . . .	1	PURS (Presidential Undergraduate Research Scholars) . . . . .	7
Kidd Creative Writing Workshops . . . . .	7	Robert and Catherine Miller Foundation . . . . .	1
		Rod Capaldi Biology Scholarship . . . . .	1

Ronald E. McNair Scholars Program.....13  
 Roy F. Jones Memorial Scholarship Fund ....1  
 Science and Memory Fellowship.....1  
 SCORE (Students of Color Opportunities  
 in Research Enrichment) .....1  
 Summer Program for Undergraduate  
 Research (SPUR).....1  
 Sutherland Lab .....1  
 The Gray Family Foundation.....1  
 The Robert and Catherine Miller  
 Foundation.....1  
 Thomas and Lindsey Marriott  
 Undergraduate Research Support Fund .....1  
 Tunisian Ministry of Health .....1  
 Tunisian Society of Endocrinology .....1  
 UnderGrEBES Research Award.....5  
 UO Department of Chemistry.....3  
 UO Environmental Studies Program.....1  
 UO Presidential Scholarship .....1  
 UO Summit Scholarship .....13  
 UO Women in Graduate Science Award .....3  
 UROP (Undergraduate Research  
 Opportunities Program) .....13  
 Ursula Moshberger Scholarship.....1  
 Usher 1F Collaborative .....2  
 Usher Syndrome Society.....2  
 Vice President for Research and  
 Innovation (VPRI) Undergraduate  
 Fellowship ..... 9  
 Wayne Morse Scholarship .....3

Williams Fund .....1  
 World Health Organization.....3  
 Wu Tsai Human Performance Alliance.....5

### **Central Oregon Community College**

#### **Majors**

Psychology.....1

### **Lane Community College**

#### **Majors**

Nursing.....3

Botany.....1

### **Southern Oregon University**

#### **Majors**

Anthropology.....1

English .....1

Environmental Science .....1

Ethnic Studies.....1

Psychology.....2

### **Umpqua Community College**

#### **Majors**

Chemistry.....3

Physics.....1

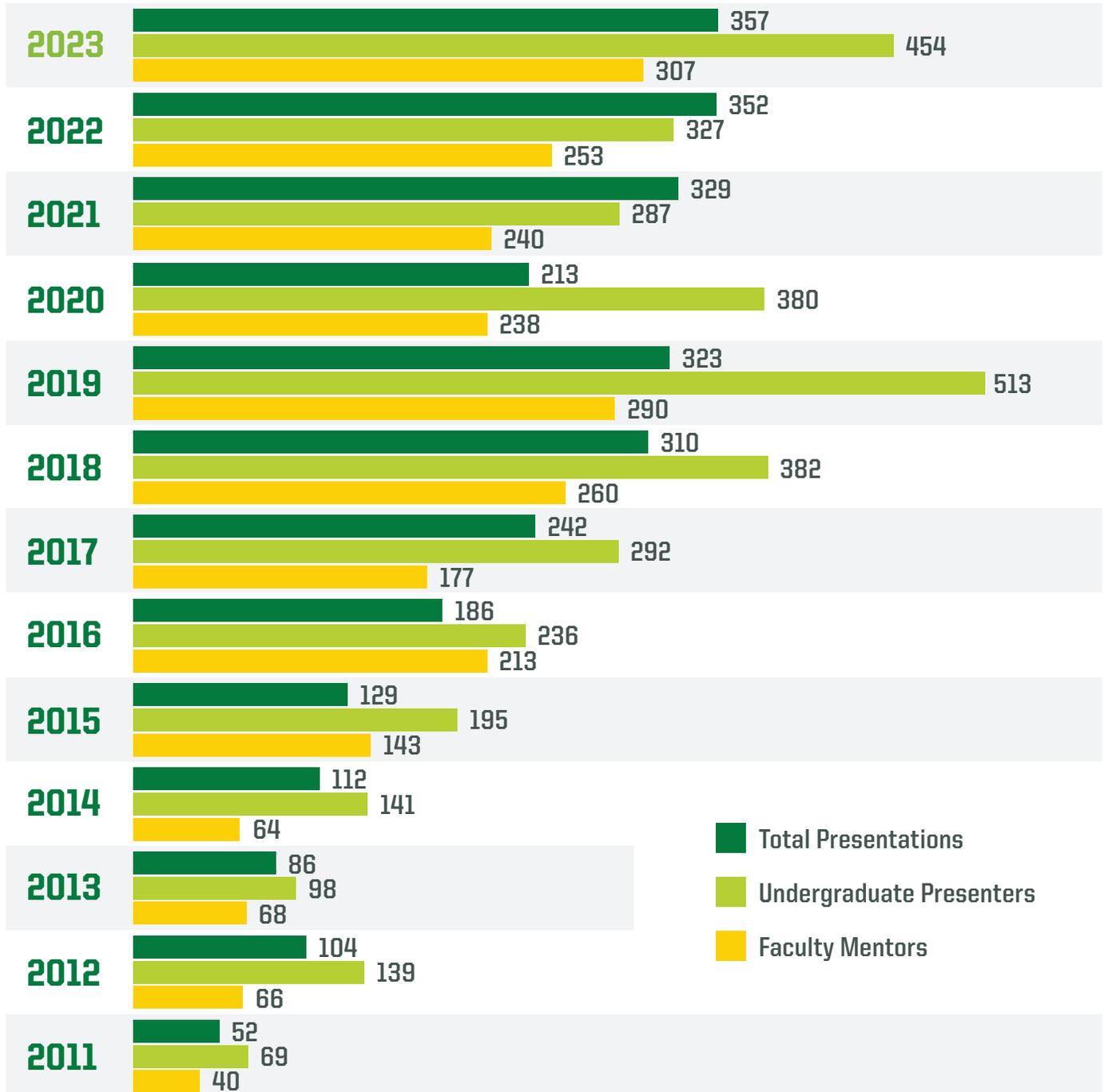
### **University of California San Diego**

#### **Majors**

General Science .....2

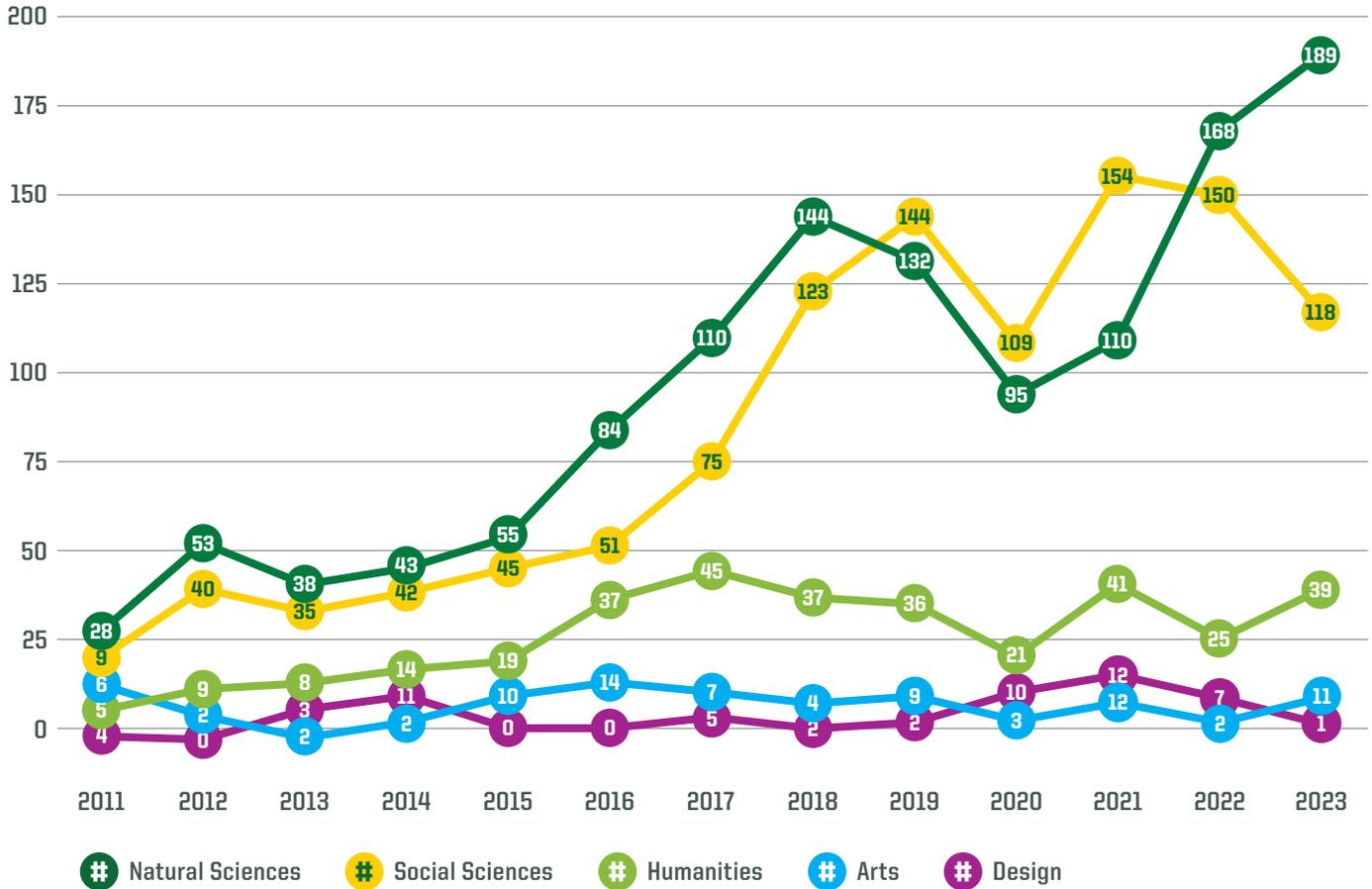


## Total Presentations, Presenters, and Faculty Mentors



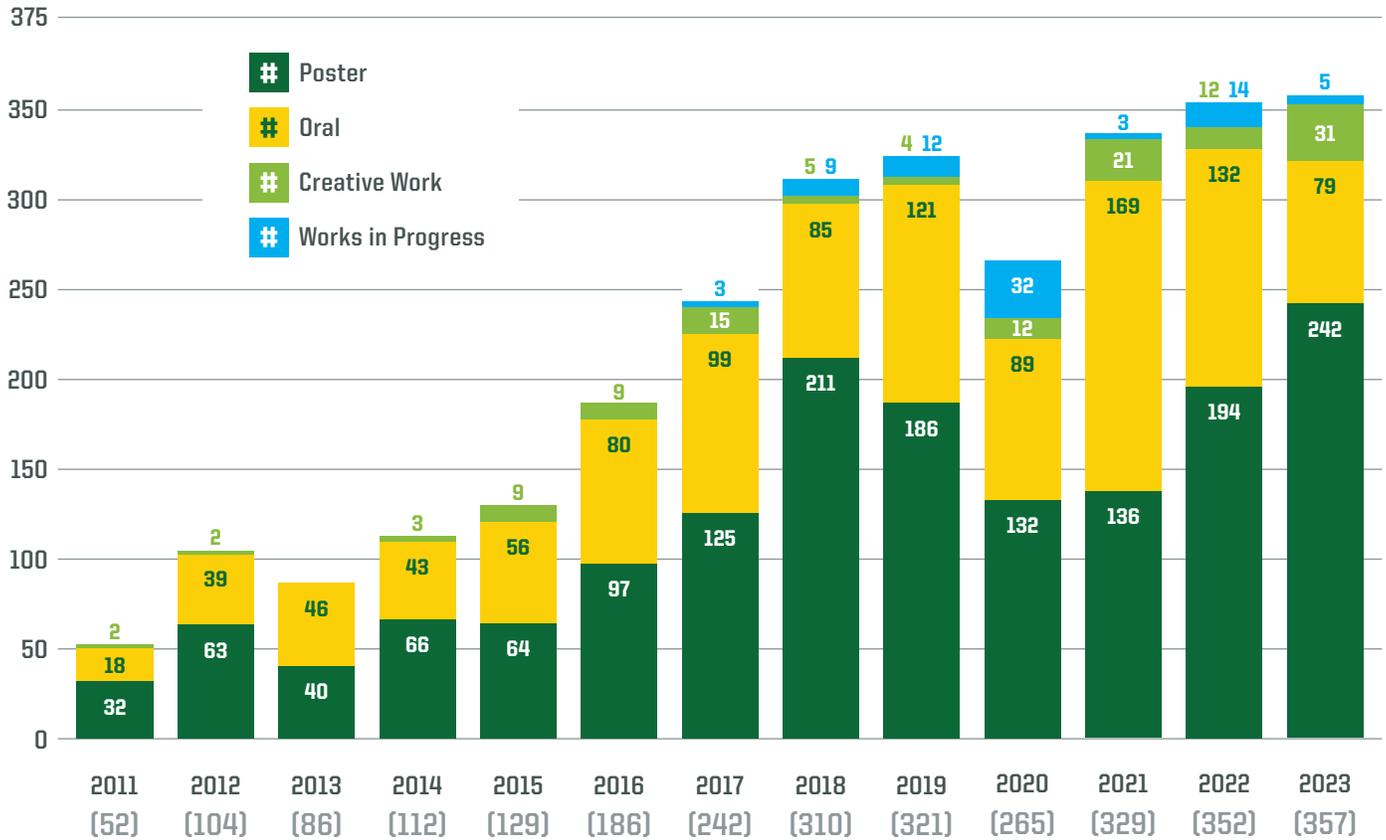


## Total Presentations by Divisional Area





## Total Presentations by Type





## Symposium Presenters

Visit our [schedule web page](#) for full symposium schedule.

(Number following the name is the poster location in the [EMU Ballroom \(see page 12\)](#)).

Ellie A Laufer	Tyee Atkin	Shaun Brazelton #124
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Ian Ahlberg	Sanjana Basak #74	Sadie Byler
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Ashley Christensen  
Adam Clayton  
Nicole Cleland #104  
Olivia Cobb  
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Eleanor Coddling  
Lauryn Cole  
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Connor Cooney  
Celia Cooper  
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Margo Cumming #111  
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Nithi Deivanayagam #111  
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Quaye Dydasco  
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Krysten Elkins  
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Tito Flores-Bautista  
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Emma Matsell #137	Ann Moorhead #197	Mia Owen #110
Sophia Mauelshagen #156	Reyes Morales Warne #92	Raine Padawer
Hana Mazur #8	Hannah Motta	Lawren Paris #50
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Ryan McCarthy	Nicole Mullen	Mystery Parke
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Victoreya McKissick	Sadie Myers	Gabriel Peery #182
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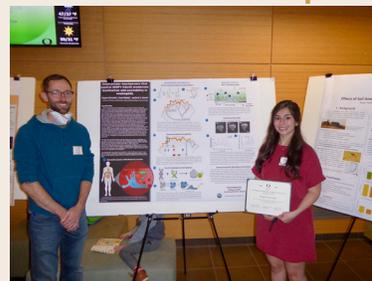
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## Faculty Research Mentor Awards

The Faculty Research Mentor Award 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 Faculty Research Mentor Award is open to all full-time and part-time research and instructional faculty employed by the University of Oregon, which includes tenure related and career faculty, emerit faculty, library faculty, and officers of research, including research assistants, research associates, 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. The awards include a \$2,500 prize, framed certificate, and profiles published in the Symposium Program Book and the Undergraduate Research and Distinguished Scholarships website.

## Faculty Research Mentor Awards

**Nicholas Addington** is deeply committed to the department's new undergraduate summer research program for UO math majors, which is currently funded by an NSF RTG Grant, "Combinatorics, geometry, representation theory, and topology."

Several current and former student recommenders recognized Professor Addington for his innovative pedagogy and developmental mentorship that inspired them to pursue major and career pathways they had not previously considered.

One recommender reflected on how their experience in Professor Addington's "hands-on math lab during my very first term on campus took an experiential approach to learning that allowed us to play around with combining math and code in a self-directed manner. I still remember putting in way more hours than I needed to a Python program that drew fractals just because I thought the assignment was so cool. Later, Dr. Addington stopped me in the hall at Fenton to tell me that he really admired the work I put into his class. As a very new freshman, the encouragement really stuck with me." This recommender also shared that approximately two years later "during the peak of the of the COVID-19 pandemic I was looking to get my feet wet in the world of math research and I contacted Nick to see if he still remembered me from that very first math class I had taken with him. He replied saying he remembered me well and went on to go above and beyond working with me on a summer research project in the field of algebraic geometry full of highlights in my academic career which included proving a theorem together with Nick on a blackboard and sending code snippets back and forth with the researcher who discovered the topic we were working on."

Another thesis advisee shared, "I am incredibly grateful for the massive time investment he has made. With his guidance, I have been able to explore fascinating mathematical topics that would be completely inaccessible otherwise."



**Nicholas Addington**  
**Associate Professor**  
**Department of**  
**Mathematics**

## Faculty Research Mentor Awards

**José Cortez** serves on the Faculty Advisory Committee for the Undergraduate Research Opportunities Program (UROP) in the Office of the Vice President for Research and Innovation. He is also an affiliated faculty member with the Center for Latino/a and Latin American Studies (CLLAS), Digital Humanities, Disability Studies, and Latinx Studies.

Student nominators discussed the bridge from Professor Cortez' dynamic classroom learning environment to working with him on undergraduate research projects.

A former undergraduate mentee of Professor Cortez and current UO graduate student wrote in their nomination, "Small classes can be intimidating. Entering a class for the first time, you never know what you're going to get--how will you measure up? How hard will you be required to work? What will the professor be like? And so on. In my almost five years here at the University of Oregon, one professor has taken these first-day anxieties and made them into dynamic, informative, empathetic, challenging, and deeply thought-provoking classrooms like no other. This would be Professor José Cortez. I have taken five of Dr. Cortez's classes, and each time this classroom transformation occurred. Before, during, and after the height of the pandemic, I might add. The closest academic bonds I have had with peers all trace back to Dr. Cortez's classes. This is due to the combination of non-negotiable respect, openness to being wrong, and willingness to debate that Dr. Cortez institutes and maintains. After having taken three of his classes, Dr. Cortez reached out to me to ask if I would work as a research assistant for his forthcoming book on borders and border patrol. During the fourteen months that I worked for Dr. Cortez, I learned invaluable skills that I have used in every class and job I have had since. Most notably, I learned how to look at a series of historical events and conduct research in a way that enables an understanding of what narratives were and are being told about the subject."



**José Cortez**  
**Assistant Professor**  
**Department of**  
**English**

## Faculty Research Mentor Awards

**Maria Fernanda Escallón**'s current research traces how the declaration of cultural practices of Afro-Latino communities as “intangible cultural heritage of humanity” may further marginalize already vulnerable community members and leave structural racial inequities intact. Professor Escallón was a 2021-22 Wayne Morse Center for Law and Politics Resident Scholar.

Students recommenders cited Professor Escallón's dedication to her mentees' holistic success and wellbeing.

One of Professor Escallón's mentees testified that “she has been instrumental in my success as an undergraduate researcher and aspiring anthropologist. In serving as my faculty mentor for several undergraduate research projects, she has supported my academic and personal endeavors along every stage of my short undergraduate tenure at the University of Oregon, allowing me to develop considerable research experience and helping me win several grants and awards to support my ongoing work. Beyond her academic, professional, and logistical support, she has also proved herself to be a caring and considerate person whose interest in my success and wellbeing extends far beyond the purview of academia. Thanks to Professor Escallón's outstanding mentorship I was able to actualize my dream of conducting serious ethnographic research as an undergraduate anthropologist. Where others said my goals were too ambitious, Professor Escallón encouraged me to shoot for the stars. So I did—and it worked. Shortly before my return to Eugene after three months abroad in the field, Professor Escallón wrote to me: ‘It's been an absolute pleasure reading your work this summer seeing you grow into an ethnographer.’ While the experience was transformative indeed, I could not have done it without her expert mentorship. My future academic and professional career as an anthropologist was built on the foundation of skills, knowledge, and professional and personal ethics that she helped lay down.”



**Maria Fernanda  
Escallón**  
**Assistant Professor**  
**Department of  
Anthropology**

## Faculty Research Mentor Awards

**Laura Jeanty** is a member of the Institute for Fundamental Science specializing in experimental particle physics. Professor Jeanty's group works on the ATLAS experiment at the CERN Large Hadron Collider and she has been a member of ATLAS since 2006.

Her student recommenders acknowledged her confidence-building and inspiring mentorship. One mentee conveyed, "As a first-year physics student, I was initially extremely intimidated by high energy physics and believed that making contributions or working on research in the field as an undergraduate student would be nearly impossible. However, since joining Dr. Jeanty's research group, I have felt a constant sense of support and guidance throughout my research journey. Dr. Jeanty's support and encouragement has helped me to overcome feelings of self-doubt and her mentorship has been particularly meaningful to me as a female undergraduate student in physics, a field that has been historically male-dominated. She has provided a supportive environment where I feel comfortable asking questions and sharing ideas. From the first meeting, she ensured that I would be included in team meetings and discussions, and listened to my interests to develop projects that aligned with my research goals and aspirations. In addition to ensuring my inclusion in her research group meetings, she also connected me to the larger UO ATLAS Collaboration meetings, providing opportunities to learn about the projects and research being undertaken by other groups and graduate students. Dr. Jeanty has also helped me identify and apply to summer research programs, working closely to review and provide feedback on research proposals and write letter of recommendation. I have been able to receive a distinguished summer research award, which would have been impossible without her guidance and mentorship."



**Laura Jeanty**  
**Assistant Professor**  
**Department of**  
**Physics**



## Faculty Research Mentors

### **Jennifer Ablow**

Associate Professor, Psychology

### **Claire Albrecht**

Graduate Student, Physics

### **David Allcock**

Assistant Professor, Oregon Center for  
Optical Molecular & Quantum Science

### **Markus Allgaier**

Postdoctoral Research Scholar, Physics

### **Rose Al-Saadi**

Doctoral Student, Institute of Neuroscience

### **Balamurali Ambati**

Research Professor, Knight Campus

### **Lina Aoyama**

Doctoral Student, The Institute of Ecology  
and Evolution

### **Denicia Aragon**

Doctoral Student, Psychology

### **Paige Arneson-Wissink**

Postdoctoral Scholar, Oregon Health &  
Science University.

### **Pouya Asadi**

Postdoctoral Scholar, Institute for  
Fundamental Science

### **Jessica Atencio**

Graduate Student, Human Physiology

### **Melissa Baese-Berk**

David M. and Nancy L. Petrone Faculty  
Scholar: Associate Professor, Linguistics

### **Kemi Balogun**

Associate Professor, Women's, Gender and  
Sexuality Studies

### **Douglas Banning**

Graduate Student, Darren W. Johnson  
Laboratory

### **Matt Barber**

Assistant Professor, Institute of Ecology and  
Evolution

### **Lina Aoyama Batas**

Graduate Student, Biology

### **Steven Beda**

Assistant Professor, History

### **Jon Bellona**

Senior Instructor I of Audio Production,  
School of Music and Dance

### **Elliot Berkman**

Professor, Psychology

## Faculty Research Mentors

### **Lauren Berny**

Doctoral Student, Prevention Science

### **Aaron Betts**

Graduate Student, Human Physiology

### **Savanah Bird**

Doctoral Student, Institute of Ecology and Evolution

### **Mark Blaine**

Professor of Practice, School of Journalism and Communication

### **Mitchell Block**

Jon Anderson Endowed Chair in Journalism and Communication, Professor in Documentary Studies and Production, School of Journalism and Communication

### **Shannon Boettcher**

Professor, Chemistry and Biochemistry

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## Presentation Abstracts

Visit our [schedule web page](#) for full symposium schedule.

**Abdoulaye, Ismayil**

Umpqua Community College

Research Mentor(s): Sean Breslin

Poster

### **Reliance of Oscillation on Catalyst and Reagent Concentrations in the Belousov-Zhabotinsky Reaction**

Our study aimed to investigate the condition dependence of chemical oscillations in the Belousov-Zhabotinsky (BZ) reaction by manipulating the catalyst and concentration of reagents. The primary objective was to explore how varying the catalyst and reagent concentrations can modulate the chemical oscillations in the BZ reaction. The methods used involved manipulation of catalyst and reagent concentrations and observing the resulting oscillatory behavior of the system. The study aimed to reveal insights into the mechanisms behind these condition-driven oscillations and to demonstrate that the behavior of the BZ reaction can be controlled and manipulated by varying its conditions. The findings could have implications for the development of new chemical systems that exhibit oscillatory behavior and may open up new opportunities for exploring the dynamics of non-equilibrium or oscillatory chemical systems. Overall, the study highlights the potential for manipulating chemical reactions to control their behavior and underscores the need for further research in this area.

**Acker, Riley**

University of Oregon

Research Mentor(s): Dagmar Zeithamova, Troy Houser

Poster

## **Theta Oscillations in Memory Encoding and Retrieval: A Behavioral Experimental Investigation**

Co-Author(s): Troy Houser, Dagmar Demircan

Theta waves are a type of neural oscillation produced in the brain when the neurons in the hippocampus and connected structures synchronize and fire in a rhythmic pattern, producing electrical activity in the frequency range of roughly 3 to 9 Hz. Research has shown that theta waves play a key role in the formation and retrieval of episodic memories, as these oscillations are hypothesized to gate the transfer of information within the hippocampus and surrounding structures. The SPEAR model (Separate Phases for Encoding and Retrieval) proposes that the timing of theta oscillations relative to the presentation of stimuli can affect how that information is encoded and subsequently retrieved. To test this, participants in the study are presented with an image on a computer screen after a manipulated delay following a cue to reset theta phase. Participants are then presented with a subsequent memory test where they recall information about the image. In analysis, the timed delay is related to observed accuracy in the memory test. It is expected that this project will provide evidence that stimulus presented during the peak of a theta cycle is more likely to be remembered than stimulus presented during the trough of a theta cycle. Overall, this research aims to provide evidence for how theta waves support memory processes with implications for how they can be modulated to improve memory function.

**Adair, John**

University of Oregon

Research Mentor(s): Ed Madison

Virtual

## **Love Unbound: Black Fathers Incarcerated and the Family Experience**

Mass incarceration in America has long been known to be a problem, particularly with a majority of the population being Black men. Additionally, it is known the incarceration of a single parent increases the likelihood of a child being imprisoned later in life. This led me to research how imprisoned Black men carry on with their parental duties to both maintain their connection to family

and to keep their children from taking a similar path. The importance of this information can serve as proof that a program designed with the goal of breaking generational incarceration is in fact effective and should be funded for expansion. Due to a lack of funding and access, my method of research consisted of reviewing published academic works involving the subject of Black fathers who were incarcerated or the children of an incarcerated individual. What was found were many challenges that these men face, both within and outside of prison, that cause a disconnect with family and even a return to prison. I also found the most effective means of maintaining a relationship with children, and a lower recidivism rate, is to engage incarcerated Black fathers – and fathers in general – through a program that is based on a theoretical framework. With increased funding, programs like these can further put an end to generational incarceration.

**Adamec, Megan**

**University of Oregon**

**Research Mentor(s): Lisa Munger**

**Poster**

### **How do soundscapes in different areas within the EMU change based on the week of the term?**

The Erb Memorial Union (EMU) is a hub for students on the University of Oregon campus. Many students frequent the EMU as a place to study due to the variety of atmospheres based on location. These different atmospheres vary in lighting, location, and most notably, sound. Sound is a vital part of the environment that impacts study habits of students. For our study, we aim to know how the noise levels in different areas in the EMU change based on the week of the term. We will be stationing ourselves in different locations throughout the EMU, such as leisure areas like the pool tables and study locations like the open tables by restaurants, and recording the noise levels of our soundscape at different times of the day, times in the week, and weeks throughout the term. We will record over an hour of audio recording per week along with field data and pictures to aid our analysis. We predict that as the term progresses and gets closer to midterms, the EMU will increase in activity, but decrease in noise level. This study is designed to investigate the impact of school workload on noise levels in an academic soundscape.

**Aghdaei, Alexander**

University of Oregon

Research Mentor(s): Craig Parsons

Oral Session

### **Explaining The Great Divide: Exploring Causal Pathways of Communist Defection**

Since the fall of the USSR in 1991, the 28 former communist states within and related to the USSR have experienced rapid regime change. Some states entirely abandoned communist rule at the first opportunity of democratic election; while others have chosen to re-elect their communist leaders (with some states maintaining the same leaders to this day). Explaining this huge variance in “communist exit” -- the deposition of communist leadership during a state’s first democratic election -- has long been a salient question in political science, and yet theories attempting to answer this question remain largely at odds with one another. In my study, I develop an integrative model using fuzzy-set Qualitative Comparative Analysis (fsQCA) which will explore the validity of a multitude of factors largely believed to explain communist exit. I look at four conditions which have been noted by field experts as largely influential on communist exit: a high literacy rate, the presence of pre-communist curricular content, high civil-military control, and low ethnic fractionalization. The outcome explained will be a non-majority level of communist parliament seats in a state’s first free election. My study will provide pathways to communist exit and explain qualitatively why some states chose to forego communist rule, and others, to retain it. Additionally, this study will allow for theory comparison between the most notable univariate studies of communist exit in post-communist states.

**Ahlberg, Ian**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

### **Kool-Aid Stains**

It wasn’t my intention to write a story about my relationship with my father. It happened unconsciously and slowly revealed itself as the words slowly changed and permeated through drafts and revision. His voice oozes from this story, more than my own. I enjoyed filling his shoes to try to bring some closure to my childhood. All I ever wanted to do was make him proud.

**Ahlheim, Bella**

University of Oregon

Research Mentor(s): Chantelle Russell

Poster

## **The benefits of resistance training for college students' emotional and physical well being**

Resistance exercise, defined in this study as training for muscular strength and endurance, is crucial for maintaining a healthy lifestyle. To study the benefits of resistance exercise, our group has interviewed current faculty in the UO Department of Physical Education and Recreation. As part of our findings, there is a very clear relationship between a reduction in stress and resistance exercise, as endorphins that reduce stress are released during exercise.

The benefits of weight lifting we found were surprising. According to one of the journals, students that participated in weight lifting had an increase in self efficiency and friendships. This is because students that partook in resistance training were more consistent with their commitment to weight lifting than the students that partook in aerobic exercise, this made it possible for the students to build community and friendships. It is also beneficial for your brain. According to Pete McCal, high strength workouts increase your BDNF levels which increases memory and academic performance. Resistance training is beneficial to not just your physical health but also your relationships, memory, and lifestyle. We did interviews in UO and research about university students to find the importance of resistance training for college students. This information is valuable to UO students because it can enhance their health, relationships, and academic performance, leading to an overall more productive college experience.

**Ahmad, Sarita**

University of Oregon

Research Mentor(s): Dominik Grätz

Poster

## **Rational distraction: The adaptive nature of reliance on external action-relevant information**

Co-Author(s): Dominik Grätz, Ulrich Mayr

As humans age, we experience a slowing of cognitive processing due to the natural neuronal degeneration which is manifested in increased distractibility in older adults. Understanding

interactions between these individuals and their environment can help shed light on the relationship between perceived distractibility and atypical cognition. Does cognitive slowing cause an inability to retain attention or is environmental cue checking a rational response to natural slowing effects in the brain? To test this, we created an eye-tracking paradigm that simulates the attentional differences in older and younger adults within a single sample of participants aged 18-35. Participants complete as many trials as they can of a cognitive task, with monetary incentive. These tasks are changed at random throughout the block, so participants must check cues that tell them which they should be following, thus simulating distractibility. To simulate the difference between individuals with lower and higher cognitive processing speeds, the task is manipulated to increase response time in about half of the trials. The goal is to see if cue-checking rates increase when reaction times are slowed in individuals who have typical cognitive processing. If so, it would lead to the conclusion that the perceived distractibility of individuals with lower cognitive abilities may be adaptive, and not a fault. This is done in an attempt to understand the typical behaviors of those with attentional disorders.

**Aichler, Mars**

**University of Oregon**

**Research Mentor(s): Steven Turrill**

**Creative Work**

### **Aliens by Mars Aichler**

This piece is inspired by the song *Chinese Satellite* by Phoebe Bridgers. When I first heard it, it struck me as a desperate cry to return to wherever the singer came from. It is also inspired by an outsider's struggle to fit in and the curiosity as to whether Earth is even the right place for them in the first place. As someone on the autism spectrum who grew up unaware of my condition until recently, I often felt as if I was different from other people in ways I didn't have words for. I frequently had fantasies of finding a door to another world because surely I would fit better in a fantasy land than Earth, with all its difficult nonsensical rules and people who weren't nice to me because I was "weird." But I've found that there are some delights only found on this planet that would make the choice to leave much less cut and dry than I previously thought.

**Akhouri, Yash**

University of Oregon

Research Mentor(s): Thomas Hahn

Oral Session

### **Living Lady Lawrence Designing for Living Building Challenge Certification: A Case Study of Lawrence Hall at the University of Oregon**

Lawrence Hall at the University of Oregon is aiming to achieve Living Building Challenge (LBC) certification, a green building program promoting sustainable practices. This case study presents challenges and opportunities in designing for LBC certification, including strict standards in seven areas. Sustainable features will include rainwater harvesting, wastewater treatment, a photovoltaic canopy, and non-toxic materials. The renovation prioritizes equitable design with accessible furniture and building access, and educational displays on sustainability. Achieving LBC certification will reduce energy/water use, improve indoor air quality, and increase awareness of sustainable practices. Designing for LBC is a challenging yet achievable goal for academic institutions, and the Lawrence Hall project serves as a model for sustainable building projects.

Keywords: Living Building Challenge, sustainable design, green building, Lawrence Hall, University of Oregon, case study.

**Akpakwu, Kikachi**

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Research Mentor(s): Mellie Lemon

Oral Session

### **Investigation of the Reaction Pathways of Niobium and Selenium in Crystal Structures**

This paper presents a study on the effect of manipulating diffusion lengths and rates for solid-state synthesis of niobium selenide structures. This was investigated through annealing studies of precursors deposited with varying thicknesses of Nb and Se layers. The samples were characterized using x-ray diffraction, x-ray reflectivity, and x-ray fluorescence. Three initial samples targeted different total film thicknesses with the same NbSe<sub>2</sub> composition. These samples were used to create a calibration curve to determine the amount of Nb present in samples from the intensity observed in XRF measurements. The three other samples targeting varying Nb and Se layer thicknesses were explored to see the effect of diffusion lengths on phase formation. These data

showed that the two samples deposited with thinner Nb and Se layers were found to heterogeneously nucleate NbSe<sub>2</sub> at the reacting interfaces. A slower diffusion rate was observed in the film with the thickest Nb and Se layers, and extended annealing was needed to react the dichalcogenide with the remaining elemental reactants. This work is intended to provide fundamental insight into the reaction pathways between elements during solid state reactions.

**Alberon, Kimmy**

**University of Oregon**

**Research Mentor(s): Bernice Cheung, Elliot Berkman**

**Poster**

### **Psychological Well-Being and Goal Prioritization**

**Co-Author(s): Bernice Cheung, Elliot Berkman**

People often work towards several goals at once, but having multiple goals can be a source of distress when people do not know what or how to prioritize. Research has explored what kinds of goals people tend to prioritize, and if psychological well-being influences goal priority. This project investigated the effects of goal characteristics and individuals' psychological distress on goal prioritization. I hypothesized that people would prioritize abstract, intrinsically motivated, and more important goals over concrete, extrinsically motivated, and less important goals. Moreover, the effects of these goal characteristics would be stronger when people experience psychological distress. I analyzed data from a longitudinal study with 241 participants, who rated each of their goals on 31 dimensions. Results from independent samples t-tests show that people were more likely to prioritize goals high on extrinsic motivation, construal level, specificity, and importance, and low on intrinsic motivation. Binomial logistic regressions revealed an interaction effect of social desirability of goals and individuals' stress levels on goal prioritization. People with higher stress levels tended to prioritize goals that were low on social desirability, whereas people with lower stress levels tended to prioritize goals that were high on social desirability. Our findings suggest that individuals' stress levels influence their considerations of social factors when prioritizing their goals.

**Albers, Cora**

University of Oregon

Research Mentor(s): Zachary D. Bush, Diana E. Libuda

Oral Session | Poster

## **Genome-wide mapping and analysis of the transposon landscape of *Caenorhabditis elegans* isolates**

Co-Author(s): Zachary D. Bush, Diana E. Libuda

Transposable elements (TEs) are mobile DNA sequences that can replicate and propagate independently of the host genome. In the model organism *Caenorhabditis elegans*, TEs comprise a significant portion of the genome and their activity is highly regulated to prevent mutations and chromosomal rearrangements. We recently completed de novo genome assemblies for two genetically divergent strains of *C. elegans*, the Bristol and Hawaiian isolates, that are estimated to have diverged 30,000-50,000 generations ago. Utilizing new TE annotation tools, we comprehensively mapped and characterized all known TE families in each genome. Our analyses identified over 18,000 TEs in both the Bristol and Hawaiian genomes and revealed differences in the global TE landscapes of these two isolates. Cross-referencing these TE annotations with single nucleotide variations, we also tracked the movement of unique TE sequences between the Bristol and Hawaiian genomes. While we found that most TEs did not move between the two lineages, we did identify 38 TEs that moved intrachromosomally and 9 TEs that moved interchromosomally. These data demonstrate TE mobility is highly regulated over the large generational divide that separates these isolates. These studies illustrate how TEs and their movement could play a key role in intra-species diversity and contribute to genomic structural variation and gene regulation.

**Aldridge, Kate**

University of Oregon

Research Mentor(s): Peg Boulay

Poster

## **Grizzly Bear Recovery in the Greater Yellowstone Ecosystem**

The grizzly bear (*Ursus arctos horribilis*) is an apex predator in the Greater Yellowstone Ecosystem (GYE) whose role assists with the regulation of over-grazing from ungulate populations while also benefiting vegetation through seed dispersal. Grizzly bears face numerous issues that negatively affect their species. Most of these are anthropogenically caused including habitat loss and

hunting. In the GYE, grizzly bear populations have suffered massive population loss following park management changes in 1967 that resulted in increased conflicts with humans. Grizzly populations have diminished down to about 50% of their historic numbers, however following the efforts of its Recovery Plan implemented and revised by the Department of Fish and Wildlife, the exacerbated population of grizzly bears is slowly reestablishing itself in the Greater Yellowstone area. The reintroduction of grizzly bears in the GYE remains controversial due to misconceptions and opinions relating to the safety of locals near Yellowstone National Park and surrounding human communities. As an integral and historic species to the region, grizzly bears remain prominent.

**Amer, Holly**

**University of Oregon**

**Research Mentor(s): Sydney Katz, Lucas Silva**

**Poster**

### **Fire Impacts on Soil Organic Carbon in the Deschutes National Forest, Oregon**

**Co-Author(s): Sydney Katz**

Climate change is increasing the frequency of wildfires in the Pacific Northwest. Soil is the largest terrestrial store of organic carbon and based on previous studies, climate change-induced wildfires are causing carbon loss in the soil. Since soil properties are extremely variable, it is not well established how prescribed burning affects soil carbon in central Oregon forests. We aim to understand how prescribed burns and natural wildfires influence the different soil organic matter (SOM) pools. We used soil samples from Deschutes National Forest near Sisters, Oregon. Samples were taken from seven different burn locations, to analyze an array of burn severity and location. Five of these locations were prescribed burn sites (2004, 2008, 2010, 2016, 2018). Two locations were from the Milli Fire (2017) in low and high severities, along with an unburned site. At each site, the soil was taken from five points, at three depths of 0-2cm, 2-20cm, and 20-40cm. We separated SOM into particulate organic matter (POM, unstable) and mineral associated organic matter (MAOM, stable). We separated out pyrogenic carbon (PyC, fire-derived carbon of variable stability). We measured pH, which is important for plant growth. We lastly measured soil OC% with an elemental analyzer. Prescribed burns are a tested way to lessen the impact of wildfires by reducing fuels. With our data, we are discussing the potential that prescribed burns are also beneficial to the soil's ability to sequester carbon.

**Anand, Anya**

University of Oregon

Research Mentor(s): Rachel Robinson, Mike Hahn

Poster

## **Ground Reaction Force Variables Across Outdoor Concrete and Bark Running Surfaces**

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

Ground reaction force (GRF) variables are frequently considered regarding running-related injuries. Previous studies demonstrated associations between higher impact-related GRF variables and risk of common running-related injuries. The purpose of this study was to determine the outdoor running surface with the least biomechanical load on the body, through measurements of peak normal ground reaction force (pGRF), vertical average loading rate (VALR), average force, and impulse (IMP) on bark and concrete. It was hypothesized that a bark running surface will yield lower GRF values than a concrete running surface. Fourteen healthy recreational runners completed a 5-mile outdoor run which included uphill, downhill, level ground, concrete, and bark path sections. The mean and standard deviation of pGRF, VALR, average force, and IMP were calculated for 20 steps of bark and 20 steps of concrete for each participant. No significant differences in pGRF, VALR, average force, or IMP were detected between bark and concrete surfaces. This is consistent with previous lab-based studies that evaluated the effect of surface on peak vertical GRF. These observations further demonstrate that VALR, IMP, and average force are unaffected by surface stiffness in real-world outdoor running as well. Therefore, runners who are seeking to reduce impact loading may choose either running surface, as they will yield relatively similar ground reaction forces.

**Anaya-Aguilera, Celina**

University of Oregon

Research Mentor(s): Tannaz Farsi

Creative Work

## **Privilege is Memory to Note**

I mark my pages with what we associate to be letters. These forms present to me as distorted, what do we know about letters? And does its meaning have place in its structure? I will draw this form to speak, not with my mouth, nor with my words, but with my act of writing. These marks on a canvas speak differently from words. I will mark these pages with experience, where my emotions form this

figure before I could think. And within experiencing these writings, I have created a memory. One of knowledge in meaning and my search for understanding.

**Andaluz, Joanna**

**University of Oregon**

**Research Mentor(s): Chantelle Russell**

**Oral Session**

### **Social Media's Effect on Personal Relationships**

It's important to make students at the University of Oregon recognize the impact that social media has on their relationships. As technology evolves, social media and dating apps put a barrier between the way students connect with each other. Engaging with social media too much does more harm than good. In college, students may begin to date online and have accounts on several social media apps. Frequent use of these apps takes away the value of conversation between UO students because they have the option to look at their phones to avoid social situations. In addition, a study in October 2019 conducted by the Pew Research Center found that many Americans are struggling with navigating romantic relationships due to technology-related issues. Dating apps give access to a wider range of people who would not be able to connect with one another if it weren't for these apps. These specific connections monetize extrinsic value, making it harder to develop relationships face-to-face; people focus on how they look online and forget to look beneath the surface. We talked to students around campus regarding their personal opinion on the question: How has social media affected our personal relationships and connections with one another? Especially in college, it's critical to feel like we belong and have a community of people who support us. Cultivating awareness around social media usage has the potential to strengthen relationships amongst students at the University of Oregon.

**Aniefuna, Fedi**

**University of Oregon**

**Research Mentor(s): Emily Simnitt**

**Oral Session**

### **Imposter Syndrome in Tech**

This report examines Imposter Syndrome and how internal symptoms and external factors allow it to prominently manifest across the technology industry. However, by creating a common way to identify

it in given situations, individuals in the tech industry have a chance to repress this mindset. Comprised of multiple existing sources centered around this issue, ISIT attempts to illustrate the problem of imposter syndrome's exponential growth amongst workers within the career field of tech. Thorough organization and planning were done throughout the creation of ISIT taking into account aspects such as accessibility for the audience, variety in data acquired, and a consistent check on the credibility of sources used in the report. Extensive analysis is provided as well in each section with relevant examples that make applying the knowledge found in this study easier for the audience. I thank all the participants who allowed me to gather insight based on their feedback, as it provided a crucial piece to completing this project.

**Arca, Brianne**

**University of Oregon**

**Research Mentor(s): Douglas Toomey**

**Poster**

### **Examination of Environmental Observation Platforms in Multi-Hazard Mitigation Applications**

Oregon's ecologically diverse landscape is regularly utilized by residents for year-round outdoor activities. Managing this terrain requires environmental monitoring, maintenance, and education. Environmental monitoring platforms provide the necessary data for researchers and federal departments to inform effective public safety decisions. Can the implementation of remote sensor networks function to mitigate geologic hazards in the Oregon Cascade Mountain Range? This research evaluates how the desired platform will provide advanced or earlier notifications of hazards. Specifically how that information is communicated to communities and first responders, and how cultural beliefs, values, and practices need to be considered in designing emergency response plans for natural disasters. The central case study for this research assesses the potential benefits of the application of this technology in the Three Sisters region of the Cascades. Carver Lake is a lake located on the south sister mountain in Deschutes County Oregon, it is fed by snowmelt and the movement of a glacier that lies above it. Research methods include analysis of government hazard mitigation plans and Geophysical Research Papers. Early results suggest that awareness of your proximity to natural hazards and accessible regularly updated hazard assessments improve public safety. Communication of information will aid first responders and increase the resilience of our critical infrastructure during hazardous events.

**Arcoren, Ray**

University of Oregon

Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson

Virtual

**The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Arora, Nayantara**

University of Oregon

Research Mentor(s): Alicia DeLouize, Josh Snodgrass

Poster

**Community clustering accounts for most of Anemia variance in Tunisian Health Examination Survey**

Co-Author(s): Alicia DeLouize, Josh Snodgrass

Anemia refers to a low number of healthy red blood cells or hemoglobin (Hb). An important global public health issue, it is a precursor to many health complications. Known to mainly affect pregnant women & young children, many studies explore the individual level predictors that may predispose one to anemia. However, the extent that causes of anemia are driven by individual vs. community-level

factors have yet to be explored. Hb levels and survey data from 9,985 individuals, 15+ years in Tunisia were obtained from the World Health Organization (WHO)'s 2016 Tunisian Health Examination Survey, excluding pregnant women. Gender, education, age, smoking, and alcohol use were modeled as fixed effects, with districts/towns being random intercepts. We hypothesized that community would account for a significant amount of the variance in anemia. Anemia rates were 38% in women and 22% in men, indicating a high public health burden. Without community level clustering only education was a significant predictor of anemia ( $b = -.01$ ,  $p = .017$ ). Community level clustering accounted for 98% of the variance in anemia prevalence, with age, education, smoking, and alcohol use as significant predictors ( $p$ 's  $\leq .001$ ). Not only is most of anemia prevalence clustered by community, the risk from individual-level behaviors such as age, smoking, and alcohol use also clusters by community. Understanding community-level indicators is crucial to targeting public-health interventions regarding anemia.

**Atkin, Tyee**

University of Oregon

Research Mentor(s): Peg Boulay, Marissa Lane-Massey

Oral Session

### **Native Pollinator Enhancement Through Riparian Restoration in the McKenzie River Valley**

Riparian areas support aquatic and terrestrial ecosystems through habitat provision, water filtration, and temperature regulation. These areas are particularly sensitive to environmental disturbances such as invasive species takeover. Impacts to plant communities in riparian areas can adversely affect native pollinators, which play important roles in ecosystem functions. The 2023 Environmental Leadership Program's Restoration and Research Team is restoring native plant-pollinator systems and riparian habitat at Whitewater Ranch, a blueberry farm in the McKenzie River Valley, contributing to an ongoing restoration project that began in 2014. To do this, we will remove invasive species, continue native revegetation efforts that promote pollinator resources, and monitor subsequent changes to ecosystem services by analyzing stream temperature, pollinator presence, and plant growth. Based on findings from prior years, we anticipate these actions will decrease stream temperatures and increase native plant establishment at Whitewater Ranch, as well as increase native pollinator visitation to the ranch's blueberry fields. This project can inform management methods for riparian restoration and native pollinator enhancement, especially in semi-natural and agricultural lands. Our

research can be particularly useful to agricultural managers seeking to implement land use practices that benefit native flora and fauna.

**Axon, Henry**

University of Oregon

Research Mentor(s): Matthias Vogel

Poster

### **Comparing Methods of Dealing with Aging Populations in China and Scandinavia**

As nations across the globe continue to develop, and opportunities beyond traditional gender roles continue to develop for women aging populations will become a problem more and more countries need to deal with. Two regions currently working to resolve these problems are China and the nations in Scandinavia. China is unique in that its one-child policy is now having a major impact on the population whereas in Scandinavia the pressure to work is the main cause of the birth rate decline. Social welfare programs of various types are now being implemented from stipends to free or affordable IVF. This report seeks to explore the methods countries now use to increase their birth rate while also expanding rights for all; as well as evaluating the effectiveness of these policies.

**Baggenstos, Kiasia**

University of Oregon

Research Mentor(s): Professor Derek Brandow

Oral Session

### **“The Unsilenced” Podcast episode**

My podcast is roughly 8 and a half minutes, and it is about a man named Isaac Matheney who was murdered by police officers near Klamath Falls, OR in 2021. Issac was a man who unfortunately experienced police brutality and lost his life. My podcast tells Matheney’s story and spreads awareness of police brutality in America today, and why people should care about the issue. My podcast can be heavily felt through the hearts of African-American families, anyone who has family members who’ve experienced police brutality, people who’ve witnessed the issue first-hand, allies of the black community, and anyone else who cares about such a pressing social issue. Police brutality is an important issue that many people aren’t educated about and through my podcast, I plan to be a part of teaching them.

**Bailey, Zoey**

University of Oregon

Research Mentor(s): Lauren Hallett, Lina Aoyama

Oral Session

### **Invasive Annual Species Increase with Fire Frequency in the Northern Great Basin**

Wildfire, although a natural part of the Great Basin's sagebrush-steppe ecology, is poised to occur at more frequent intervals due to the combined influence of annual grass invasion and increasingly long dry seasons. Deviations from historic fire patterns disrupt the establishment of the keystone sagebrush species *Artemisia tridentata*, and alter the structure of plant communities to favor early-colonizing annual species. As fire frequency increases, native species struggle to compete with invasives, leading to the loss of intact sagebrush habitat and jeopardizing human and wildlife needs on the landscape. To better understand the effects of fire frequency on annual species invasion, I surveyed vegetation in sites with variable burn history at the North Great Basin Experimental Range in July 2022. The relative abundance of plant functional groups and the critical invasive species *Bromus tectorum* and *Alyssum desertorum* were recorded. Though no statistically significant differences were found between burn interval groups, trends in the data support the hypotheses that *Bromus tectorum* and *Alyssum desertorum* would be more dominant in sites burned more frequently. The preliminary results of this study reveal the importance of illuminating the connection between fire frequency and loss of native species to inform best practices for land managers working to preserve the sagebrush-steppe.

**Barajas, Karla**

University of Oregon

Research Mentor(s): Luis Ruiz

Poster

### **The Decline and Revitalization of Indigenous Languages in Mexico**

Indigenous communities in Mexico have experienced oppression and inequalities on a far greater scale as compared to their non indigenous counterparts. The lack of healthcare, safe infrastructure, food/clean water access and quality education for Indigenous people has made it difficult for them to maintain their native language and culture and thus are forced to assimilate to the Spanish language and their respective communities. This research focuses on the factors that cause the decline of Indigenous languages in Mexico, and what revitalization techniques can be employed to prevent this

decline. Preserving these languages is vital for ensuring the continuation of not only the languages, but the cultures, customs, and histories of Indigenous people in Mexico. This research was conducted through the analysis of peer reviewed literature, secondary sources involving testimonials from Indigenous populations, government statistics, and looking at the accessibility of national documents for Indigenous folk. This research has proven that the lack of support and access to basic needs has forced indigenous communities to migrate to denser, more urban parts of Mexico, where the majority language is Spanish which greatly contributes to this decline. Certain revitalization techniques, like introducing school materials in Indigenous languages as well as providing better support to rural indigenous communities, have shown to be promising techniques in the fight for language preservation.

**Barnard, Nadia**

**University of Oregon**

**Research Mentor(s): Nick D'Antona, Shannon Boettcher**

**Poster**

### **Ion transfer kinetics at the interface between two immiscible electrolyte solutions**

**Co-Author(s): Nick D'Antona, Paul Kempler, Shannon Boettcher**

Studying interfacial ion transfer kinetics is crucial for developing electrochemical systems used in sustainable energy sources. This research has many applications, including studying double-layer charging, lithium-ion batteries, and renewable energy fuels. This study used nano-pipettes to perform cyclic voltammetry on immiscible liquids at a nanoscale. Our results demonstrate how several organic bases react under applied voltage. Specifically, 9-Methyl Acridine (9-MA), Diphenyl Pyridine (DPP), and Di-tertbutyl Methyl Pyridine (DTBMP) were tested for their performance under applied voltage. Each displayed distinct oxidation and reduction peaks, suggesting different ion transfer mechanisms. We utilized a variety of data characterization methods, including SEM, UV-vis, and Python modeling, to support our findings. Our research highlights the importance of studying interfacial ion transfer kinetics and its potential impact on developing eco-friendly energy sources.

**Basak, Sanjana**

University of Oregon

Research Mentor(s): Hironori Uehara, Balamurali Ambati

Poster

### **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 procedure. Late-onset FECD is characterized by an inordinate decrease in corneal endothelial cell density. As the cells die, they cease their pumping function and cause fluid to accumulate in the cornea. Prior research indicates that diseased corneal endothelial cells are affected by a trinucleotide expanded repeat mutation in the TCF4 gene, which leads to the formation of cytotoxic CUG RNA accumulations. Our treatment, OptiDicer, is a modified form of the protein Dicer that is responsible for cleaving CUG RNA in cell nuclei. Unlike Dicer, OptiDicer does not respond to negative feedback and is able to cleave accumulated CUG RNA continuously. We expect that OptiDicer will significantly reduce CUG RNA accumulations in corneal endothelial cell nuclei and therefore halt 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

Research Mentor(s): Lisa Munger

Poster

### **How do soundscapes in different areas within the EMU change based on the week of the term?**

The Erb Memorial Union (EMU) is a hub for students on the University of Oregon campus. Many students frequent the EMU as a place to study due to the variety of atmospheres based on location. These different atmospheres vary in lighting, location, and most notably, sound. Sound is a vital part of the environment that impacts study habits of students. For our study, we aim to know how the noise levels in different areas in the EMU change based on the week of the term. We will be stationing ourselves in different locations throughout the EMU, such as leisure areas like the pool tables and

study locations like the open tables by restaurants, and recording the noise levels of our soundscape at different times of the day, times in the week, and weeks throughout the term. We will record over an hour of audio recording per week along with field data and pictures to aid our analysis. We predict that as the term progresses and gets closer to midterms, the EMU will increase in activity, but decrease in noise level. This study is designed to investigate the impact of school workload on noise levels in an academic soundscape.

**Beleyovych, Erika**

**University of Oregon**

**Research Mentor(s): Wendy Feng, Katie Lynch**

**Oral Session**

### **Connecting Youth to the Land and Environment: Climate Science Climate Justice**

**Co-Author(s): Ari Rubenstein, Theresa Stevens, Ethan Moser, Tatum Reiter, Roman Worthey**

The greatest threat to our planet is the belief that someone else will save it. In taking action, the Climate Science Climate Justice team of the Environmental Leadership Program demonstrates that environmental education is vital in providing the next generation with skills to address and adapt to the impacts of climate change. Through culturally aware and diverse pedagogy, our team connects middle school students to hands-on outdoor experiences at H.J. Andrews, an experimental old-growth forest located deep in the Cascade mountains. Students are introduced to climate science and evidence of climate change through four investigations: microclimates, tree ID, phenology, and climate justice. Developed by the Environmental Leadership team, these interdisciplinary lessons cover a range of topics, including plant identification, impacts of the changing climate on plants and animals, qualities and significance of an old-growth forest ecosystem, development of observational skills, and the intersection of climate change and social justice. Our project exposes students to scientific methods and concepts, developing critical thinking skills, and encouraging them to develop a deeper connection to their surrounding environment while engaging in ideas for how they can participate in creating solutions. By empowering young people to be scientists, the climate team paves the way for future environmental stewardship and takes action against climate change one student at a time.

**Benz, Morrhysey**

University of Oregon

Research Mentor(s): Jonathan Dorogin, Marian Hettiaratchi

Poster

### **Affinity-based Molecules for Immunomodulatory Regulation**

After a severe tissue injury, expression of immunomodulatory proteins that aid in transitioning through the stages of wound healing can be interrupted, resulting in a diminished immune response. Delivering immunomodulatory proteins can help reestablish healing. In this study, we aim to deliver interleukin-4 (IL-4), a protein involved in the transition from pro-inflammatory to anti-inflammatory response. Control over protein release is important for minimizing off-target effects. To address this challenge, we use affinity-based binding partners, called affibodies, paired with hydrogel delivery vehicles for tunable delivery of proteins. Two previously identified affibodies sequences that demonstrate binding to IL-4 were recombinantly expressed and soluble affibodies were collected. Circular dichroism was performed on each affibody, confirming the expected  $\alpha$ -helical structure. Biolayer interferometry determined the dissociation constant (KD) of the binding interaction between each affibody and IL-4. One affibody has a KD of 92,000nM, indicating a low affinity for IL-4. The second is a high-affinity binder, with a KD of 2.72nM. Affibodies were conjugated to hydrogels and loaded with IL-4. Affibody-conjugated hydrogels demonstrated comparable encapsulation efficiency and slowed the release of IL-4 compared to those with no affibodies. Our results demonstrate that IL-4-specific affibodies may be a promising method for achieving a tunable delivery of IL-4 to severe tissue injuries.

**Berk, Luca**

University of Oregon

Research Mentor(s): Bennet Smith

Poster

### **Culture in Higher Education: Understanding how Educational Inequality exists**

This paper functions as an analysis of cultural barriers within higher education both historically and today. Through research on the historical context and the present day consequences of white hegemony within higher education, it can be shown that the exclusion of students of color in higher education is a verifiable issue today. While this barrier between students of color and university was initially developed as a formal institution of segregation; higher education now uses culture to limit

minority students looking to succeed in the US. Through empirical evidence, discrepancies in the system of admissions and college success rates can be found, and these all lead back to fundamental issues within higher education. While some may point to strictly economic or cultural issues as a blame for these discrepancies, they fail to address the reality of inequalities that minority students face. Historically segregated systems must be recognized for continuing to remain ineffective at fostering diverse and representative student bodies. By actively addressing these systems as being foundationally unjust by design, the conversation regarding how to fix or change them can be effectively started.

**Bermudez, Jackie**

**University of Oregon**

**Research Mentor(s): Sarah Rich, David Johnson**

**Poster**

### **Understanding the reaction pathways of manganese-tellurium through an annealing study**

An annealing study of the manganese-tellurium binary system was conducted to better understand the reaction pathways of cubic MnTe, hexagonal MnTe, and MnTe<sub>2</sub>. Samples were deposited using a custom-built physical vapor deposition chamber where Mn was deposited using a 6 keV electron beam gun and Te was deposited using a Knudsen effusion cell. Ultrathin layers of atoms were deposited with a sequence which mimics the nanoarchitecture of the desired crystalline products. A low temperature annealing study was performed in an oxygen free environment in a step-wise manner. After each annealing step, specular X-ray diffraction (XRD), X-ray reflectivity (XRR), in-plane XRD, and X-ray fluorescence (XRF) were used to characterize changes in structure and composition as a function of temperature. Understanding the reaction pathways between Mn and Te will allow us to integrate Mn-Te phases into Van der Waals heterostructures.

**Bhaskar, Mayurika**

University of Oregon

Research Mentor(s): Dr. Aaron J. Grossberg, Dr. Paige C Arneson-Wissink

Poster

## **Differential Dependence of Tumor-Derived IL6 in models of PDAC-associated muscle atrophy**

Co-Author(s): Paige C. Arneson Wissink Ph.D, Heike Mendez BS, Jessica Dickie BS,  
Aaron J. Grossberg Ph.D

Pancreatic cancer is one of the deadliest forms of cancer with a survival rate of only about 11.5%, and its most common form is PDAC, also known as pancreatic-ductal adenocarcinoma. A prevalent symptom of PDAC is cancer cachexia, which is a loss of skeletal muscle mass and fat mass that cannot be regained with nutritional supplementation. This makes it incredibly difficult for PDAC patients to receive necessary treatments, decreasing their quality of life. In other literature, pro-inflammatory cytokine IL-6 has been associated with cancer cachexia, but its mechanisms and its correlation to its source are still relatively unknown. My research objective is to determine the effects of IL-6 on muscle tissue and its course of action in both in vivo and in vitro models. The in vivo models are orthotopic PDAC (OT-PDAC), IL6-knock out mice models and the in vitro models are C2C12 myotube cultures. I hypothesize that muscle atrophy in PDAC is dependent on tumor-derived IL6, and IL6 overexpression in the tumor will exacerbate muscle atrophy directly. I will be testing both the gastrocnemius muscle harvested from our mice models and the C2C12 myotubes from the cultures via qPCR to measure the presence/activation of common muscle catabolism genes. Similarly, through IF-staining/imaging and electron-microscopy imaging of the tibialis anterior muscle from our in vivo models and the C2C12 myotubes respectively, I will quantify and statistically analyze any myofiber atrophy.

**Billo, Avery**

University of Oregon

Research Mentor(s): Calin Plesa

Poster

## **Generating Optimized Fluorescent Proteins Libraries Using Machine Learning and DropSynth Technology**

Co-Author(s): Anissa Benabbas

Although fluorescent proteins (FPs) are useful tools for observing and investigating biological phenomena, the current available color spectra are inconsistent, and brightness is notably lower in blue and red FPs. In fact, the vast size of the potential sequence space constrains its exploration. Random mutations around a parent sequence usually fail to introduce substantial changes, hindering the efficient and large-scale analysis of the protein fitness landscape. Using Dropsyth gene synthesis technology, we have assembled large and diverse protein libraries spanning nearly all known beta-barrel fluorescent proteins. We have applied DNA shuffling and mutagenesis to these libraries to create even more diverse libraries of chimeric proteins. Many of these chimeric proteins still retain fluorescence despite having novel sequences. These mutant libraries were characterized with a Flow-seq. assay to evaluate brightness in blue and red regions of the spectrum. This data will be utilized as a training set for machine learning models to generate new libraries that contain red and blue FPs with increased brightness. Ultimately this experiment can be seen as a proof of concept for how to explore functional sequence space utilizing Dropsyth and machine learning methods.

**Birruete, Jessica**

University of Oregon

Research Mentor(s): Sergio Loza

Poster

## **Lenguaje Inclusivo in the Pacific Northwest: Latine versus Latinx**

Latino/a, Latin@, and Latinx are terms that have been used to describe Central and Latin American communities since the creation of the United States census. These titles have gone beyond that and now serve as a way to label ethnicity from members within and outside of the communities in question. Additionally, another change has occurred with the rise in popularity of inclusive language in the United States and Global context, many have shifted to using the term Latinx instead of Latino as it allows language users to address and refer to the community in a manner that is inclusive of

women and non-binary people. The usage of the “x” however has faced backlash due to the way in which it aligns more so with English grammar than that of Spanish. To refute this issue members of the community have begun using the term Latine, popularized by Argentinians, as the gender neutral “e” falls more in alignment with the structure of Spanish than “x”. Despite the popular shifts to using more inclusive language, speakers within this community have strong thoughts and feelings regarding which term they use. Therefore, I wish to investigate the attitudes surrounding the use of Latine held by the Spanish heritage language speaking community in the Pacific Northwest.

**Blackburn, Jack**

**University of Oregon**

**Research Mentor(s): Courtney Mathers, Peg Boulay**

**Oral Session**

### **Carbon Sequestration in Soils to Allocate Solutions for Atmospheric Carbon**

There is more carbon contained in the soil than the atmosphere and vegetation combined. Understanding the mechanisms that control the accumulation and stability of carbon in soil, we can mitigate our planet’s changing climate. By using a variety of existing soil and forest management techniques, this study will produce valuable data regarding which plant species and management techniques are most effective at storing atmospheric carbon in the soil. This is the first large-scale, long-term data collection study performed to measure carbon sequestration rates among Oregon native tree and shrub species. In 2022, the Soil Plant and Atmosphere Lab (SPA) and EWEB’s Carbon Forestry Lab planted eighteen different native Oregon tree and shrub species at the Highbanks site. The trees and shrub species were planted in various treatments which include hardwood-only, conifer-only, mixed tree and shrub, and shrubs-only plantings. We will monitor the soil’s health using methods such as soil sampling, pH measurement, aggregate stability measurement, carbon respiration and water quality measurement. This will allow us to answer our monitoring question regarding which types of plant species and planting treatments are most effective at storing carbon. The implications of this study have the potential to influence the way forests are restored and managed in Eugene and potentially beyond, within the goal of increasing carbon sequestration in soil in order to create sustainable climate solutions.

**Blankenship, Leah**

University of Oregon

Research Mentor(s): Emily Sylwestrak

Poster

### **Functional and Anatomical Properties of Cck+ Cells in the Medial Habenula**

Previous research has shown that the medial habenula (MHb) is involved in many behaviors, such as stress, depression, addiction, and reward-guided behavior, but the organization of neurons driving these behaviors is unclear. MHb neurons have traditionally been divided into two groups based on expression of ChAT and Tac1 and studies have demonstrated that Tac1+ cells are involved in reward-guided behavior. More recent work has suggested that the MHb contains additional cell types and Cck has been identified as a potential marker for a subset of Tac1+ cells exclusive to the dorsal MHb. In this project, we aimed to confirm that Cck+ cells are a subset of Tac1+ cells, as well as examine functional and anatomical differences between these two cell types. To examine RNA expression overlap between Cck and Tac1, we conducted RNA in situ hybridization experiments. To examine Cck+ cell function, we recorded neural activity of Cck+ cells in mice during reward-guided behavior with fiber photometry using a genetically encoded calcium indicator. To examine Cck+ cell inputs, we fluorescently labeled inputs with rabies tracing and examined outputs with fluorescently-labeled Cck+ axon projections. Results from experiments thus far suggest that Cck cells respond to withheld reward (similar to Tac1 cells) and appear to project through the interpeduncular nucleus, rather than stopping there like most Tac1 projections.

**Blechsmidt, Zoey**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **A Survey of Commonplacing: Exploring Commonplace Books and their Evolution**

This research poster is a project for Professor Cheng's course in Winter 2023. I was tasked with planning an exhibit on "book love; or, reading commonplaces." Commonplace books are a record kept as a repository for or collection of quotes, from anyone and all writings encountered by an individual. As a curator, I am to identify and research items in Special Collections and situate them alongside our course readings. For this, I chose to focus on the history and evolution of commonplacing-how they change with time, author, and audience. To study this, I am using Robert Darnton's article

“Extraordinary Commonplaces” from the class readings; a commonplace book kept by E.M. Forster with parts by John Jebb, a work from UO Special Collections; my own commonplace book created during this course, taken from assigned readings; and digital adaptations of commonplace books today, such as TikToks. While situating these works beside each other, I will look at what constitutes a commonplace and how these elements may have changed, the themes each commonplace explores, and the format in which each is presented and organized, while comparing and contrasting these works through time. With this, I aim to create a survey of the act of commonplacing. Furthermore, I aim to argue for or inspire the reader towards the act of keeping a commonplace today, using the evidence from commonplacing’s presence and role throughout history.

**Bodle, Weston**

**University of Oregon**

**Research Mentor(s): Lisa Munger**

**Poster**

### **How do soundscapes in different areas within the EMU change based on the week of the term?**

The Erb Memorial Union (EMU) is a hub for students on the University of Oregon campus. Many students frequent the EMU as a place to study due to the variety of atmospheres based on location. These different atmospheres vary in lighting, location, and most notably, sound. Sound is a vital part of the environment that impacts study habits of students. For our study, we aim to know how the noise levels in different areas in the EMU change based on the week of the term. We will be stationing ourselves in different locations throughout the EMU, such as leisure areas like the pool tables and study locations like the open tables by restaurants, and recording the noise levels of our soundscape at different times of the day, times in the week, and weeks throughout the term. We will record over an hour of audio recording per week along with field data and pictures to aid our analysis. We predict that as the term progresses and gets closer to midterms, the EMU will increase in activity, but decrease in noise level. This study is designed to investigate the impact of school workload on noise levels in an academic soundscape.

**Bouchard, Peter**

University of Oregon

Research Mentor(s): Raghuvveer Parthasarathy, Susana Marquez Rosales

Oral Session

### **Bacterial Colonization of Larval Zebrafish from a Living Rotifer Probiotic**

Co-Author(s): Raghuvvee Parthasarathy, Susana Marquez Rosales

Studying bacteria-host relationships helps answer many questions regarding the development and health of humans and other animals. In particular, the gut microbiota play a critical part in neurological development, digestion, and overall immune system health. Zebrafish are one of the most commonly used model organisms; they are vertebrates that share a similar genetic structure to that of humans and are fairly transparent during their larval stage, allowing imaging. Additionally, they are capable of being raised devoid of any pre-existing bacteria, serving as an ideal canvas for controlled experiments examining effects of particular species of bacteria. One barrier when working with larval zebrafish is that they must be fed 7 days post fertilization, potentially introducing unwanted bacteria from their preferred living food sources. Little research has been done into feeding larval zebrafish while still controlling their gut microbiome. In this paper, we describe a method to manipulate rotifers, aquatic microorganisms commonly fed to larval zebrafish, by UV-sterilizing them and then inoculating them with fish-derived bacteria, avoiding the day 7 feeding barrier while also maintaining control gut microbiome. This enables experiments further into zebrafish development, allowing for a deeper understanding of bacteria-host interactions.

**Braker, Maxwell**

University of Oregon

Research Mentor(s): Ashley Walker, Emily Reeve

Poster

### **Effects of large artery stiffness prevention on age-related cerebrovascular dysfunction in aged mice**

As the life expectancy for humans continues to increase, the prevalence of age-related diseases is rising. Specifically, humans are becoming more at risk for cardiovascular and cerebrovascular diseases. As a result, it is important to understand the physiology behind age-related cognitive impairment so that we can propose solutions and treatments for these diseases.

There are many factors that can lead to brain aging. Specifically, large artery stiffness is a strong

predictor of cerebrovascular dysfunction. Large artery stiffness occurs because of the accumulation of AGEs, or advanced glycation end products, in blood vessels. This study used wild type C57BL/6 mice to determine the impact that Alagebrium - a drug that breaks AGEs - has with regards to improving cerebrovascular function. Endothelial cell function was assessed ex-vivo in isolated, pressurized cerebral arteries by vessel experiments where their dilation response to different chemicals was measured. Arterial stiffness was also assessed ex vivo in carotid arteries and cerebral arteries via passive stiffness. Large artery stiffness was assessed via elastin and collagen immunofluorescence. Lastly, oxidative stress was assessed via a nitrotyrosine antibody stain. The results of this study give insight about the efficacy of large artery stiffness prevention on cerebrovascular function, and it also helps expand our knowledge about the contributions of large artery stiffness to age-related cognitive diseases.

**Brazelton, Shaun**

**University of Oregon**

**Research Mentor(s): Christopher Chapman**

**Poster**

### **Prolonged Mild Hypohydration Attenuates Renal Functional Reserve**

**Co-Author(s): Christopher Minson, John Halliwill, Sadie Holt, Karen Needham, Cameron O'Connell**

The capacity for the kidneys to increase filtration above basal levels is termed renal functional reserve (RFR). Passive heat stress induced hypohydration reduces RFR. We hypothesized that hypohydration independent of heat stress reduces RFR. In a block-randomized crossover design, twenty healthy adults [9 females, 11 males; age: 21 (3) years] completed 24 hours of fluid deprivation (HYPO) and 24 hours of normal fluid consumption (EUHY). Participants underwent oral protein loading by ingesting a whey protein shake (1.0 g protein and 10 ml water per kg body mass) to assess RFR. Body fluid loss was estimated via the percent change in body mass ( $\Delta$ BM) over the 24-hour protocol. Creatinine clearance (CCr) was calculated to quantify GFR at baseline and 150-min post-protein consumption (POST).  $\Delta$ BM was reduced in HYPO vs. EUHY [-2.6% (-3.0, -2.2) vs. 0.1% (-0.3, 0.4),  $P < 0.01$ ]. Baseline CCr was elevated in HYPO vs. EUHY [261 ml/min (218, 303) vs. 143 ml/min (118, 168),  $P < 0.01$ ]. There were no differences in CCr between conditions at POST [HYPO: 246 ml/min (212, 280); EUHY: 231 ml/min (196, 265),  $P = 0.27$ ]. At POST, CCr was elevated from baseline in EUHY ( $P < 0.01$ ) but not HYPO ( $P = 0.29$ ). These findings suggest that CCr is not altered with oral protein loading during prolonged mild hypohydration. Whether our findings suggest that a ceiling effect was reached in the HYPO condition or are influenced by increased tubular creatinine secretion during hypohydration requires further investigation.

**Bucuroaia, Stephanie**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

### **The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful in regard to the modern world. This project will show the importance of reevaluating notable pieces from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Burke, Bayley**

University of Oregon

Research Mentor(s): James Brau

Poster

### **Detection of High Energy Particles and Jets From Higgs Decays at the International Linear Collider**

The Standard Model is among the most successful and accurate physical theories ever devised. It distills all known physics (except gravity) down to interactions between just seventeen 17 fundamental particles. It was completed in 2012 with the discovery of the Higgs, a particle closely tied to the mechanism that gives particles mass, and is by far the least understood piece of the Standard Model. To remedy this, a new particle collider called the International Linear Collider (ILC) is being planned to act as a 'Higgs Factory.' My thesis focuses on optimizing one of the ILC's detectors, examining how the replacement of the old low-resolution design with a new high-resolution design improves the measurement of the Higgs through studies of simulations. There are tradeoffs, but I show that the new design works at least as well as the old and identify several specific areas in which it presents an opportunity for significant improvement. The implementation of this design would thus allow the ILC to make a better measurement of the Higgs and further increase our understanding of fundamental physics.

**Burress, Ben**

University of Oregon

Research Mentor(s): Parisa Hosseinzadeh

Poster

## **Computational Design of Bone Morphogenetic Protein 2 Binders for Fracture Regeneration**

Co-Author(s): Karly Fear, Ben Gonzalez, Parisa Hosseinzadeh

Nonunion/malunion bone fractures are often difficult to treat and have abnormally long healing times. Research has started to look toward Bone Morphogenetic Protein 2 (BMP-2) as an effective agent for healing.[1] Bone Morphogenetic Proteins (BMP) are multi-functional growth factors in the Transforming Growth Factor-Beta (TGF- $\beta$ ) superfamily, BMP-2 was the first BMP to be characterized and it has FDA approval for usage as a bone-repair therapeutic.

The recombinant human BMP-2 (rhBMP2) has generally been effective in clinical settings; however, it has been associated with a variety of negative effects. It is likely that supraphysiological amounts of BMP-2 can cause major adverse reactions. Therefore, limiting the amount of BMP-2 or creating slow-release delivery systems is currently of active research interest. The goal of this report is to utilize computational protein design techniques (PyRosetta and RFdesign) to create slow or moderate binders, as part of a delivery system, to a binding site of BMP-2.

The PyRosetta design pipeline has so far yielded positive results both computationally and in-lab including accurate structure, docking simulations, protein mass, and some preliminary binding. The RFdesign pipeline is still in progress but is expected to provide similar results. Computational protein design provides a powerful toolset which can be applied in a variety of scientific areas, and from this work we see that bone repair is an important area that can be enhanced.

**Butterfield, Arden**

University of Oregon

Research Mentor(s): Jon Bellona

Oral Session

## **Empy and Fish: Two Real-Time Audio Plugins for Lossy Distortion as a Musical Effect**

Lossy audio compression is a digital process that uses models of human hearing to remove parts of the sound deemed less important, in order to compress audio to much smaller file sizes. The MP3

encoding process, one of the most famous lossy audio compression formats, can impart audio with a distinctive watery, muffled sound at higher levels of compression. This sound, which I call “lossy distortion,” can be used as a musical effect to inspire nostalgia for early digital audio, or for a more abstract, ethereal sound. In analyzing creative uses of lossy distortion and existing plugins for lossy distortion, I identify some desirable features that are lacking from existing plugins. To fill these gaps, I built two lossy distortion plugins. One, called Empy, gives the user control over a wide variety of lossy distortion sounds. The other, Fish, emulates a particular sound of lossy distortion that other plugins struggle to achieve, by modifying a popular piece of MP3 encoding software. In their sound and user interface, these plugins explore new ground in the rapidly developing field of lossy distortion plugins.

**Byars, Faith**

**University of Oregon**

**Research Mentor(s): Steven Turrill**

**Creative Work**

***The Lookingglass: a short story walking through the way we remember***

As part of my work in the Kidd Creative Writing Program and as a subset of my English Honors Thesis, I ventured to perform a creative writing experiment as a method of exploring formal techniques of writing about memory. The result was *The Lookingglass*, a short work of creative fiction which explores the human experience of confronting the stories we tell ourselves and coming to terms with our own, often faulty, memories. The story used techniques from Charles Baxter’s theories on counterpoint characterization and forms of verb tense and point of view in an ultimately omnipresent objective narration. The short story drew inspiration from outside literary sources like nonlinear storytelling in music and the Kurosawa effect in film (a story told through a series of contradictory but plausible interpretations of an event by the characters involved), as well as the literary with thematic influence from Lewis Carroll’s Alice stories later in the project. Ultimately, the story takes place on the plane of a collapsing relationship, in which both characters Olivia and Abel must confront their past together in order to come to terms with the reality of their three-year relationship rather than their perceptions of it. If literature is an experience of asking ourselves questions through narrative, then this story asks the question: what would happen if you had no choice but to see the past for what it was instead of what you told yourself it could be?

**Byler, Sadie**

University of Oregon

Research Mentor(s): Dr. Abigail Fine

Oral Session

### **Female Tastemakers in the US: The Impact of Steers and Coman on Concert Culture in Portland, OR**

At the turn of the 20th century the culture around classical music was still developing in the United States, particularly in the Pacific Northwest. However, due to perceived effeminacy of music and the fine arts in general, men were reluctant to get directly involved – and thus, many women became crusaders for the classics, as club runners, concert managers, and patrons, taking on the role of tastemakers for the public. Portland had its very own female owned-and-operated concert management company, Steers and Coman, which has been credited with the expansion of classical music throughout the Pacific Northwest. The company ran successfully for over 30 years, as evidenced by newspaper articles and other archival materials. An analysis of the artists brought to Portland by Steers and Coman illustrates the impact of women on creating and upholding “good” taste in the United States.

**Bynum, Jaemie**

University of Oregon

Research Mentor(s): Nick Sund, Adam DeHeer

Poster

### **Building a Palette of Wetland Plants for Treating Anthropogenic Wastewater**

Phytoremediation is the application of vascular plants to treat contaminated water. Low oxygen and high nutrient environments with low flowing water are conditions favorable for wetland and bog-loving plants with rhizomatous root systems. Constructed wetlands utilize these types of plants to treat anthropogenic wastewater such as blackwater, and greywater. Their value as nature based solutions to water treatment is becoming increasingly relevant as water demand outpaces supply in many places throughout the world. In response to the potential of aquatic plants to efficiently treat domestic wastewater, this study aims to identify the phytoremediative abilities of four popular ornamental pond plants—Equisetum hyemale, Iris spp., Juncus patens, and Saururus cernuus. The four plants were first commissioned with fertilizer for two weeks, then dosed with randomized greywater concentrations for three weeks. Water quality parameters pH, EC, Temperature, Turbidity, Nitrate,

and Phosphate were monitored for water treatment efficiency. Turbidity will be the primary metric of success for treatment efficiency, with high expectations for *Juncus patens*, a prolific helophyte, and *Iris* spp., a hyperaccumulator. By testing the phytoremediative viability of these four ornamental pond species, we will develop a robust plant palette for treating anthropogenic wastewater.

**Byrne, Casper**

University of Oregon

Research Mentor(s): Quinn Miller, Carol Stabile

Oral Session

### **Monsters in the Closet: Exploring the Intersections Between Monstrosity and Queer Storytelling**

Since the publication of Mary Shelley's *Frankenstein* in 1819, Gothic monsters have dominated Western media as symbolic figures of difference. Existing at the intersection of race, class, gender, sexuality, and geography, Gothic monsters embody the traits that their creators associate with deviancy and danger. These constructions often target queer-identifying people as deviant, a pattern which has persisted across the last 200 years. However, despite their vilification within the Gothic monster genre, monsters and horror media are incredibly popular within the larger queer community. This paper explores the historic relationship between monsters and queer identity, as well as contemporary attempts to subvert the queer monster into an empowering force. I will pull from the original texts of *Frankenstein* (1819) and *Dracula* (1897) to understand the popular origins of Gothic monsters and compare them to *Frankissstein* (2019) and *Interview with the Vampire* (1976), which are queer retellings of each novel. In comparing these works I will explore how queer readings of the original texts have evolved, and how these modern adaptations have dealt (or not dealt) with the legacies of their source materials. While not the only factor, the length to which authors go to unpack the relationship between queer identity and monstrosity can largely affect the impact their work can have as an authentic piece of queer media.

**Cannan, Caitlyn**

University of Oregon

Research Mentor(s): Lisa Munger

Poster

### **How do soundscapes in different areas within the EMU change based on the week of the term?**

The Erb Memorial Union (EMU) is a hub for students on the University of Oregon campus. Many students frequent the EMU as a place to study due to the variety of atmospheres based on location. These different atmospheres vary in lighting, location, and most notably, sound. Sound is a vital part of the environment that impacts study habits of students. For our study, we aim to know how the noise levels in different areas in the EMU change based on the week of the term. We will be stationing ourselves in different locations throughout the EMU, such as leisure areas like the pool tables and study locations like the open tables by restaurants, and recording the noise levels of our soundscape at different times of the day, times in the week, and weeks throughout the term. We will record over an hour of audio recording per week along with field data and pictures to aid our analysis. We predict that as the term progresses and gets closer to midterms, the EMU will increase in activity, but decrease in noise level. This study is designed to investigate the impact of school workload on noise levels in an academic soundscape.

**Cannan, Caitlyn**

University of Oregon

Research Mentor(s): Kira Thurman

Poster

### **Understanding Ion Transfer Kinetics of Copper Corrosion in Different Microenvironments**

**Co-Author(s): Kira Thurman, Nadia Barnard, Sophia Hodgdon, Paul Kempler, Shannon Boettcher**

Copper is a valuable metal that has myriad applications in electrochemical devices, particularly in the generation of clean and renewable energy. Understanding the corrosion and deposition of copper in an electrochemical cell can facilitate the development of longer lasting and less wasteful devices, which can benefit the future. By utilizing underpotential deposition (UPD), the rates of Cu corrosion and deposition on an Au(111) electrode surface can be investigated. Varying microenvironments can enhance the knowledge about the efficiency and durability of these energy systems. Current data

indicates Cu strips off in a consistent manner. Inferring that slowing the rate of the initial process can decelerate the entire process to create a more efficient system. Microenvironments, including the temperature and solvent, play a crucial role in the overall efficiency of electrochemical devices and can influence the lifespan and amount of waste produced.

**Cao, Gracie**

University of Oregon

Research Mentor(s): Adam Glass

Poster

### **Color Tunability of Benzofulvene Dimers**

Benzofulvenes and their derivatives have many implications as synthetic precursors and molecular materials, as well as in medicinal applications. The conjugation of benzofulvenes reveals many interesting properties that raise the possibility of color tunability. Through our synthesis we have also been able to create benzofulvene dimers in moderate yield which show interesting spectral properties in both the UV and visible range which indicates that these dimers may be very useful in studying electronic and optical effects within a large network of structures. We are specifically looking to explore push/pull dynamics related to different substituents on the dimers in regards to electron flow and movement. 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 dimer benzofulvene synthesis, optimize yield, and manipulate the dimers with substituents in order to gain a better understanding of their properties and implications in scientific scenarios.

**Cardenas-Riumallo, Sebastian**

University of Oregon

Research Mentor(s): Dr. Kirstin N. Sterner, Samantha R. Queeno

Poster

### **Function and disease risk of slow and fast myofiber-associated regions of the human genome.**

Regions of the genome that influence the traits that “make us human” are sometimes associated with evolutionary trade-offs, constraints, or mismatches that have the potential to cause disease. One trait that is unique to our species is our upright and bipedal locomotion. This research aims to

assess disease-causing mutations within evolutionarily important non-coding regions of the genome that may impact human muscle endurance and the energetic efficiency of bipedal locomotion. To do this, 43 candidate regions previously associated with slow and fast myofiber development and overlapping regions of positive selection in humans (human accelerated regions) were analyzed for disease-causing single nucleotide polymorphisms (SNPs) using the UCSC Genome Browser. This project focused on common SNPs which occur at least once in every 1000 people. This decision was made since the common SNPs affect more people. 220 common SNPs were found in the 43 candidate regions. Of the 220 common SNPs only 41 had associated publications, suggesting that little is known about the effect of these mutations. Variants with prior publications had relations to transcriptional regulation, nerves, muscles and metabolic processes and diseases such as heart disease. These findings could help guide future research in the biomedical sciences and molecular anthropology by bringing better understanding to disease associations within evolutionarily important regions of the genome.

**Carl, Peyton**

**University of Oregon**

**Research Mentor(s): Peg Boulay**

**Poster**

### **Grizzly Bear Recovery in the Greater Yellowstone Ecosystem**

The grizzly bear (*Ursus arctos horribilis*) is an apex predator in the Greater Yellowstone Ecosystem (GYE) whose role assists with the regulation of over-grazing from ungulate populations while also benefiting vegetation through seed dispersal. Grizzly bears face numerous issues that negatively affect their species. Most of these are anthropogenically caused including habitat loss and hunting. In the GYE, grizzly bear populations have suffered massive population loss following park management changes in 1967 that resulted in increased conflicts with humans. Grizzly populations have diminished down to about 50% of their historic numbers, however following the efforts of its Recovery Plan implemented and revised by the Department of Fish and Wildlife, the exacerbated population of grizzly bears is slowly reestablishing itself in the Greater Yellowstone area. The reintroduction of grizzly bears in the GYE remains controversial due to misconceptions and opinions relating to the safety of locals near Yellowstone National Park and surrounding human communities. As an integral and historic species to the region, grizzly bears remain prominent.

**Carney, Sue**

University of Oregon

Research Mentor(s): Dr Melissa Brunkan

Oral Session

### **Remote music interventions in hospitals during the time of COVID: a scoping review**

The therapeutic benefits of music to reduce suffering and promote wellness have been commented upon since ancient times, but this evidence was dismissed as anecdotal by modern medicine until the late 1900s, when scientific evidence supporting the ancient view began to appear. In 1973 Music Therapy became a certified psychological practice, and a new era of wide horizons and pioneering research dawned. Therapeutic musicians worked to expand hospital care to include therapeutic music as part of their suite of “complementary” specialties, much as massage therapy and acupuncture have been mainstreamed in response to scientific evidence. The use of therapeutic music at hospital bedsides has grown steadily over the ensuing decades.

The arrival of COVID 19 severely disrupted this progress, as hospitals shuttered and turned inward to deal with the crush of infected patients. Remote treatment became the only option, as therapists kept a lifeline for their patients. This industry-wide laboratory for remote treatment created the opportunity to ask: Are there differences in the efficacy of live music therapy vs synchronous remote music therapy at bedside? Related questions include: What part does therapeutic presence play? Can remote treatment be confidently prescribed?

Finally, we spoke with industry stakeholders to explore the development of remote therapeutic delivery protocols that are of maximum benefit to patients, practitioners, and hospitals.

**Carroll, Megan**

University of Oregon

Research Mentor(s): Anne Laskaya

Oral Session

### ***Sir Gawain and the Green Knight: Androgyny in Late-Medieval Literature***

This project asks what place femininity has in late-Medieval texts that rely on androgyny to characterize a woman versus the characterization of a man. *Sir Gawain and the Green Knight*, for example, uses androgyny to characterize the Green Knight, a character known for his tricks, but it also uses activity and passivity to characterize Sir Gawain, Lady Bertilak, and Morgan le Fay. This

project asks how the masculine and active is used to portray strength and trustworthiness, while the feminine and passive are used as a sign of weakness and other. The research methodology for this project is based on reading *Sir Gawain and the Green Knight* and collaborating with my mentor, Anne Laskaya. I have read 10-15 texts to provide background information, while also building my claim using context from secondary texts. The expected conclusion is that femininity is used in Medieval literature to add mystery or untrustworthiness to a man, while masculinity is used to dehumanize and other women. I expect that androgyny is a useful tool to make men more godly and women ghastly.

**Cassery, Aaron**

University of Oregon

Research Mentor(s): Andrew Greenberg, Benjamin McMorran

Poster

### **Multidisciplinary Design Optimization: Portland State Aerospace Society (PSAS) Launch Vehicle 4**

Multidisciplinary Design Optimization is a field that enables the solution of challenging engineering problems involving multiple technical specializations and design/performance constraints. In this work, I optimize the design of the PSAS Launch Vehicle 4 (LV4). Different optimization approaches such as RBFOpt Global Optimization, Nelder-Mead minimization, and Simplicial Homology Global Optimization with Nelder-Mead and COBYLA local minimization techniques are evaluated. Structural analysis information is calculated at different stages of flight. A method of simulating fin “staging” or the dropping of a larger initial fin can at a certain altitude to reduce the required engine thrust and drag in the upper atmosphere is outlined. Fin parameter optimization is also covered.

**Castañeda, Natasha**

University of Oregon

Research Mentor(s): Jessica Atencio, Emma Reed

Poster

### **Acute Central Hemodynamic Responses To Three Different Heating Modalities**

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

Hot water immersion (HWI), traditional sauna (TRAD), and far-infrared sauna (FIR) are commonly utilized passive heating modalities. The cardiovascular demand imparted by passive heating leads to beneficial adaptations with repeated use. Passive heating is known to elicit increases in cardiac

output (Q) via increased heart rate (HR), while stroke volume (SV) remains poorly understood. Furthermore, acute central hemodynamic responses between these heating modalities remain unknown. The purpose of this study is to compare the acute changes in Q, HR, and SV between a single bout of HWI, TRAD, and FIR. In a randomized, cross-over study design, subjects completed three sessions of acute passive heating in all heating modalities. HR was continuously measured via chest strap (Polar). At baseline and end of heating, Q was measured using an open-circuit acetylene uptake method. SV was calculated as Q/HR. One-way ANOVAs were performed to compare the hemodynamic responses between heating modalities from baseline to end of heating. Q increased more in HWI than TRAD ( $P=0.0069$ ) and FIR ( $P<0.0001$ ). HR was greater in HWI than TRAD ( $P=0.0036$ ) and FIR ( $P=0.0057$ ). There were no differences in SV between all conditions ( $P=0.0976$ ), and no differences in TRAD vs FIR for Q ( $P=0.0598$ ) and HR ( $P=0.9944$ ). Preliminary data indicate that HWI elicits the most marked changes in acute central hemodynamic responses compared to other modalities, likely driven by the hydrostatic effect of water immersion.

### **Castillo, Cody**

Visiting McNair Scholar | Southern Oregon University

Research Mentor(s): Dr. Paul Condon

Poster

### **Mindfulness apps: How effective are they?**

The consensus throughout various studies is that mindfulness meditation apps are cost-effective, easily accessible, and may empower people to manage their health better. Mindfulness can be used as a tool to return individuals to their baseline mode of functioning when under elevated levels of stress. Similarly, mindfulness effects can be extended to many high-stress situations; for example, mindfulness improved college students' resilience in a four-week mindfulness-based emotion management intervention. The current study seeks to understand whether the positive effects of mindfulness interventions extend to online delivery treatment methods.

A systematic literature review was conducted by selecting journal articles from PsychINFO that included empirical studies on mindfulness interventions comparing online treatments to in-person interventions. The results suggest that app-based mindfulness treatments have benefits and disadvantages and that specific populations and circumstances enhance positive online treatment effects. For example, participant state mindfulness or state anxiety, contact with a researcher, and incentives contribute to successful app engagement.

In conclusion, in-person treatments may be more effective than online mindfulness treatments.

However, online interventions may positively contribute to vulnerable populations such as cancer patients, physicians experiencing burnout, and other high-stress populations.

**Castillo, Elizabeth**

University of Oregon

Research Mentor(s): Karleigh Bradbury

Poster

### **Association of Patent Foremen Ovale and Respiratory Heat Loss at Rest and During Exercise in Men**

Co-Author(s): Karleigh Bradbury, Aaron Betts, Nisha Charkoudian, Andrew Lovering

Respiratory heat loss (RHL) is a thermoregulatory process involving evaporative (Eres) and convective (Cres) heat loss and ventilation. Previous research has shown that men with a patent foramen ovale (PFO) have higher core temperatures (Tc) at rest and during exercise. PURPOSE: The purpose of the study was to test whether there are differences in RHL (Eres, Cres, and total RHL (Tres)) between PFO+ and PFO- men at rest and during 60 min of exercise at a workload eliciting a heat production (Hprod) of 7 w/kg. METHODS: Twenty-one males (11 PFO+, 10 PFO-, 18-36 y/o), without cardiometabolic or pulmonary diseases, participated in the study. Subjects completed 60 min of cycling exercise at a previously determined workload eliciting a Hprod of 7 w/kg in a thermoneutral laboratory environment (22°C, 39% rh). RHL was calculated at baseline (BL) and during min 0-10, 25-30, and 55-60 of exercise. RESULTS: There were no differences in RHL (Cres, Eres, or Tres) between PFO+ and PFO- men at rest and during exercise ( $p > 0.05$ ). Using a two-way ANOVA (Tres RHL X Exercise), there was a main effect of exercise on RHL ( $p < 0.01$ ), with RHL being greater at all 3-time points compared to rest and at min 55-60 vs min 0-10 ( $p < 0.01$ ). Tc was significantly higher in PFO- vs PFO+ men at rest and during exercise ( $37.59 \pm 0.18$  °C vs  $37.40 \pm 0.19$  °C;  $p < 0.05$ ). CONCLUSION: RHL is not likely the mechanism to explain the differences in Tc seen between PFO+ and PFO-men.

**Chan, Philip**

University of Oregon

Research Mentor(s): Kait Leggett

Creative Work

### **Forms and Fragments: Original Poems**

I've always loved poetry, and I've been delighted to write poems in the Kidd Workshop this year. As a poet, I try to read widely. I love the rhyme and meter of the canon—Elizabeth Barrett Browning and

Emily Dickinson—as well as the confessional and contemporary—Ada Limón and Victoria Chang, to name a few. I love new forms like the golden shovel and traditional ones like the sonnet and the villanelle. I've even studied poetry in Latin. In my own writing, I try to combine my influences to create something new, using the constraints of form to explore topics that are important to me. I aim to delight the ear and touch the heart. My work covers grand themes like love, friendship, and grief but also less universal ones like Asian American identity. Writing helps me. I often write thinking that putting my feelings on paper will prove we are not so alone. So I hope people find some meaning in these poems, just as they have given meaning to me.

**Chesak, Maya**

**University of Oregon**

**Research Mentor(s): Eleanor Wakefield**

**Poster**

### **Argument Revision**

In English 335: Inventing Arguments we have looked over various relevant historical and revolutionary arguments throughout history such as Sojourner Truth's *Ain't I a Woman*, Rachel Carson's *The Obligation to Endure*, Jonathan Swift's *A Modest Proposal* and Emma Goldman's *Patriotism, A Menace to Liberty* to understand the various components that build a strong argument. We will be using the practiced skills from this class to analyze and evaluate a well-known argument within its historical context. Then after researching the context, audience, and purpose, we will be adapting the argument to suggest how it would be better perceived through a modern perspective.

**Chesak, Maya**

**Research Mentor(s): Frances White, Sara Cotton**

**Poster**

### **Order from Chaos: Post-Pandemic Curation of the Primate Osteology Collection**

**Co-Author(s): Olivia Ferrell, Mariam Fischer, Gabe Westensee, McKenna Williams, Frances White**

The Museum of Natural and Cultural History's Comparative Primate Collection comprises over 700 primate skeletal specimens consisting of lemurs, monkeys, and apes. It also includes well over 100 non-primate vertebrate skeletal specimens including a wide variety of placental and marsupial mammals from sloths to bats as well as a varied collection of birds, reptiles, amphibians, and fish. In 2019, before the onset of the COVID pandemic, the collection was in the midst of a major

reorganization effort. In March 2020, when all undergraduate research in the lab was terminated, lab activities were abruptly halted, the reorganization was left unfinished, and past students working on the project graduated. In 2022, new students arrived with the daunting task of picking up where previous students left off. With the loss of a database computer and its records, we needed to reshelve, relabel, identify, and organize the numerous specimens to rebuild an updated database containing species and skeletal element identifications as well as their locations within the collection's cabinets. Many specimens were in need of urgent care to remove accumulated grease that naturally exudes from bones over time. Each student in the lab took on a degreasing project and contributed to a lab-wide effort of rebuilding and cataloguing the database which necessitated learning skills in anatomical identification and species determination from skeletal traits.

**Chotechuang, Siri**

**University of Oregon**

**Research Mentor(s): Melissa Redford**

**Virtual**

### **The Role of Language Planning in Speech and Breathing Coordination**

The processes of speaking and breathing are inseparable from one another as air must flow through the larynx and oral and nasal cavities in order for a person to produce speech sounds. The coordination of breathing and speaking results in the alternation of long pauses during the inhalation phase and speech during the exhalation phase. In fluent speech, these pauses are considered grammatical when they occur after a completed thought, sounding well-timed and natural to the listener. This study investigates what the role of language planning is in the coordination of speech and breathing, and whether a disruption to the language planning process impacts breathing during speech. Participants complete a story-retelling task in which an additional cognitive load is introduced to tax the language planning process. Breathing kinematics and timing are measured and compared to a control-task in which there is no cognitive load introduced and therefore the language planning process is not taxed. The anticipated results are that breathing is a part of the language planning process and breathing during speech will become less grammatical when the language planning process is taxed. This research will provide a better understanding of speech and breathing coordination, having implications for fluency shaping and other treatment interventions for developmental and acquired fluency disorders.

**Clayton, Adam**

University of Oregon

Research Mentor(s): Cal Penkauskas, Lauren Hallett

Oral Session

### **Out on a Limb: Do Oregon hazelnut orchards provide habitat for cavity nesting birds?**

Cavity nesting birds are a group of high conservation concern in the U.S. They depend on areas with mature decaying trees in which cavities can be excavated, but few studies have examined the role of managed landscapes such as orchards in providing nesting habitat. This study assesses the habitat suitability of hazelnut orchards for cavity nesting bird species in the Willamette Valley, where hazelnut farming is a major industry. Using field surveys, the density of suitable tree cavities and size of tree limbs was measured for four commercial hazelnut orchards. Observations of birds in the same orchards were used to determine the abundance of several cavity nesting species. When comparing the orchards, cavity density increased with average limb size, but was much lower in the orchard with low levels of fungal decay. Black-capped chickadees were the most abundant birds observed; an insectivore species which benefits hazelnut production through reducing pest pressure. These results suggest that orchards with mature trees experiencing fungal decay may be the most valuable for cavity nesting birds, but these qualities also make orchards vulnerable to destructive diseases. To control key diseases, many older orchards are being replaced with new blight resistant trees, altering habitat for Willamette Valley birds. Retaining some mature orchard patches within hazelnut operations could be a pest management strategy that benefits both hazelnut production and wildlife conservation.

**Cleland, Nicole**

University of Oregon

Research Mentor(s): Joshua Roering

Poster

### **Stability from Instability: Quantifying Total and Pyrogenic Carbon Stocks in Deep-Seated Landslides**

Co-Author(s): Brooke Hunter, Joshua Roering, Lucas Silva, Baird Quinn

Soils store more carbon than the biosphere and atmosphere combined and may serve an important role in understanding and potentially mitigating climate change. With increasing frequency, severity,

and size of fires, we need to quantify how wildfires impact the production, cycling, and storage of pyrogenic carbon (PyC), which is a small but highly stable component of soil organic carbon (SOC) stocks. Because SOC research focuses on the top meter, less is known about dynamics of deep soil organic carbon. In deep, highly weathered critical zones, such as deep-seated landslides, SOC below 1 m can contribute significantly to total SOC stock. To quantify the role of deep-seated landslides for storing SOC and PyC, we sampled a 7 meter deep soil and weathered bedrock profile on a ~1 My landslide deposit in the Oregon Coast Range. Given the 200-300 year return interval of stand-replacing fires in this region, abundant slide deposits may constitute a substantial reservoir of PyC. From the core samples, we measured SOC density, soil texture, and Fe content throughout the profile. To address how stability of carbon varies with depth, we measured mineral-associated and particulate organic carbon fractions by density fractionation; and PyC fractions through digestion. This work will help to improve SOC inventory predictions and understanding the role deep-seated landslides have in PyC storage and deep critical zone development.

**Cobb, Olivia**

**University of Oregon**

**Research Mentor(s): Peg Boulay, Marissa Lane-Massey**

**Oral Session**

## **Native Pollinator Enhancement Through Riparian Restoration in the McKenzie River Valley**

Riparian areas support aquatic and terrestrial ecosystems through habitat provision, water filtration, and temperature regulation. These areas are particularly sensitive to environmental disturbances such as invasive species takeover. Impacts to plant communities in riparian areas can adversely affect native pollinators, which play important roles in ecosystem functions. The 2023 Environmental Leadership Program's Restoration and Research Team is restoring native plant-pollinator systems and riparian habitat at Whitewater Ranch, a blueberry farm in the McKenzie River Valley, contributing to an ongoing restoration project that began in 2014. To do this, we will remove invasive species, continue native revegetation efforts that promote pollinator resources, and monitor subsequent changes to ecosystem services by analyzing stream temperature, pollinator presence, and plant growth. Based on findings from prior years, we anticipate these actions will decrease stream temperatures and increase native plant establishment at Whitewater Ranch, as well as increase native pollinator visitation to the ranch's blueberry fields. This project can inform management methods for riparian restoration and native pollinator enhancement, especially in semi-natural and agricultural lands. Our

research can be particularly useful to agricultural managers seeking to implement land use practices that benefit native flora and fauna.

**Cobb, Will**

University of Oregon

Research Mentor(s): Chantelle Russell

Poster

### **The benefits of resistance training for college students' emotional and physical well being**

Resistance exercise, defined in this study as training for muscular strength and endurance, is crucial for maintaining a healthy lifestyle. To study the benefits of resistance exercise, our group has interviewed current faculty in the UO Department of Physical Education and Recreation. As part of our findings, there is a very clear relationship between a reduction in stress and resistance exercise, as endorphins that reduce stress are released during exercise.

The benefits of weight lifting we found were surprising. According to one of the journals, students that participated in weight lifting had an increase in self efficiency and friendships. This is because students that partook in resistance training were more consistent with their commitment to weight lifting than the students that partook in aerobic exercise, this made it possible for the students to build community and friendships. It is also beneficial for your brain. According to Pete McCal, high strength workouts increase your BDNF levels which increases memory and academic performance. Resistance training is beneficial to not just your physical health but also your relationships, memory, and lifestyle. We did interviews in UO and research about university students to find the importance of resistance training for college students. This information is valuable to UO students because it can enhance their health, relationships, and academic performance, leading to an overall more productive college experience.

**Codding, Eleanor**

University of Oregon

Research Mentor(s): Lauren Hallett, Lina Aoyama Batas

Oral Session

### **Post-Fire Reseeding Effects on the Genetic Diversity of Native Grass in the Great Basin**

After large wildfires, land managers reseed burned areas with native perennial grass species such as blue bunch wheatgrass (*Pseudoroegneria spicata*) to support the regeneration of grasslands

and prevent soil erosion and cheatgrass (*Bromus tectorum*) invasion. The seeds used for restoration often have lower genetic diversity than native populations, which would in turn lower the local genetic variation of the restored population. Low genetic variation is a concern for restoration because it lowers the population's adaptability to environmental changes. This study explores the effect of post-fire reseeding on the genetic diversity of the native blue bunch wheatgrass. I hypothesized that plots of grass that have not been reseeded will have a higher level of genetic diversity than that of the burned plots that were reseeded. After completing my analysis, I did not find any significance between the genetic diversity of the reseeded versus unseeded plots. These findings are likely due to the genetic makeup of the seed and how they established in the ecosystem. This research is important because post-fire restoration ecology is increasingly important to maintain the Northern Great Basin grasslands with the presence of invasive species.

**Cole, Lauryn**

**University of Oregon**

**Research Mentor(s): Anna Carroll, Angela Rovak**

**Oral Session**

### **Fat & Fabulous: The Power of Contemporary Romance as a Site of Anti-Oppression Work**

My research for this project looks at two Contemporary Romance novels published in the last twenty years—*Take a Hint, Dani Brown* by Talia Hibbert and *Bet Me* by Jennifer Crusie—each of which features a plus-sized heroine, to chart the evolution of language and characterization of women's bodies as the genre has progressed. This project will serve to demonstrate the feasibility and value of doing academic research on Contemporary Romance and to situate close readings of these novels within the literary theories of Intersectional Feminism, Fat Studies, Cultural Studies, and Reader Response. My application of these theoretical frameworks to the understudied genre of Romance will help to fill in the gaps of existing research, build connections between disciplines, and propose a new facet of productive inquiry with radical cultural implications for dismantling fatphobia. My work will include an interrogation of how women's bodies are described; how the voice and perspective of these descriptions impact the one the reader receives; what role women's physical appearance plays in the way the central romance develops; the stakes of including heroines with 'untraditional' body types; and why fat representation is radical and revolutionary in and outside of the genre of Contemporary Romance.

**Contreras, Isaiah**

Lane Community College

Research Mentor(s): Caroline Lundquist, Stacey Kiser

Works in Progress: Lightning Rounds

### **The Impact of Personal Identity on Students' Attitudes Toward Learning as "Failure" and/or "Play"**

The Sigma Zeta chapter of Phi Theta Kappa (PTK) National Honor Society at Lane Community College would like to present on its 2023 Honors in Action (HIA) project on the topic of The Art and Science of Play. PTK HIA projects combine multimodal research, practical problem-solving, and service in order to identify and help solve a problem that is impacting our community. Our project focuses on students' identities in relation to play. Our working research question is: "What aspects of students' identities may stand in the way of developing a playful attitude about learning, and/or a sense that productive failure is a part of learning?" The aim of our research is to discover a practical problem related to learning and play that we can help to address at Lane Community College through a service project. This topic is relevant to many stakeholder groups at LCC, including students who, due to aspects of their identity, do not feel able to approach learning and/or failure as "play," and faculty who incorporate play and/or productive failure into their pedagogy. For this project we will identify and critically assess the 8 most relevant pieces of scholarly literature we can find on our topic. We also plan to collect data specific to our campus community. We hope to elicit audience feedback regarding potential data collection methods, and the relevance of our project to real-world problems impacting our local, national and global communities.

**Contreraz, Elias**

University of Oregon

Research Mentor(s): Chantelle Russel

Oral Session

### **Increase Community for First Year Students; The Value and the Methods**

Academic Residential Communities (ARCs) are a proven way to increase a sense of belonging, build relationships and improve one's well-being. As members of Thrive; an ARC here at UO, we have noticed these effects first hand and how positive an impact joining an ARC has been. However, during conversations with students on campus who are not involved in ARCs, we frequently encounter shared themes of loneliness and disconnection. Some students not in ARCs don't even know their

next door neighbor. This has prompted us to find and promote strategies to enhance the community experience and well being of students who are not a part of ARCs. The University of Oregon website states that “About 25 percent of incoming freshmen join one of the 15 ARCs at the UO,” this means three out of every four students are left to navigate an entirely new environment on their own. We talked with faculty and students along with using research articles to figure out methods for improving a feeling of community. Through research we found that students can increase their sense of belonging and happiness by starting conversations and getting involved in campus activities. This is particularly important for those not in ARCs because we all have a psychological need for belonging and all students should know how they can cultivate community while in college.

**Cooney, Connor**

**University of Oregon**

**Research Mentor(s): Peg Boulay, Dhruv Modi**

**Oral Session**

### **Monitoring Fuel and Vegetation Characteristics of Thurston Hills Natural Area**

Through using our protocol, we aim to provide data on fuel loads in Thurston Hills Natural Area (THNA) that can be used to inform future management. THNA is located at the wildland urban interface (WUI)- an area between unoccupied land and human development, meaning it is a critical site for fuel load assessment and reduction. This is important because it will help preserve historic oak savanna habitat, which is critical to plants, animal and avian species diversity in the Willamette Valley. Oak savanna provides both suitable habitat for wildlife and reduces the risk of wildfire for nearby inhabitants. Since fire does not spread as fast or burn as intensely as it does in conifer forest, protected oak savanna habitat in THNA will act as a buffer for the nearby community in the event of a wildfire. THNA also has outdoor recreational opportunities for inhabitants of Lane County. THNA offers a unique model of mixed land use, providing outdoor recreation and preserving oak savanna habitat. In order to support THNA in continuing its wildlife preservation and outdoor recreation use, we will assess fuel loading, species diversity, and canopy cover at the site.

**Cooper, Celia**

University of Oregon

Research Mentor(s): Chantelle Russell

Oral Session

### **Social Media's Effect on Personal Relationships**

It's important to make students at the University of Oregon recognize the impact that social media has on their relationships. As technology evolves, social media and dating apps put a barrier between the way students connect with each other. Engaging with social media too much does more harm than good. In college, students may begin to date online and have accounts on several social media apps. Frequent use of these apps takes away the value of conversation between UO students because they have the option to look at their phones to avoid social situations. In addition, a study in October 2019 conducted by the Pew Research Center found that many Americans are struggling with navigating romantic relationships due to technology-related issues. Dating apps give access to a wider range of people who would not be able to connect with one another if it weren't for these apps. These specific connections monetize extrinsic value, making it harder to develop relationships face-to-face; people focus on how they look online and forget to look beneath the surface. We talked to students around campus regarding their personal opinion on the question: How has social media affected our personal relationships and connections with one another? Especially in college, it's critical to feel like we belong and have a community of people who support us. Cultivating awareness around social media usage has the potential to strengthen relationships amongst students at the University of Oregon.

**Coronado, Nicole**

University of Oregon

Research Mentor(s): David Luebke

Poster

### **The 17th Century Leprotic Experience as a Lens for Disability Studies as an Academic Discipline**

Leprosy is one of the world's oldest and most devastating illnesses, often leaving its victims severely disabled. Those afflicted, called lepers, were removed from their communities and marked as stained. The author examines the experience and perception of leprosy to draw conclusions about the treatment of disabled individuals within the realm of disability studies. This particular

examination involves the application of a 21st century concept of disability studies (the study of disabled individuals as part of a diverse community) to distant eras in history where disability was nearly always met with fear and repulsion. While this type of analysis can be a precarious and difficult way of examining history, this application is important for understanding the disability experience as well as giving a vastly marginalized and mistreated group the consideration and presence in history they have always deserved. The way in which lepers were treated ultimately created a juxtaposition of invisible visibility through social rejection and forced transparency. The author concludes this paradigm can be applied to the disability experience as a whole. The author examines two written works produced during the 17th century that demonstrate the most prevalent perceptions of leprosy. This also gives a glimpse into the emerging metamorphosis of a strictly theological perception of disability to a strictly medicalized perception of disability, as well as beliefs that entwined the two.

**Crain, Michael**

**University of Oregon**

**Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson**

**Virtual**

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Crumly, Teresa**

University of Oregon

Research Mentor(s): Professor Kathryn Lynch

Oral Session

### **A Shared Sky: Celebrating the Cultural Connections of Migratory Birds**

Co-Author(s): Ivy Brott, Matilda Henehan, Rachel Hamid, Sofia Bajenaru

Their stunning plumage and catchy melodies make migratory birds difficult to miss. For elementary students at River Road/El Camino del Río Elementary School, learning about migratory birds helps expand their ecological knowledge while developing an ethic of care for the environment. Studying migratory birds also provides intercultural connections which broaden students' understanding of the world and cultivates empathy. This presentation highlights the impact that Aves Compartidas educators from the Environmental Leadership Program have on local students. Our interdisciplinary curriculum builds relationships between students in the Willamette and Laja watersheds in Oregon, USA, and Guanajuato, MX through the birds both regions share. Our Spanish and English instruction promotes intercultural connections and environmental stewardship through observation, critical thinking, and a series of five student-centered and action-based lessons, culminating in a field trip to Mt. Pisgah Arboretum. Students learn about the challenges birds face during migration and develop tools to make positive changes. Instilling a sense of capability to be a changemaker helps students move from an awareness of issues to helping to resolve them. Upon program completion, students can recognize migratory birds of both watersheds, communicate about their characteristics in Spanish and English, and use their leadership skills to enact change in their own communities that help migratory birds thrive.

**Cruz, Alonso**

University of Oregon

Research Mentor(s): Parisa Hosseinzadeh, Benjamin Gonzalez

Poster

### **Designing Protein Binders for MMP-8: A Biomarker in Periodontal Disease**

Periodontal Disease affects roughly 50% of Americans aged 30+. As it turns out, there is a striking pattern in the incidence of this disease. Studies in recent years have found the protein MMP-8 to be an inflammatory biomarker in Periodontal Disease. Consequently, its detection can be helpful as a preventative tool in dental medicine. While the idea of an MMP-8-detecting biosensor has great

potential for medical applications, selective binding to MMP-8 is difficult due to its similarity to other MMP proteins at its active site, namely MMP-1 and MMP-13. To conquer this hurdle, we take a novel approach, targeting surfaces on MMP-8 that are distal from the active site. Using insights from structural comparisons between MMP-8 and other MMP proteins, we focused our efforts on the hemopexin domain, a region of MMP-8 with minimal similarity relative to other MMPs. Using Rosetta design scripts, we produced a library of computationally-designed proteins. In the project's current stage, we are working on experimentally validating these designs in the lab.

**Csaszar, Avery**

**University of Oregon**

**Research Mentor(s): Prof. Lisa Munger**

**Poster**

### **Characterizing Study Spots Based on Their Sound Qualities**

The University of Oregon campus is a diverse environment, bustling with a wide range of sounds. Understanding the relationship between soundscapes and studying habits can provide valuable insights into how sound impacts our cognition in different settings. For example, white noise has been demonstrated to aid with logic and analytical thinking, whereas natural sounds have a greater benefit for creative and collaborative thinking.

This project aims to study 12 different soundscapes on the UO campus. Our two hypotheses are as follows: Hypothesis 1: Indoors at Knight Campus, one will study logical topics best because of the low-level white noise present. Hypothesis 2: Outside at Tykeson, one will study creative topics best because of the ambient noise present.

To conduct this research we will record 21 minutes each week from different locations using a simple phone adaptor and recorder. We will then use RavenLite software to examine frequency and volume. Qualitative research will be taken on-site to note the type of crowd, contributing noise factors, possible error sources, etc.

The results of this study will provide valuable insights into how the soundscape can influence the academic performance of students. The results may also have practical implications for campus planning, design, and management, as well as for new approaches to education. The findings of this research will pave the way for further interdisciplinary studies in the field of sound and place.

**Cumming, Margo**

University of Oregon

Research Mentor(s): Lisa Munger

Oral Session | Poster

### **Indoor Anthropogenic Noise Trends at the University of Oregon**

Although there is extensive research about the effects of anthropogenic noise, the research regarding anthropogenic noise indoors and in relation to weather patterns is sparse. We will investigate how indoor anthropogenic noise varies in 3 different locations at UO, depending on the weather. We will plug the Dayton Audio iMM-6 calibrated microphone into our smartphones to capture sound levels on campus and record for 10-minute intervals, two days a week in different locations (Knight Library floor 1, EMU O-desk, and the Lillis building floor 1). We will record the weather conditions during each 10-minute interval to track fluctuating patterns and use Raven Lite to read the recordings by looking at the spectrogram created to identify the frequency components of the sounds. We will measure the sound pressure levels and frequency spectrum. We will see patterns in the human noise levels over time and will compare them to the weather conditions and locations. Our independent variables are the location on campus and weather conditions, while our dependent variable is the sound levels. We predict that indoor anthropogenic noise will decrease on sunnier days since students will spend more time outside in the sun. On rainier days, the noise will increase since students likely stay inside. Oregon's weather is inconsistent, so our analysis of UO students adapting to the changing climate will help further research comparing the effects of anthropogenic noise and weather conditions.

**Deivanayagam, Nithi**

University of Oregon

Research Mentor(s): Lisa Munger

Oral Session | Poster

### **Indoor Anthropogenic Noise Trends at the University of Oregon**

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locations (Knight Library floor 1, EMU O-desk, and the Lillis building floor 1). We will record the weather conditions during each 10-minute interval to track fluctuating patterns and use Raven Lite to read the recordings by looking at the spectrogram created to identify the frequency components of the sounds. We will measure the sound pressure levels and frequency spectrum. We will see patterns in the human noise levels over time and will compare them to the weather conditions and locations. Our independent variables are the location on campus and weather conditions, while our dependent variable is the sound levels. We predict that indoor anthropogenic noise will decrease on sunnier days since students will spend more time outside in the sun. On rainier days, the noise will increase since students likely stay inside. Oregon's weather is inconsistent, so our analysis of UO students adapting to the changing climate will help further research comparing the effects of anthropogenic noise and weather conditions.

**Dettwyler, Eunhye**

**University of Oregon**

**Research Mentor(s): Jina Kim**

**Virtual**

### **Streaming Racial Categories: Spotify, K-Pop, and Genre**

Music genres are sociologically significant because they construct, uphold, and negotiate social boundaries that have real-world implications. Due to increasing awareness of Asia and anti-Asian racism, I turn the focus toward K-pop and put it in contrast with Western contemporary pop. What criterion does the music industry, and specifically Spotify (the most popular music streaming platform worldwide), use to classify a song as "K-pop"? If there are no significant distinctions between what is categorized as K-pop and pop, why does this cultural and ethnic segregation exist, and how does it complicate race relations in American society? I analyze a sample of K-pop and pop songs with the following: a quantitative study of musicological factors using Spotify's online API service and R Studio; and a qualitative study of lyrical themes using NVivo software. I report statistically significant differences in both musicological and lyrical aspects. This analysis contributes to a small but growing sector of scholarly work that studies K-pop as an art form and a text and in conversation with Western music. It also introduces areas of further questioning regarding Spotify's playlist feature and musicological/lyrical themes unique to K-pop.

**Deweese, Iaila**

University of Oregon

Research Mentor(s): Celena Simpson

Poster

### **Dance is a sport**

The medium that I used for this poster was photography as well as the addition of dance movement. My matter of subject is what physical and mental challenges has not being considered an athlete at the UO caused me. This lack of resources and understanding has caused me physical strain. My body and mental health are the relationship between me and this subject. Without proper care to small injuries most dancers face the repercussions of bigger overuse injuries. I hope to convey that not only is dance art but it's also a sport. If dance is considered apart of the athletics department the funding would help grow the program. For me this would help my development in my career adequate classes and proper funding opens doors. The respect of dance being considered would bleed over into other aspects such as wages of Superbowl dancers. This is something I'm extremely passionate about because I feel the repercussions daily.

**Diakite, Mariam**

University of Oregon

Research Mentor(s): aris hall

Virtual

### **Mariam**

My question is how does surrounding myself with black peers help with being at a PWI? Having black friends at the UO has helped me adjust to going to a PWI. I feel like no matter what microaggressions I deal with, I will never feel alone since my friends will most likely have experienced it too or they will understand that I'm not overreacting. I also just feel like they are my safe space. Surrounding myself with my black peers sometimes helps me forget about everyone else around me doesn't look like us.

**Dinh, Ethan**

University of Oregon

Research Mentor(s): Genevieve Romanowicz, Robert Guldberg

Works in Progress: Lightning Rounds (must be in-person)

### **Proteomic Signatures of Reinjury in Tibial Bone Stress Injury**

Co-Author(s): Genevieve Romanowicz, Robert Guldberg

Stress fractures account for up to 20% of all sports medicine injuries among athletes. Upwards of 30% of athletes will have at least one additional stress fracture. Despite this frequency, the underlying mechanisms contributing to this high rate remain poorly understood. This study aims to identify proteomic signatures associated with re-fracture using machine learning algorithms and to develop a predictive model ensemble for healing outcomes in female athletes. A panel of 1500 proteins, encompassing metabolic, immune, pain, bone healing, and aging biochemical pathways, was analyzed at five timepoints following fracture diagnosis in 30 female athletes; notably, 10 of these athletes experienced re-fractures during the study. The data was preprocessed via data filtering, discretizing, transforming, and normalizing techniques. Machine learning models, including sparse partial least squares-discriminant analysis (sPLS-DA), HSIC Lasso, and Genetic Programming were employed for feature selection and predictability in similar retrospective datasets. Our pilot workflow demonstrated the feasibility for identifying significantly correlated feature between proteomic markers and secondary fractures. Further analysis is planned with individual return-to-sport timelines to inform personalized injury prevention and rehabilitation strategies. Future work will compare predictive models in similar datasets with the goal of testing our model prospectively on athlete populations.

**Dinh, Ethan**

University of Oregon

Research Mentor(s): Genevieve Romanowicz, Robert Guldberg

Poster

### **Leveraging robotic assisted bioprinting to fabricate injectable bone-like microdots**

Co-Author(s): Genevieve Romanowicz, Robert Guldberg

The complexity of replicating native bone's highly mineralized collagen and cellularity poses a significant challenge in developing truly bone mimetic materials both as organoids and surgical

grafts. Here, we present a novel approach that leverages robotic bioprinting to produce injectable, cell-laden, mineralized microdots that mimic bone composition and cellularity in less than 7 days. Human mesenchymal stromal cells embedded in type I collagen were printed into small volumes and self-contracted over 3 days. The microdots were then mineralized, and mineral quality was assessed with Fourier transform infrared spectroscopy. Injectability and cell viability were demonstrated through in-vitro injection and live/dead staining. Mineral distribution was visualized with x-ray microcomputed tomography (microCT) and cellular phenotype via immunofluorescent staining. Bioprinting reduced fabrication time by 47% and achieved contraction to less than 0.8mm within 72 hours. The mineral to matrix ratio of the microdots reached  $58\pm 9\%$  of native bone by day 7, and post-injection viability was  $98.6\pm 0.5\%$ . MicroCT showed osteocyte-like cells entombed in high density mineral. Mature osteoblasts were observed in the central and peripheral regions of microdot cells. In conclusion, our robotic bioprinting-assisted approach created viable bone-like microdots that mimic native bone properties, showing promise for further development and in vivo testing as an organoid model or surgical graft material.

**Dinsdale, Kenna**

**University of Oregon**

**Research Mentor(s): Kathryn Lynch, Mirabai Collins**

**Oral Session**

### **Trailblazing Accessibility: Auditing Regional Hiking Trails for More Equitable Outdoor Recreation**

In the United States, over 25% of the public is disabled and might experience inaccessibility in outdoor recreation. Specifically, the lack of information regarding accessibility features, amenities, trail conditions, and sensory experiences prevents many disabled people from having positive experiences outside. The Trails Team from the University of Oregon's Environmental Leadership Program (ELP) collaborated with our community partners, Travel Lane County (TLC) and Willamette Valley Visitors Association (WVVA), to gather and disperse trail information to the public so that users can determine whether a trail is accessible for them. The team initially performed a literature review to learn about disability and establish relevant factors regarding trail accessibility. The team then assessed ten trails in Lane, Linn, and Benton Counties and surveyed trail characteristics such as slope, cross-slope, tread surface, and trail width, in addition to documenting amenities and obstacles. The team created a protocol detailing best practices for future use, a spreadsheet of data collected at each site, brief trail profiles summarizing qualitative and quantitative data, trail

photographs, and a team website. We provided our community partners with this information to disperse to the public so that community members can determine whether or not a trail is accessible to them based on their personal access needs before visiting.

**DMello, Craig**

University of Oregon

Research Mentor(s): James Imamura, Scott Fisher

Poster

### **Measuring the Age and Distance of the Open Star Cluster NGC 752**

**Co-Author(s): Tsukiha Takayama, Nao Shinohara, Hiroki Konosu, Shunnta Yamamoto, Nanako Yano**

The purpose of this study is to estimate the age and distance of an open cluster - New General Catalogue (NGC) 752 - by constructing color-magnitude diagrams in Sloan g, r, and i from data collected at Pine Mountain Observatory (PMO) through the Robbins 0.35m telescope. Stellar properties from the data were measured using Aperture Photometry Tool (APT) and were calibrated through the SIMBAD astronomical database. Isochrone fitting, parameterized from additional literature, was performed in r versus g-r and i versus r-i yielding a [1300] lightyear distance, while approximations of the main-sequence turnoff estimate an age of [2.8] Gyrs. Observation of hypothesized white dwarf stars and blue stragglers within the cluster are inconclusive. This work was a collaboration between students from the University of Oregon and Kobe University in Japan. 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.

**Dobson, Maggie**

University of Oregon

Research Mentor: Alexander Dracobly

Poster

### **The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World**

"The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War" is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the

First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Duey, Francis**

University of Oregon

Research Mentor(s): James Schombert

Poster

### **The WISE Baryonic Tully-Fisher Relation from NASA Archives**

Co-Author(s): Sara Tosi, James Schombert

We present the new WISE baryonic Tully-Fisher (bTF) for the SPARC (Spitzer Photometry and Accurate Rotation Curves) sample with improved photometry, new M/L models, and extended gas masses. The SPARC sample with redshift independent Cepheid or TRGB distances are added with the Ponomareva et al. (2018) sample to form a new, distance independent bTF of 62 galaxies. The new bTF has a slope of  $4.00 \pm 0.09$ , in agreement with predictions from MOND, and in sharp tension with values predicted by  $\Lambda$ CDM models. In addition, the new WISE distance bTF provides an opportunity to deduce a value of  $H_0$  using every galaxy with an accurate rotation curve by varying the expected total baryon mass until a minimal fit is obtained. Such an experiment results in a value of  $H_0$  of  $74.8 \pm 1.8$  (stat)  $\pm 1.5$  (sys).

**Dumore, McKayla**

Visiting McNair Scholar | Southern Oregon University

Research Mentor(s): Chance White Eyes

Works in Progress: Lightning Rounds (must be in-person)

### **Indigenous Pedagogy in Action at Southern Oregon University**

Southern Oregon University was one of the first universities on the West Coast to have a Native American Studies Program. 25 years later, the program continues to grow. Native students, scholars, and professors have woven Indigenous pedagogy throughout their curriculum, providing an

informed and holistic program.

The question at hand asks “What is the affect on student success when Indigenous pedagogy is applied in classrooms at Southern Oregon University?”

Participatory observation, surveys, and interviews are all being used in this project. After conducting participatory observation in a Native American Studies class, the researcher will provide the students with a survey aimed to collect self reported data regarding how they felt the class affected their success. The professor will also be interviewed to further assess how Indigenous pedagogy was integrated into the classroom, and how affective they believe it was.

While no results have been found thus far, it is anticipated that the implementation of Indigenous pedigogy within classes will have a significant positive impact on student success.

If the anticipated results prove to be true, it will not only reaffirm the idea that knowledge sovereignty is important but also that Native American Studies deserves a place in Higher Ed.

This study touches on subjects of tribal and knowledge sovereignty, and can be used to advocate for more Native American Studies curriculum in Post Secondary Education.

**Dydasco, Quaye**

**University of Oregon**

**Research Mentor(s): Theresa May, Marta Clifford**

**Creative Work**

### **Embodied Indigenous Research: *Pocahontas and the Blue Spots***

For the undergraduate research symposium, I, along with three co-presenters, am performing a staged reading of the play, *Princess Pocahontas and the Blue Spots* by the Indigenous dramatist, Monique Mojica. The materials that we will be using are the script, the performance space, and fabric and instruments. Our methods involve devised movement, research, and connection with my fellow actors to strengthen the message of the play.

The subject matter is *Princess Pocahontas and the Blue Spots* and the struggles faced by Native women through colonialism. Throughout the play, there are 13 transformations that a combination of our four actors will play. These transformations both seriously and satirically explore the truths of the Native woman’s experience and focus on topics including the loss of identity, stereotypes, and exploitation. Given the subject matter, we approached the script with intention, knowing our actions represent the experiences of Native women who have been silenced for far too long. As women-identifying artists, POC, and allies, our connection to this piece is deeply personal and the weight of this piece is important to us. Therefore, through our exploration and research of devised movement

and our connection with each other, we aim to create a performance that not only honors these women but also creates a space for understanding. With *Princess Pocahontas and the Blue Spots*, we hope to inspire others to join us in this fight for justice and equality.

**Earle, Taylor**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **The Effect of Style Choices in Books on the Reader's Experience**

We are developing this project for a course with Professor Cheng in Winter 2023. Our class assignment was to plan an exhibit on “book love; or, reading commonplaces.” As co-curators, our task is to identify and research an item in Special Collections and situate the item in the context of our relevant course readings. We chose to approach the project by studying *What We See When We Read*, *Northanger Abbey*, and *A Commonplace Book of Cookery*. Through these works of literature, we hope to find out how style choices in books, like font, size, use of blank space, etc., affect the engagement of the reader, as well as their motivation throughout the work. Although style choices may seem minuscule or go unnoticed by many readers, authors have the opportunity to use them to create a whole reading experience for their audience. After this project, we want our audience to understand aspects of reading that are often taken for granted. Unique stylistic choices are important and allow the author to have an impact on the audience through more than just the words on the paper. While it is still true that there is more to a book than just its cover, the style choices of a piece of literature can be just as important as the actual meaning of the work.

**Easton, Catherine**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

### **The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people

today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful in regard to the modern world. This project will show the importance of reevaluating notable pieces from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Elkins, Krysten**

University of Oregon

Research Mentor(s): Jeanette De Jong

Virtual

### **Designing for Straightforward Theatre**

For the purpose of this project, I created my designs both digitally and through photo collage. The idea is that, just because a production's concept may be simplistic and straight forward - I.E., a story about an all-girls indoor soccer team - does not necessarily mean the designs have to be. My influence and vision for the work was to replicate and create a true and relatable experience for not only the actors in their roles, but for the audience to be included as well. The message I hope to convey through my creative work is to encourage communication within your research process, and to pay special attention to the details - regardless of how big or small a project may be.

**Elmer, Molly**

University of Oregon

Research Mentor(s): Kathryn Lynch, Mirabai Collins

Oral Session

### **Trailblazing Accessibility: Auditing Regional Hiking Trails for More Equitable Outdoor Recreation**

**Co-Author(s): Naia L'Amour-Wolf, Stephanie Wigle, Melozie Madland, Grace Samath**

In the United States, over 25% of the public is disabled and might experience inaccessibility in outdoor recreation. Specifically, the lack of information regarding accessibility features, amenities, trail conditions, and sensory experiences prevents many disabled people from having positive experiences outside. The Trails Team from the University of Oregon's Environmental Leadership Program (ELP) collaborated with our community partners, Travel Lane County (TLC) and Willamette Valley Visitors Association (WVVA), to gather and disperse trail information to the public so that

users can determine whether a trail is accessible for them. The team initially performed a literature review to learn about disability and establish relevant factors regarding trail accessibility. The team then assessed ten trails in Lane, Linn, and Benton Counties and surveyed trail characteristics such as slope, cross-slope, tread surface, and trail width, in addition to documenting amenities and obstacles. The team created a protocol detailing best practices for future use, a spreadsheet of data collected at each site, brief trail profiles summarizing qualitative and quantitative data, trail photographs, and a team website. We provided our community partners with this information to disperse to the public so that community members can determine whether or not a trail is accessible to them based on their personal access needs before visiting.

**Emary, Treydon (Kimo)**

**University of Oregon**

**Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson**

**Virtual**

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Engblom, Isabella**

University of Oregon

Research Mentor(s): Ulrick Casimir

Oral Session

### **A Feminist Analysis of *Gone Girl*: A Critique of Postfeminism and Neoliberalism**

The subgenre of “Good for Her” narratives allows female characters to reject their oft-held position as the victims of violence, and to take their place as antagonists who are just as malicious and vile as their male counterparts. The 2014 film *Gone Girl* is often included in this trend, as the character Amy Dunne lies, manipulates, and kills to take revenge on her unfaithful husband. However, to say that Amy Dunne represents female empowerment because she is evil is to ignore a much deeper commentary on modern social phenomena. Through the lens of feminist analysis, this presentation demonstrates how Amy Dunne, and the ways in which she enacts her revenge, are best understood as commentary on postfeminism and neoliberalism. Comparing *Gone Girl* with examinations of these two concepts facilitates an in-depth analysis of how Amy Dunne’s status as a white, affluent woman affords her a very specific type of power, as well as the promise of a privileged lifestyle. When that power is threatened, Amy loses all semblance of control over her seemingly picturesque life. Therefore, the revenge of Amy Dunne is not just revenge against her husband, but revenge against the patriarchal system of power that deluded her in the first place. The motif of revenge in *Gone Girl* serves to expose the failings of postfeminism, not just for marginalized women, but for privileged women as well, by exposing the ways in which it deceives them into believing that they hold value in a patriarchal society.

**Evans, Tessa**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

### **Crooked, But Upright**

A flash fiction piece where a Shepherd Boy and a Hunter venture into the woods to slay a Beast lurking inside, but the two of them quickly realize the denizens of the forest are best left alone, lest they lose their lives. Inspired by old fairy tales, folklore, and myths, with a sprinkling of conservation, environmentalism, and the culling of predators out of fear.

**Faris, Katie**

University of Oregon

Research Mentor(s): Benjamin Duewell, Scott Hansen

Poster

### **Examining in vivo PIP5K Dimerization**

Co-Author(s): Benjamin Duewell, Scott Hansen

Cell signaling, the ability of cells to interact with one another, is crucial for organismal life. Phosphatidylinositol phosphate (PIP) lipids modulate cell signaling by acting as second messengers to coordinate cell response to an incoming signal. The most abundant PIP lipid at the plasma membrane is PI(4,5)P<sub>2</sub> (PIP<sub>2</sub>), which is synthesized by the family of enzymes called Phosphatidylinositol 4-phosphate 5-kinase (PIP5K). Correct production of PIP<sub>2</sub> lipids regulates various important signaling processes, including cytoskeletal reorganization, endocytosis, and ion channel gating. Incorrect PIP<sub>2</sub> synthesis has been linked to developmental disorders and neurological diseases. This makes the study of PIP5Ks activity important for understanding PIP<sub>2</sub> homeostasis. Recently, the lab determined that PIP5K can dimerize in vitro in a density-dependent manner. This is important, as dimerization enhances the catalytic efficiency of PIP5K ten-fold. This project aimed to test whether PIP5K undergoes dimerization in vivo. Using molecular cloning techniques, I created an orthogonal PIP5K protein that was only capable of homodimerization and a monomeric PIP5K that could not undergo dimerization. I successfully expressed these constructs in HEK293T and RAW 264.7 macrophage cells. Using Total Internal Reflection Fluorescence (TIRF) microscopy I was able to determine the biophysical properties of these proteins in vivo and conclude that PIP5K can undergo dimerization in cells.

**Farrara, Macy**

University of Oregon

Research Mentor(s): Kait Leggett

Creative Work

### **Poetry reading**

Growing up I fell in love with reading, especially fiction, and fantasy. I like to include those themes within my poetry because they are things that inspired me to write. Another inspiration to me is my family because they are a huge part of my life, they have been there for me through tremendous loss when they were grieving themselves and I am forever grateful to have them in my life. To me, poetry

is a captivating and extensive medium to include these topics because you can use literary devices such as Imagery, metaphor, alliteration, personification, and tone to share a memory or create a new scene. I often use metaphors, or personification to add a fictional or fantasy element to my poems. My hope for my poetry is to convey to readers my experiences with family and loss and create poems that they can connect to.

**Farrenkopf, Tom**

University of Oregon

Research Mentor(s): Dr. Ari Purnama

Oral Session | Poster

### **How as Native American Representation in the US Film Industry changed over the last thirty years?**

The cinematic representation of Native Americans has been consistently relegated to stereotypical characters that scholars and activists have labeled as damaging to the identity of the Native American population. Through a comparative analysis approach, this paper examines the question “How, if at all, has the American film industry altered its relationship with Native Americans since 1990.” To achieve this goal, this research compares the usage of narrative stereotypes as representation in front of the camera and an examination of employment practices behind the camera. *Dances with Wolves* (1990) has been called a watershed due to a significant shift in public opinion during the years following its release. *Montford: The Chickasaw Rancher* (2021) is a contemporary example of Native American filmmaking. Major U.S. cinematic hubs, like New York and Hollywood, have yielded no observable changes. However, there has been a significant increase in Native American film production companies and, as a result, more stories are being created by their filmmakers.

**Feldmeier, Hannah**

University of Oregon

Research Mentor(s): Karleigh Bradbury, Tyler Kelly

Poster

## **Core and Skin Temperature in Men With and Without a Patent Foramen Ovale at Rest and During Exercise**

Co-Author(s): Karleigh Bradbury, Aaron Betts, Elizabeth Castillo, Nisha Charkoudian, Andrew Lovering

Introduction: During exercise, core (T<sub>c</sub>) and skin temperatures (T<sub>sk</sub>) increase due to a higher heat production (H<sub>prod</sub>) from exercising muscles. To maintain T<sub>c</sub> & T<sub>sk</sub> humans increase skin blood flow, sweat, and release heat through exhalation. Individuals with a patent foramen ovale (PFO) don't release as much heat through ventilation, as a fraction of their cardiac output bypasses the respiratory system (Davis et al. 2017). Purpose: To determine if a PFO is associated with higher T<sub>c</sub> & T<sub>sk</sub> at rest and during exercise in adult men. Methods: The study was completed in a thermoneutral environment (20 C, 39% rh). 21 men (11 PFO+ & 10 PFO-), ages 18-35 y/o participated. Day 1 consisted of non-invasive pulmonary function tests and a cardiac ultrasound to determine PFO status. Day 2 subjects performed a graded exercise protocol to determine what workload elicited a H<sub>prod</sub> of 7 W/kg body weight and completed a  $\dot{V}O_2$  peak test. Day 3 participants completed a 1 hr cycling protocol at the 7W/kg workload. T<sub>c</sub> & T<sub>sk</sub> were measured continuously. Results: PFO- subjects had significantly higher (P<0.05) T<sub>c</sub> before and during exercise compared to PFO+ subjects (rest: PFO- 37.13±0.18, PFO+ 36.89±0.19), (exercise: PFO- 37.62±0.16, PFO+ 37.44±0.16). No significant difference was observed in T<sub>sk</sub> between PFO+ and PFO- subjects. Conclusions: These data suggest that the presence of a PFO is associated with decreased T<sub>c</sub> at rest and during exercise. Reasons for these discrepancies are not yet understood.

**Ferguson, Willie**

University of Oregon

Research Mentor(s): Aris Hall, Celena Simpson

Poster

## **Culture Shocked**

Co-Author(s): Dr Hall, Dr Rachel, Dr Celena

I created my art by using the cinematic photo mode on my iphone 13 while getting out the sunlight to make a better quality photo, also using instagram to add the captions built in the photos taken.

The materials used were an iPhone 13 and Instagram editing option to add text to photos. The subject matter of this photo layout is to describe the feeling of a young Black male from the inner city of Houston, TX moving over 3000 miles from home to what seems to him from his POV a strange town of Eugene, OR. Being surrounded by all this nature and wild-life, going on hikes and trails for the first time and experiencing brand new things and meeting new people from all over the country at once was really eye-opening and made me expand my thinking especially in the context of Black history and other Black topics. My research question was How does it feel to be culture-shocked, coming from Houston TX to the University of Oregon, I am asking this question because I feel I am misunderstood and to express how I feel in my POV so maybe people who read this can understand and maybe relate to what I'm saying.

**Fernandes, Isabel**

**University of Oregon**

**Research Mentor(s): Dan Tichenor, Burke Hendrix**

**Oral Session**

### **America's Greatest Idea, But At What Cost? How America's National Parks Displaced Indigenous Nations**

The establishment of US National Parks has long been considered a critical component of environmental protection, or "America's Greatest Idea." What's often unspoken about the land National Parks is that it has been shaped, inhabited, and worshiped by Native peoples for millennia. The truth is America's National Parks came at a tremendous cost. This study seeks to analyze the extent to which the creation and enforcement of National Parks in the US have displaced Indigenous nations. Specifically, this study analyzes two national parks: Yellowstone and Glacier. The histories of the Bannock, Shoshone, and Blackfoot tribes are tracked in comparison to Yellowstone and Glacier's establishment, seeking to understand the means by which any displacement occurred and the reasons behind doing so. By looking through Supreme Court cases, National Park Superintendent Reports, park establishment laws, and more, this study finds instances of the Bannock, Shoshone, and Blackfoot all experiencing displacement. While land cessions were often agreed upon exchanges, the abrogations of treaty rights within National Park boundaries afterward were not. Interestingly, America's conception of wilderness and the federal judiciary play crucial roles in displacement policies. Ultimately, the idea that National Parks serve as a virgin wilderness for visitors to view "untouched" is a fabricated one, at best, as they were home to the Shoshone, Bannock, and Blackfoot for centuries.

**Fernandez, Rafael**

University of Oregon

Research Mentor(s): Victor Lewis

Poster

## **A swim-training protocol for the study of exercise and skeletal appendage repair in zebrafish**

Co-Author(s): Victor Lewis, Kryn Stankunas

Rehabilitation accelerates repair and improves outcomes following skeletal injury. However, exercise delays healing if initiated too early. Moderating this antagonism would allow for earlier rehabilitation and likely improve patient outcomes. The zebrafish caudal fin is a leading vertebrate regeneration model, yet it remains unknown how exercise impacts fin appendage repair. After caudal fin resection, intra-ray fibroblasts and dedifferentiated wound-adjacent osteoblasts migrate distally to establish an organized blastema. The blastema guides subsequent outgrowth and is the progenitor source of replacement tissue. Using a swim tunnel system, we find that exercise specifically initiated during blastema establishment impairs the regenerative response. Since “Elite” athletes frequently return to activity earlier than non-athletes, we next endeavored to evaluate regeneration in “trained” animals. We first developed a training protocol based on our initial exercise regimen. Animals experiencing a 5-day on, 2-day off training regimen showed significant improvement in a maximum swimming assay. However, trained cohorts showed no benefit to regeneration relative to controls. Ongoing efforts will test how trained cohorts respond to exercise during regeneration by evaluating bone ossification and regenerative area. These future efforts will identify if exercise therapies may be an attractive approach to moderate the detrimental effects of early exercise on skeletal repair.

**Ferrell, Olivia**

University of Oregon

Research Mentor(s): Frances White

Poster

## **Solving anatomical puzzles; Unidentified Specimens in the MNCH Primate Osteological Collection**

Co-Author(s): Frances White, sara cotton, sedona epstein

The Museum of Natural and Cultural History’s UO Comparative Primate Collection, also known as the “Grand Collection” named after its most important contributor, comprises over 700 primate

and 125 non-primate vertebrate skeletal specimens . The primates consist mostly of Old World monkeys, but there are numerous Prosimians and New World monkeys as well. Many specimens in the collection come from past anatomical studies by Dr. Grand between 1963 and 1982 during his time at the Oregon National Primate Research Center. Like any collection, some specimens are well identified and well prepared but a few others are anatomical puzzles. These puzzles often consist of a miscellaneous collection of unlabeled bones without identification or attribution to a specific specimen. An important part of curating a valuable biological collection is solving the puzzles. Bones have to be identified and when possible be reunited with their parent skeleton. My project is to take box number 088-3962 which contains 20 small bones and mummified tissue samples, and identify the elements and compare them to possible parent species. In order to complete this project, I will be using standard tissue preparation, degreasing, and maceration, to separate different elements for identification. If it is possible to identify its source, I will document my reasons for association and reunite the specimens.

**Feyfant, Aymeric**

**University of Oregon**

**Research Mentor(s): Michael Hahn, Emily Karolidis**

**Oral Session**

### **Sex Differences in Plantar Pressure Distribution in Soccer Players After Fatigue**

In soccer, physical demands subject players to systemic fatigue progression, resulting in decrements to performance. While females are generally more resistant to fatigue than males, studies into the effects of fatigue in created sports are often generalized to male athletes. This study aims to examine sex differences in plantar pressure in soccer players before and after systemic fatigue. Plantar pressure data were collected from three college soccer players (2 males, 1 female, n = 20 in progress) using Novel Pedar-X pressure insoles, both during a 50 m warm-up sprint (pre-fatigue state) and the final 100 m of an aerobic fatigue protocol (post-fatigue state). Data were analyzed at maximal velocity and masked according to anatomical regions; regional force-time integral (FTI) was compared across fatigue states and sex, and peak pressure was determined for the whole foot. Initial descriptive statistics show that post-fatigue, both sexes show an increased FTI in the lateral forefoot and the whole foot, and a decreased FTI in the lesser toes. With fatigue, females saw FTI increases in the lateral and medial midfoot where males saw no change, and males saw FTI increases in the medial and central forefoot where females saw a decrease. Peak pressure was consistently found in the hallux for all conditions. Initial results suggest there may be sex differences in sprinting

mechanics due to fatigue; this can be used to better inform training methods or cleat design in female athletes.

**Fields, Imaesia**

University of Oregon

Research Mentor(s): Judith Eisen, David James

Poster

### **Learning how Host-Associated Microbes Influence Visual System Development**

Through recent findings, the microbiome (the collection of microbes, such as bacteria and viruses, that naturally live within a host) is proving to be an important factor in brain development and has created a paradigm shift in neuroscience. Our preliminary data has shown that the microbiome is required for normal development of the visual system. Microbial imbalance is associated with autism spectrum disorder (ASD), and we hypothesize it is also responsible for the altered visual processing that is commonly linked to ASD. Our goal is to determine how changes in the microbiome of an organism affect development of the visual system. To do this, we use zebrafish as a model; zebrafish are an ideal model because their genetics and physiology are similar to mammals, and they have various experimental advantages suited for research. We have discovered that zebrafish raised without a microbiome have aberrant differentiation of a population of neurons in the brain optic tectum, a region involved in processing visual information. The broader impact of this research will allow a larger understanding of the mechanisms behind visual comorbidities associated with neurodevelopmental disorders like ASD. Completing research in this field provides us with data on the otherwise poorly understood role the microbiome plays in host development, along with potential methods for treatment and preventative measures.

**Finch, Kelly**

University of Oregon

Research Mentor(s): Monika Fischer, Matthias Vogel

Poster

### **A Comparison of the Effects and Solutions to Climate Change Exemplified in China and Japan**

Climate change and environmental destruction are some of the most serious issues we have yet to face on this planet. One of the biggest contributing factors of climate change is the growing amount

of carbon emissions being put into the air from various industrial production companies, cars, and other fossil fuel-dependent industries. While regulations on big business have been enforced, it is not enough and oftentimes is subject to corruption. For our project, we chose to focus specifically on China and Japan to compare the causes and outcomes of climate change in these East Asian countries, and reflect on what is being done in each of them to combat the adverse effects of carbon emissions. We will explore the comparison of these two countries while discussing the unique obstacles they face in relation to climate change. From our research, we have found that Japan has an active plan to almost completely eliminate carbon emissions by 2050, whereas China has yet to make any plans, despite the fact that they are one of the largest producers of greenhouse gasses in the world. From the data provided by these scenarios we will compare the economic, political, cultural, and environmental problems and solutions affecting these countries. We hope to gain a better global understanding from this representative study by using it as a lens to analyze the broader politics of climate change.

**Fischer, Mariam**

**University of Oregon**

**Research Mentor(s): Frances White**

**Poster**

### **Sex-based Power in Controlling Preferred Resources: Bonobo Control of a Termite Mound**

Bonobos (*Pan paniscus*) are a species of ape that are most closely related to humans, alongside chimpanzees, making them an ideal subject for studying the evolution of human behavior. Unlike chimpanzees however, unrelated female bonobos form close bonds with each other, resulting in coalitionary power over males and a mixed sex hierarchy. This results in patterns of behavior evident of female dominance. One way we can investigate sex-based dominance behavior is through identifying the sex that displays control over preferred resources. We plan to investigate sex-based control of a preferred resource through analysis of videos of a fission-fusion group of bonobos at the Columbus Zoo, centered around an artificial termite mound, which was baited with preferred foods. We predict that males are less likely to approach the termite mound when females are present, with this effect increasing with the number of females present. We also predict that females are equally likely to approach the termite mound whether or not males are present. Furthermore, we predict males are more likely to leave the termite mound than to stay when a female approaches, while females are equally likely to leave or stay when a male approaches the termite mound. Results from

this study will inform our understanding of sex-based dominance in high stake situations, which is a lens that can be applied when attempting to understand human evolution.

**Flores, Sol**

University of Oregon

Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson

Virtual

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Flores-Bautista, Tito**

University of Oregon

Research Mentor(s): Kelley Howarth

Virtual

### **Spanish Variation In Public Health Advertisement**

Each language has variations that could arise for various reasons, some such as: spatial distance, socioeconomic, and contact with other languages/dialects. Language variation exists in terminology in many aspects of language whether it's education, food, outdoors, medical, etc. Studying language

variation is important, since it can have an impact on whether or not an individual understands the intended message presented to them. The COVID-19 pandemic is affecting every country in the world. Government agencies have to implement new health practices that people were not subject to before, such as social distancing, wearing a mask, multiple vaccination doses, and capacity limit allowed in a room. For the most part, people get their health guidance from the government through advertisements which can be TV commercials, flyers, news segments with infographics, and social media posts. The question I researched: Was there language variation present in public health announcements in Spanish used by the CDC compared to the Secretaría de Salud de Mexico ?

**Ford, Madeleine**

**University of Oregon**

**Research Mentor(s): Justin Svendsen, Marian Hettiaratchi**

**Poster**

## **Characterization of VEGF Controlled Delivery Systems for Improved Wound Healing**

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

The formation of new blood vessels, called angiogenesis, plays a prominent role in the healing process of nearly all injuries. Many proteins play a part in angiogenesis, including Vascular Endothelial Growth Factor (VEGF), which will be the topic of my presentation. VEGF plays an important role in healing injuries that involve damage to multiple tissue types. Injuries involving bone and muscle tissue accounted for an economic burden of over 127 billion dollars in 2004 alone. These injuries also impose significant suffering on those affected. We aim to develop a delivery system that can control the dosage and rate of delivery of VEGF to a wound site, to improve healing outcomes. Current therapeutic approaches cannot deliver VEGF in a controlled manner. Our work addresses this challenge by applying bioengineered proteins called affibodies which display reversible binding interactions at variable affinity strengths toward growth factors. We have identified affibodies that display variable affinity towards VEGF. My work has applied Biolayer Interferometry to determine the affinity strengths of VEGF affibodies, providing insight into the interaction dynamics. My future work aims to conjugate these affibodies into Polyethylene Glycol hydrogels to demonstrate the controlled release of VEGF.

**Fox, Sof**

University of Oregon

Research Mentor(s): Richard Emlet, Maya Watts

Poster

### **The Root of the Problem: Understanding Local Determinants of Ecological Structure on Mangrove Roots**

Species diversity and abundance is vital for ecosystem function and health both on land and in the marine environment. Mangrove forests and roots provide vital habitat to thousands of fish, crustacean, mollusk, and sessile species, but climate change is leading to species diversity loss in many tropical mangrove communities. We wanted to understand how climate change and anthropogenic changes may impact species diversity and distribution on mangrove roots in the Caribbean. To do this, we examined how different factors such as wave action, turbidity, depth, and root length impacted the species diversity and distribution on mangrove roots in Bocas del Toro, Panama. We found that while species richness and diversity were similar between sites with different exposure, the species identity and distribution had high variation. With climate change and increasing storms, understanding community distribution as a function of different variables is important to predicting which species will prevail.

**Franchetti, Luca**

University of Oregon

Research Mentor(s): Chantelle Russell

Poster

### **The benefits of resistance training for college students' emotional and physical well being.**

Resistance exercise, defined in this study as training for muscular strength and endurance, is crucial for maintaining a healthy lifestyle. To study the benefits of resistance exercise, our group has interviewed current faculty in the UO Department of Physical Education and Recreation. As part of our findings, there is a very clear relationship between a reduction in stress and resistance exercise, as endorphins that reduce stress are released during exercise.

The benefits of weight lifting we found were surprising. According to one of the journals, students that participated in weight lifting had an increase in self efficiency and friendships. This is because students that partook in resistance training were more consistent with their commitment to weight

lifting than the students that partook in aerobic exercise, this made it possible for the students to build community and friendships. It is also beneficial for your brain. According to Pete McCal, high strength workouts increase your BDNF levels which increases memory and academic performance. Resistance training is beneficial to not just your physical health but also your relationships, memory, and lifestyle. We did interviews in UO and research about university students to find the importance of resistance training for college students. This information is valuable to UO students because it can enhance their health, relationships, and academic performance, leading to an overall more productive college experience.

**Frauenfelder, Elisabeth**

**University of Oregon**

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

**Poster**

### **Comparing Methods of Dealing with Aging Populations in China and Scandinavia**

As nations across the globe continue to develop, and opportunities beyond traditional gender roles continue to develop for women aging populations will become a problem more and more countries need to deal with. Two regions currently working to resolve these problems are China and the nations in Scandinavia. China is unique in that its one-child policy is now having a major impact on the population whereas in Scandinavia the pressure to work is the main cause of the birth rate decline. Social welfare programs of various types are now being implemented from stipends to free or affordable IVF. This report seeks to explore the methods countries now use to increase their birth rate while also expanding rights for all; as well as evaluating the effectiveness of these policies.

**Fredericks, Ryan**

**University of Oregon**

**Research Mentor(s): Eleanor Wakefield**

**Oral Session**

### **The Relevance of Smokey the Bear**

In English 335 Inventing Arguments, we have analyzed different types of arguments that have been presented to the general public, and have been used throughout different expertise. Our presentation will take a well known argument and will critically analyze it, dissect it, and evaluate how it stands in today's world. The argument that we've chosen to analyze would be the famous debate of if

Smokey the Bear is still relevant, and if they are, how can they apply to children and adults and be represented in the broader field of social media.

**Freedman, Emma**

**University of Oregon**

**Research Mentor(s): Diana Christie, Nelson Ting**

**Poster**

### **Gut microbial convergence with infant presence in the black-and-white colobus monkey**

**Co-Author(s): Diana Christie, Nelson Ting**

While studies have demonstrated that social behavior plays an important role in gut microbial variation, there is limited understanding of how changes in social cohesion affect the gut microbiome. This work provides a more comprehensive examination of this relationship in a natural population of black-and-white colobus monkey (*Colobus vellerosus*). Adult female *C. vellerosus* display an increase in social interaction after the birth of an infant, presenting a known shift that I utilized to explore the association between social cohesion and the composition of the gut microbiome. Previously collected data from four social groups were used to characterize gut microbiomes via 16S rRNA sequencing and quantify changes in social cohesion. Infant presence was found to be significantly associated with gut microbial similarity (PERMANOVA:  $p < 0.01$ ), and for three groups gut microbiomes became more similar with an infant present (GLMM:  $p < 0.036$ ). However, there were no significant changes in social cohesion with an infant present, indicating that other social changes outside of my analyses may help explain this pattern. Future work would aim to evaluate the basis for differences in gut microbial variation between social groups and explore the presence of grooming with an infant present. Investigating the relationship between sociality and microbial variation ultimately contributes to our understanding of the factors influencing the assembly, composition, and diversity of the gut microbiome.

**Freeman, Sophia**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

### ***The Hiss and Chk of the Match***

I am reading an excerpt from my short story, *The Hiss and Chk of the Match*. The story takes place in New York City in the 1960s and centers around two significant blackouts in the lives of the main characters, Mary and Teddy. It begins with them as newlyweds and moves to a later point in their marriage, in which children, financial struggle, and Mary's deferred ambition to become a playwright have led to a shift in both of their inner and outer lives. Set entirely in one apartment, the story contains a metafictional component that is intended to be in conversation with playwriting. Almost by accident on my part, it also inherits the stories and experiences of my grandparents, who were newlyweds around the time the story takes place. Through these two blackouts, the story aims to ask, "Who are we in the dark?"

**French, Adeline**

University of Oregon

Research Mentor(s): Chantelle Russell

Oral Session

### **Effective Study Skills Can Improve Overall Well-Being**

Implementing more effective study habits can increase time for well-being activities, such as journaling, resting, and connecting with others. Our goal is to expose University of Oregon students to a variety of researched-backed study habits so they can gain autonomy over their time. In a search for more effective tactics, we referred to academic literature, analyzed studies on factors that set college thrivers and divers apart, and watched TEDTalks on how to study smarter and not harder. We found that elaborative rehearsal, retrieval practice, and a good night's sleep improve performance significantly. Interviews conducted with University of Oregon faculty in the Tutoring and Academic Engagement Center (TAEC) and Teaching Engagement Program (TEP) confirmed these findings. They also informed us that common strategies such as maintenance rehearsal and highlighting just don't work. Students compromise their well-being in a time-consuming effort to succeed academically. If they are knowledgeable about the study habits that aren't as efficient and know which ones to implement, students will have an opportunity to make space for well-being activities.

**Frerichs, Rose**

University of Oregon

Research Mentor(s): Frances White, Sara Cotton

Poster

### **Order from Chaos: Post-Pandemic Curation of the Primate Osteology Collection**

Co-Author(s): Olivia Ferrell, Mariam Fischer, Gabe Westensee, McKenna Williams, Frances White

The Museum of Natural and Cultural History's Comparative Primate Collection comprises over 700 primate skeletal specimens consisting of lemurs, monkeys, and apes. It also includes well over 100 non-primate vertebrate skeletal specimens including a wide variety of placental and marsupial mammals from sloths to bats as well as a varied collection of birds, reptiles, amphibians, and fish. In 2019, before the onset of the Covid pandemic, the collection was in the midst of a major reorganization effort. In March 2020, when all undergraduate research in the lab was terminated, lab activities were abruptly halted, the reorganization was left unfinished, and past students working on the project graduated. In 2022, new students arrived with the daunting task of picking up where previous students left off. With the loss of a database computer and its records, we needed to reshelve, relabel, identify, and organize the numerous specimens to rebuild an updated database containing species and skeletal element identifications as well as their locations within the collection's cabinets. Many specimens were in need of urgent care to remove accumulated grease that naturally exudes from bones over time. Each student in the lab took on a degreasing project and contributed to a lab-wide effort of rebuilding and cataloguing the database which necessitated learning skills in anatomical identification and species determination from skeletal traits.

**Frerichs, Rose**

University of Oregon

Research Mentor(s): Frances White

Poster

### **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 symmetry has been studied in both the cranium and postcranium of primates, but there is a significant lack of research connecting fluctuating asymmetry across both parts of the skeleton, as different parts of the skeleton 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 cranium and postcranium, we will primarily take measurements of the length of second and fourth metacarpals in individuals with known cranial symmetry. 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. In comparing the maximum lengths of the second and fourth metacarpals to the known cranial measurements of the skulls to determine the consistency of fluctuating symmetry in both areas of the skeleton, we will be able to determine if fluctuating asymmetry occurs as a whole-body phenomenon or if it is isolated and separately experienced by different parts of the skeleton during development.

**Gable, Kevin**

**University of Oregon**

**Research Mentor(s): Dr Matthew Norton**

**Poster**

### **Symbolism as a Mechanism of Transfer: Understanding information flow in modern society**

Information flow in society has been modeled to understand how people share information. This research recognizes information does not flow symmetrically and the underlying relationships between individuals are not symmetric. Here lies an information gap concerning the mechanisms of transfer allowing information to flow asymmetrically in a human network. While there are likely several mechanisms, the purpose of this research is to investigate how symbolism functions as a mechanism of transfer, allowing complex information to travel in a human network? Additionally, how does hierarchical position and status influence the diffusion process? This project examines COVID vaccine conversations on Twitter to identify key words and symbols, observe date of origin, and frequency of redistribution. These findings are compared with publications in mainstream news outlets to see if there is any influence between social media and traditional news media. Due to authorization issues and Twitter Corp changes, the COVID vaccine specific data has yet to be granted. This prevents the further examination of traditional news outlets. Efforts to acquire the data continue. Including mechanisms of transfer within information modeling will help to examine differential information flow connected to asymmetries. This may increase the circulation of critical scientific information and help stabilize the increasingly partisan political system.

**Gach, Mary**

University of Oregon

Research Mentor(s): Rubi Ruopp, Ian Greenhouse

Poster

## **Studying the Role of Thalamic GABA in Automated Motor Behavior**

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

Motor automaticity is a motor behavior that can happen without having to think about the movement being generated. Motor behavior can be executed through repetitive actions to a point where less movement variance will be seen and movement will gradually get generated faster. There are properties of movement, like variability and speed, that can allow us to determine if an individual's behavior is more automatic or executively controlled.

It's possible that motor automaticity and reduced motor variation of gamma-aminobutyric acid (GABA) results from the inhibitory influence of GABA in the thalamus. We hypothesize thalamic GABA reduces variability and produces automaticity, based on evidence the thalamus regulates habit formation and motor variability.

To assess this relationship, we are comparing individual differences in the performance of a behavioral typing task with GABA levels in the thalamus measured using magnetic resonance spectroscopy (MRS). We predict individuals with more thalamic GABA content will exhibit lower motor variation and greater automaticity in behavioral typing task performance. These data will be useful insight into the later stages of life, rather the early developmental skills that are more primarily focused on. By looking at data in older individuals, we are able to understand more about how to improve our motor skills as we age and typing is a good example to look at because it's often a skill we learn later in life than other motor skills.

**Gallegos, Felice**

University of Oregon

Research Mentor(s): Minkyong Kwwak

Poster

## **Measuring Iridium catalyst dissolution for improved durability of water electrolyzers**

Co-Author(s): Shannon Boettcher, Minkyong Kwak, Liam Twight

Hydrogen can be captured through water electrolysis: the process of splitting water  $2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + \text{O}_2$ . Green hydrogen can be a replacement for fossil fuels that contribute to global warming.

The Anion/Proton Exchange membrane water electrolyzer (AEMWE) and (PEMWE) devices carry out water electrolysis without using expensive platinum group metals as electrocatalysts. AEMWE and PEMWE are limited by the catalyst dissolution over time due to the harsh oxidizing environment. To improve the durability of the system, the optimal thickness of a passivation layer coating on a fabricated Iridium catalyst electrode system is investigated. A three-cell test was used to track oxygen evolution reaction activity; each with a different thickness (HfO<sub>x</sub>) passivation coating on a nanoparticle system of IrO<sub>x</sub>/ionomer used as the working electrode in an acidic and alkaline electrolyte. Following the electrochemical tests, inductively coupled plasma mass spectrometry (ICP-MS) was used to measure the passivation layer, by identifying Iridium dissolution in the electrolyte. We expect to observe that a thin layer of the metal oxide passivation layer stabilizes the IrO<sub>x</sub> surface at the anode, and a decreased amount of Iridium in the electrolyte solution. This work indicates engineering an electrolyte-catalyst interface for better durability to suppress the limitations known in AEMWE and PEMWE and provides direction for future research in this technology.

**Gamez, Julian**

**University of Oregon**

**Research Mentor(s): Brice Kuhl, James Murray**

**Poster**

## **Comparing Descriptions of Images from Memory with Natural Language Processing**

**Co-Author(s): Anisha Babu**

A goal of memory research is to understand how similar events are remembered in the brain. Analyzing data from human subjects, we explore how competition between memories of images influences their recall. We wanted to answer if studying images from similar or differently themed categories affected the verbal content used to describe them. The competitive condition was composed of images from a single category, whereas the non-competitive condition was a set of images from different categories. Specifically, we aimed to quantify how verbal descriptions of these images varied depending on the study condition. To quantify subjects' verbal descriptions, we used natural-language processing to map them onto points in a high dimensional "word embedding" space. We performed dimensionality reduction and clustering analyses on these word embeddings and found that semantic representations of images studied in the competitive condition were more differentiated than those in the non-competitive condition. Our results suggest that verbal descriptions of images were motivated by the similarity of their memories, and that highly similar memories pushed their respective representations away from one another.

**Gastelum, Lily**

University of Oregon

Research Mentor(s): Theresa May, Marta Clifford

Creative Work

### **Embodied Indigenous Research: *Pocahontas and the Blue Spots***

For the undergraduate research symposium, I, along with three co-presenters, am performing a staged reading of the play, *Princess Pocahontas and the Blue Spots* by the Indigenous dramatist, Monique Mojica. The materials that we will be using are the script, the performance space, and fabric and instruments. Our methods involve devised movement, research, and connection with my fellow actors to strengthen the message of the play.

The subject matter is *Princess Pocahontas and the Blue Spots* and the struggles faced by Native women through colonialism. Throughout the play, there are 13 transformations that a combination of our four actors will play. These transformations both seriously and satirically explore the truths of the Native woman's experience and focus on topics including the loss of identity, stereotypes, and exploitation. Given the subject matter, we approached the script with intention, knowing our actions represent the experiences of Native women who have been silenced for far too long. As women-identifying artists, POC, and allies, our connection to this piece is deeply personal and the weight of this piece is important to us. Therefore, through our exploration and research of devised movement and our connection with each other, we aim to create a performance that not only honors these women but also creates a space for understanding. With *Princess Pocahontas and the Blue Spots*, we hope to inspire others to join us in this fight for justice and equality.

**Gates, Ciara**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Poster

### **Argument Revision**

In English 335: Inventing Arguments we have looked over various relevant historical and revolutionary arguments throughout history such as Sojourner Truth's *Ain't I a Woman*, Rachel Carson's *The Obligation to Endure*, Jonathan Swift's *A Modest Proposal* and Emma Goldman's *Patriotism, A Menace to Liberty* to understand the various components that build a strong argument. We will be using the practiced skills from this class to analyze and evaluate a well-known argument within its historical

context. Then after researching the context, audience, and purpose, we will be adapting the argument to suggest how it would be better perceived through a modern perspective.

**Gaudreault, Yuki**

University of Oregon

Research Mentor(s): Natanya Villegas, Calin Plesa

Oral Session

### **Developing an Efficient and Replicable sgRNA Synthesis Protocol for DropSynth dCas9 Enrichment**

Inexpensive large-scale de novo gene synthesis technologies are in high demand for protein engineering as they enable the testing of complex hypotheses. One such technology is DropSynth, which can assemble array-based oligos within emulsion droplets to synthesize libraries of up to 1536 genes in one reaction pool. However, this technology is still error-prone, with only 20-30% perfect assemblies per gene. To address this limitation, we are developing a method to directly extract these perfect assemblies using deactivated CRISPR Cas9 (dCas9). This magnetic bead based enrichment method can effectively target the unique barcode sequences corresponding to perfect assemblies as determined from next-generation sequencing. Here, we show the development of a highly efficient and replicable single guide RNA (sgRNA) synthesis protocol for DropSynth dCas9 enrichment. To do so, we synthesized a pool of 18 sgRNAs via iterative design based on existing Golden Gate Assembly (GGA) and in vitro RNA transcription protocols. We also developed an RNA-seq pipeline to assess sgRNA pools for mutations and biases. We anticipate that this method will allow for the streamlined synthesis of any number of unique sgRNAs for dCas9 enrichment to ultimately allow for the extraction of a pool of perfectly synthesized DNA.

**Gentry-Lear, Zealon**

University of Oregon

Research Mentor(s): Melanie Spero

Poster

### **Characterizing and Understanding Synergistic Drug Interactions for Killing in *Pseudomonas aeruginosa***

Many antibiotics are ineffective at killing pathogens in oxygen-limited (hypoxic) environments, such as those found in chronic wounds and lung infections. We are studying the therapeutic potential of

chlorate, which kills pathogens under anoxic conditions by hijacking a form of anaerobic metabolism called nitrate respiration. Antibiotic treatment and chlorate treatment are marginally effective at killing the pathogen *Pseudomonas aeruginosa* in hypoxic conditions on their own. We hypothesize that combined antibiotic and chlorate treatment will be able to kill *P. aeruginosa* under hypoxic conditions at a higher rate than the sum of the two drugs alone (i.e. chlorate-antibiotic combinations will display synergy). We found that chlorate interacts synergistically with antibiotics from a variety of classes to effectively kill *P. aeruginosa* under hypoxic conditions. Interestingly, we did not observe synergistic killing when we tested different pairs of antibiotic combinations. This suggests that chlorate has a unique property to synergize with other drugs under hypoxic conditions. Future studies will focus on understanding the mechanism by which chlorate interacts synergistically with antibiotics, while antibiotic-antibiotic pairings fail to interact synergistically. Our identification of synergistic combinations of chlorate and antibiotics holds promise for improved treatments of chronic infections since current antibiotic-only treatments routinely fail patients.

**Getz, Madeleine**

**University of Oregon**

**Research Mentor(s): Josh Snodgrass, Alicia DeLouize**

**Poster**

## **Bioethics as a tool to promote anti-colonial approaches in population-level global health surveys**

**Co-Author(s): Alicia DeLouize, Felicia Madimenos, Tian Walker, J. Josh Snodgrass**

Population-based global health surveys often provide the largest share of benefits to national and international government organizations, academics, aid programs, and NGOs, but regularly fail to deliver advantages to participants and their communities. This uneven distribution of knowledge and resources is a direct result of global health's colonial past. We provide six bioethics recommendations to implement in population-level global health projects. We then undertook a semi-exploratory systematic review of six population-based global health survey projects (where n > 2,300 and prominent global health actors provided direction and/or funding) using our recommendations as metrics to examine the successes and failures of current bioethics practices among global health surveys. Six of six studies reviewed contained at least one of our measures, although only two of those six included more than one recommendation. This represents significant gaps in current bioethics standards that fail to incentivize community engagement and distribution of community benefits. In the future, studies must commit to a goal shift towards service

provisioning in order to combat global health inequalities. We recognize that global health is not necessarily a distinct field, but rather a collection of challenges towards human health, and as such the field and any successful intervention must be inherently and necessarily multidisciplinary.

**Gibbons, Cecelia**

University of Oregon

Research Mentor(s): Steven Turrill

Creative Work

### ***The Truth About Lying***

*The Truth About Lying* is a short story about self-reflection, faith, and honesty. It is a testament to our character, our morality, and our sense of justice, all within the walls of a Catholic high school. I invite you to listen along as I read an excerpt from the short and welcome you into the life of Annie Riordan: a young girl trying to survive high school through the art of lying. It is when Annie discovers herself trapped in a bathroom with two fellow students, a bag of cocaine, and an angry Dean that her character is put to the test. I began working on this piece in the fall for the Kidd Workshop, and I am excited to share how it has morphed from its original form into what it is today. Inspired by my own Catholic school experience and active imagination, this is: *The Truth About Lying*.

**Gill, Jaslena**

University of Oregon

Research Mentor(s): Hans Dreyer

Oral Session | Poster

### **Effect of Essential Amino Acid Supplementation and Blood Flow Restriction on Muscle Structure**

Healthy muscle is maintained by its ability to recover from atrophy after immobilization, such as surgery. Trained individuals regain strength and size faster than untrained (muscle resilience). This occurs because individuals with a higher density of myonuclei are better able to regain strength after atrophy, although this mechanism is not well understood. Previously, we have shown that ingesting 23 grams of essential amino acids 3x/day for 7 days increases satellite cell numbers, which are the source of new nuclei in muscle cells. Blood Flow restriction (BFR) exercise, a form of low-load exercise that restricts extremity blood flow, has been shown to increase muscle mass and strength, and satellite cells. We hypothesize that combining EAA with BFR (EAAs 3x/day for 7 days with BFR on

days 2, 4, and 6] would maximize resilience by increasing nuclei and satellite cell numbers measured in biopsies taken one day later vs. placebo. We are in the process of analyzing our data for cross-sectional area, satellite cell numbers, fiber type, muscle nuclei, and centrally located nuclei. These measurements will offer insight into muscle cell denervation, cell membrane damage, and recent muscle damage repair. This study may provide an intervention for sarcopenia and other muscle-wasting conditions. Moreover, it may provide insights into how EAA+BFR may positively influence muscle resilience and improve outcomes in clinical settings where atrophy is a prominent feature, such as surgery.

**Gillis, Ryan**

University of Oregon

Research Mentor(s): Steven Turrill

Creative Work

**Bold Jack**

My short story, “Bold Jack”, follows Jack Dugan’s unwilling journey from a farmer on the outskirts of Dublin in 1823 to an escaped convict-turned-outlaw of legend in the Outback. Along the way, he meets a wide cast of characters who remind him of the home that haunts him, as well as challenge his perceptions about the oppressive system that they all live under. My interest with this story lies in exploring the meaning of justice, the different worlds people live in, and what it means to have a legacy.

**Gladis, Jess**

University of Oregon

Research Mentor(s): Mark Carey, Barbara Muraca

Poster

**Values and Collaborative Watershed Stewardship in the Nisqually River Watershed**

Climate change impacts on water availability are predicted to intensify resource conflicts across the globe, and Puget Sound is no exception. Studying historic resource conflicts and their impacts on modern stewardship processes in Puget Sound watersheds can yield insights about conflict resolution and collaborative decision-making in watersheds with diverse stakeholder uses and values. This work is essential for successfully navigating present and future conflicting uses and identities associated with resource wars. My project investigates collaborative stewardship planning

in the Nisqually River Watershed to see how values are represented in reputedly just and effective watershed stewardship practices. To explore this issue, I review planning documents from various stakeholder groups using a conceptual framework developed from a combination of environmental philosophy and emerging developments in ecosystem services scholarship. Using this framework and thematic analysis techniques, I interpret and code for values represented in the dataset to see if value expression corresponds with certain stakeholders and ecological issues. These coded values and observable trends may show more precisely how values are represented within and influence the efficacy of planning outcomes. Findings suggest that a larger variety of cultural values via more diverse stakeholder participation causes outcomes with greater gains, such as stakeholder satisfaction and ecosystem enhancement.

**Glass, Rowan**

**University of Oregon**

**Research Mentor(s): Maria Fernanda Escallón**

**Virtual**

### **Reweaving the Wáman Lware: Cultural and Territorial Reexistence among the Kamëntsá**

Where there is colonial power, there is Indigenous resistance. Latin America offers many case studies for an analysis of Indigenous cultural survival and autonomy, historically and to the present day. Some, like the Zapatistas, have received considerable popular and academic attention, while others have gone comparatively unknown, particularly in the Anglophone academic mainstream. My research aims to address this gap by interpreting processes of cultural reproduction and territorial autonomy among the Kamëntsá, a culturally and linguistically unique people of the Sibundoy Valley, an intermontane basin in the Andes-Amazon interface of southwest Colombia. Building on ethnographic data collected during three months of fieldwork with artisans, shamans, land defenders, and community members in the Sibundoy Valley, I argue that the Kamëntsá, though facing cultural, political, and ecological threats on multiple fronts, are engaged in the integral recuperation and reproduction of their culture and the reclamation of territorial autonomy which together ensure the survival and vitality of their community. This research aims to demonstrate that Indigenous peoples are the makers of their own history, that resistance is reexistence, and that other ways of being outside of the settler-colonial and neoliberal status quo are viable. The cultural and territorial reexistence of peoples like the Kamëntsá demonstrates the pluriversal dictum that “another world is possible.”

**Gonce, Grace**

University of Oregon

Research Mentor(s): Adam Glass

Poster

### **Color Tunability of Benzofulvene Dimers**

Benzofulvenes and their derivatives have many implications as synthetic precursors and molecular materials, as well as in medicinal applications. The conjugation of benzofulvenes reveals many interesting properties that raise the possibility of color tunability. Through our synthesis we have also been able to create benzofulvene dimers in moderate yield which show interesting spectral properties in both the UV and visible range which indicates that these dimers may be very useful in studying electronic and optical effects within a large network of structures. We are specifically looking to explore push/pull dynamics related to different substituents on the dimers in regards to electron flow and movement. 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 dimer benzofulvene synthesis, optimize yield, and manipulate the dimers with substituents in order to gain a better understanding of their properties and implications in scientific scenarios.

**Gondoputro, Angelica**

University of Oregon

Research Mentor(s): Maria Schweer-Collins, Elizabeth Raisanen

Oral Session | Poster

### **The Association Between Miscarriage and Allostatic Load with Traumatic Pregnancy as a Moderator**

Co-Author(s): Maria Schweer-Collins

Miscarriage is a common physical experience defined by the loss of a fetus before 20 weeks gestation. Miscarriage is frequently described as a traumatic experience yet is often studied as an outcome of stress rather than a contributor to stress accumulation. This study seeks to understand the effect of miscarriage on allostatic load in individuals who have been involved in the American juvenile justice system. Allostatic load (AL) is the wear and tear on the body due to stress accumulation over an individual's lifetime. Contributors to a high AL may include socioeconomic disadvantages, mental and physical health disorders, and traumatic pregnancy experiences.

In the Turning Points for Women study, participants' AL was quantified by 12 biomarkers. The biomarkers were a set of biological indicators assessed to determine typical or atypical functioning. Cardiovascular biomarkers included systolic blood pressure (SBP), diastolic blood pressure (DBP), and peak expiratory flow (PEF). Metabolic biomarkers consisted of participants' body mass index (BMI) and waist-to-hip ratio (WHR), as well as levels of HDL and LDL cholesterol, triglycerides, and A1c. Biomarkers of immune function included Epstein-Barr virus levels and indicators of inflammation measured by CRP and IL-6. Analysis of the data will help us understand how individuals with histories in juvenile justice and foster care are impacted by events such as miscarriage.

**Gonzalez, Maya**

**University of Oregon**

**Research Mentor(s): Jennifer Ablow, Jeffrey Measelle**

**Poster**

### **The influence of maternal perspective taking towards her partner: Mind-mindedness and infant empathy**

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

The construct of maternal mind-mindedness is defined as the capacity to accurately perceive and talk about a child's mind. It predicts multiple social-cognitive outcomes for the child, such as fostering a secure attachment relationship and the development of theory of mind. However, whether mind-mindedness supports the development of empathy, is yet to be understood. Empathy can be observed in toddlers through concern for others and hypothesis testing. It's a valuable quality for children to develop due to its positive associations with prosocial behavior. Despite sharing underlying perspective taking characteristics, there is little research examining the influence of maternal mind-mindedness on the development of empathy. This study will examine the effects of maternal mind-mindedness on the development of toddler empathy. Mind-mindedness was measured in a task where 90 low-income women at risk for parenting problems were asked to free play with their 5-month-old infants. Transcripts were coded for frequency of attuned mental comments directed at their infant. At 17 months postpartum, the MM measure was repeated. Infants and caregivers also participated in a task designed to elicit infant empathy at this time. Recordings were coded for infant empathic behaviors. This study also examined self-reported maternal perspective seeking in the parents relationship, collected prenatally, and how this may contribute to mind-mindedness and empathy.

**Gonzalez-Ibarra, Marissa**

University of Oregon

Research Mentor(s): Megan Lipsett, Denicia Aragon

Virtual

### **Stress in Undergraduate University of Oregon Students**

Co-Author(s): Denicia Aragon, Megan Lipsett, Elliot Berkman

This research aims to explore the relationship between belonging uncertainty, stress, and academic retention. Data was collected from the Student Wellbeing and Success Initiative and the Center for Student Involvement at the University of Oregon. Percent of Maximum Possible (POMP) scoring was used to transform the variables to a scale of 0-100. Predictor variable measures included belonging uncertainty, and student involvement. Outcome variable measures included stress and retention. Lastly, Covariate measures included subjective socioeconomic and weighted Ethnicity/ Race in favor of Latino students. While controlling for sex, perceived social standing, and ethnicity, we found that belonging uncertainty did not significantly predict stress levels for students over the course of their freshman year. Additionally, student involvement did not significantly moderate the relationship between belonging uncertainty and stress over a year's time. Furthermore, self-reported belonging uncertainty did not significantly predict second-year retention. Additionally, student involvement did not significantly moderate the relationship between belonging uncertainty and second-year retention. Although our hypotheses were not validated, we discovered a notable relationship between social-societal status and second-year retention, suggesting that as social societal status increases, the likelihood for students to return for their sophomore year increases.

**Gotera, Angela "AJ"**

University of Oregon

Research Mentor(s): Alisa Freedman

Oral Session

### **Cultural Appropriation & Appreciation in Korean, Filipino, and Japanese Popular Music**

Music has been constructed by communities and cultures of different backgrounds for centuries. This can be observed in studies that follow the development of different genres through a cultural lens, such as American rap with its origins in Black neighborhoods in the Bronx and Asian hip hop with the genre first having shown up in the Philippines during the early 1980s. Due to this constantly

evolving music industry, popular music has managed to innovate and expand its boundaries by creating a wider international demographic for popular music, leading to the discovery of artists from different cultures. One outcome that has occurred because of this is the rise of Asian music, which has led to the positive global exposure of Asian countries and opportunities for non-Asian artists to utilize cultural elements of Asian music in the cultural elements of their own music. This has elicited conjectures of cultural appropriation and arguments for cultural appreciation. This study aims to negotiate those boundaries between cultural appropriation and cultural appreciation within music and the music industry in Korea, the Philippines, and Japan through the presentation of songs by Asian artists, such as Stray Kids, NCT 127, BTS, SB19, and Almat. The significance is to observe how cultural appropriation and cultural appreciation are being perceived and defined through Korean, Filipino, and Japanese music, and reflect on how to respectfully cultivate and share that culture through music.

**Gradow, Mallory**

**University of Oregon**

**Research Mentor(s): Christopher Chapman**

**Poster**

### **Diagnostic Accuracy of Urine Color in Predicting Acute Kidney Injury Risk Score During Hypohydration**

**Co-Author(s): Christopher Chapman, John Halliwill, Christopher Minson, Sadie Holt, Hannah Medved**

There are currently no low-cost accessible tools to identify individuals who may be at heightened risk for acute kidney injury (AKI) prior to or during extreme heat events. The purpose of this study was to determine the diagnostic accuracy of the validated 8-point urine color scale in assessing AKI risk score in young adults after prolonged mild hypohydration. In a block-randomized crossover design, 22 healthy adults [11 females, 11 males; 21(3) years] completed 24 hours of fluid deprivation (HYPO) or normal fluid intake (EUHY). Spot urine samples were collected from subjects after each 24-hour protocol. Urine color was assessed using a validated 8-point visual scale by three independent researchers. Positive AKI risk was determined using the U.S. Food and Drug Administration approved biomarker cut-off of  $\geq 0.3$  a.u. for the product of urinary insulin-like growth factor-binding protein 7 and tissue inhibitor of metalloproteinase-2. Fisher's exact test showed an association between urine color  $\geq 3$  a.u. and positive AKI risk ( $P \leq 0.0001$ ). The positive predictive value and negative

predictive value for urine color  $\geq 3$  in predicting positive AKI risk were 0.91 (0.72, 0.98) and 0.73 (0.52, 0.87). These data lend preliminary support for the use of the urine color scale as an accurate and accessible tool to identify positive AKI risk during prolonged mild hypohydration.

**Grivette, Margaret**

**University of Oregon**

**Research Mentor(s): Aaron Betts, Andrew Lovering**

**Poster**

### **Power Spectral Analysis During Sleep and Development of Spaceflight Associated Neuro-Ocular Syndrome**

70% of astronauts returning from months of spaceflight present lasting neuro-ocular changes, a hallmark being optic disc edema, termed Spaceflight Associated Neuro-Ocular Syndrome (SANS). While the mechanism leading to SANS is unclear, reduced metabolic clearance of neuro-ocular structures may play a role. Neurometabolic clearance occurs primarily during sleep & sleep is known to be disrupted in spaceflight despite hypnotic drug use. Our group used a strict head-down tilt bed rest model to induce findings of SANS and found that the 5/11 subjects who developed optic disc edema were shorter sleepers prior to, during, & after bed rest. Differences in sleep duration & intensity could result in a unique EEG. Examining EEG activity in those who do & do not develop optic disc edema may identify an electrical biomarker to screen those at risk for developing SANS. Power spectral density (psd) was calculated using the MNE psd function in Python. Power values were averaged over conventional frequency bands (delta: 1-4 Hz, theta: 4-8, alpha: 8-13, low beta: 13-21, high beta: 21-35). A three-factor repeated measures ANOVA was used to test differences in sleep stages for each frequency range & channel across participants & compared to a Bonferroni adjusted alpha. There were significant differences during non-rapid eye movement stage 2 (N2) sleep in alpha power, and in low & high beta power. Blunted alpha & beta activity during N2 sleep could suggest increased risk for developing SANS.

**Grubb, Skye**

University of Oregon

Research Mentor(s): Frances White, Sara Cotton

Poster

### **Order from Chaos: Post-Pandemic Curation of the Primate Osteology Collection**

Co-Author(s): Olivia Ferrell, Mariam Fischer, Gabe Westensee, McKenna Williams, Frances White

The Museum of Natural and Cultural History's Comparative Primate Collection comprises over 700 primate skeletal specimens consisting of lemurs, monkeys, and apes. It also includes well over 100 non-primate vertebrate skeletal specimens including a wide variety of placental and marsupial mammals from sloths to bats as well as a varied collection of birds, reptiles, amphibians, and fish. In 2019, before the onset of the Covid pandemic, the collection was in the midst of a major reorganization effort. In March 2020, when all undergraduate research in the lab was terminated, lab activities were abruptly halted, the reorganization was left unfinished, and past students working on the project graduated. In 2022, new students arrived with the daunting task of picking up where previous students left off. With the loss of a database computer and its records, we needed to reshelve, relabel, identify, and organize the numerous specimens to rebuild an updated database containing species and skeletal element identifications as well as their locations within the collection's cabinets. Many specimens were in need of urgent care to remove accumulated grease that naturally exudes from bones over time. Each student in the lab took on a degreasing project and contributed to a lab-wide effort of rebuilding and cataloguing the database which necessitated learning skills in anatomical identification and species determination from skeletal traits.

**Grubb, Skye**

University of Oregon

Research Mentor(s): Frances White

Poster

### **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 symmetry has been studied in both the cranium and postcranium of primates, but there is a significant lack of research connecting fluctuating asymmetry across both

parts of the skeleton, as different parts of the skeleton 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 cranium and postcranium, we will primarily take measurements of the length of second and fourth metacarpals in individuals with known cranial symmetry. 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. In comparing the maximum lengths of the second and fourth metacarpals to the known cranial measurements of the skulls to determine the consistency of fluctuating symmetry in both areas of the skeleton, we will be able to determine if fluctuating asymmetry occurs as a whole-body phenomenon or if it is isolated and separately experienced by different parts of the skeleton during development.

**Gutierrez, Samuel**

University of Oregon

Research Mentor(s): Kraig

Virtual

### **How can programming, data mining, and predictive modeling determine waterpoint operating conditions?**

Created predictive models that locate water pumps in Tanzania labeled as functional, non-functional, and functional with repairs. All of this is in hopes to improve water accessibility and limit water borne diseases. The predictive model with the highest accuracy was used to note which waterpoints will fail and which need repairs. This will help the Tanzanian Ministry of Water with maintaining operations and ensuring that clean water is available to communities across Tanzania.

**Hagan, Jack**

University of Oregon

Research Mentor(s): Corbett Upton

Oral Session

### **The Changing Perception Around Athlete Protests**

This research essay examines the effect that the rise of social media has had on the general public's perception of athletes when they speak on important social justice issues. In recent years, social media use has grown at a very high rate. In the same time frame, the media and general public has

gone from widely criticizing the actions of people like Colin Kaepernick to praising people like LeBron James for speaking up in similar ways about issues that they care about.

By carefully analyzing in-depth research articles, books, and interviews that each focus on this topic, this paper expresses how the extreme rise in social media use has changed the perception around athletes openly expressing their opinions on issues of social injustice from one of shame to one of praise.

It examines some past examples prior to social media's rise where athletes were ridiculed by the media for their actions, as well as very recent examples where athletes who have used social media to talk about social justice issues that are important to them have been accepted and sometimes praised. It looks at how prior to social media's rise, the media could frame stories about athletes speaking up to make them look bad, but now, athletes are able to control the narrative by having a direct form of contact with the public. Hopefully with this growing acceptance of athlete activism, more athletes can follow the actions of people like LeBron James, as it's very important for them to use their influence.

**Hajarizadeh, Auveen**

**University of Oregon**

**Research Mentor(s): Kylie Williams, Angela Lin**

**Poster**

## **Utilizing 3D Imaging Data for Analysis of Regenerative Rehabilitation Techniques for Bone Healing**

**Co-Author(s): Kylie Williams, Angela Lin, Genevieve Romanowicz, Robert Guldberg**

The use of noninvasive imaging allows researchers to evaluate the structure of various tissues and organs in animal models, both qualitatively and quantitatively. Traditional radiography for small animals can include microCT scans that produce hundreds of 2D slices and show internal structures at any depth, which is paramount for the field of orthopedics. The Scanco Medical vivaCT 80 is a microCT scanner that produces high-resolution images of internal animal structures, with proprietary software capable of quantifying 3D parameters. Object Research Systems Dragonfly is a 3D imaging software that can use microCT data to create detailed 3D models, which can be viewed from any angle. These manipulatable 3D models provide a thorough qualitative understanding of an animal's internal structures. The Scanco and Dragonfly softwares have allowed us to assess bone healing in different in vivo animal studies involving exercise-based rehabilitation and injectable therapeutics. We found that the Scanco software was most effective for producing quantitative measurements

of various parameters—such as bone volume and bone mineral density—while Dragonfly was most effective for producing high-quality, visually appealing 3D models for qualitative analysis of microCT data sets. This knowledge can help aid preclinical data collection, analysis, and image display strategies when investigating bone healing after the use of therapeutics or rehabilitation.

**Hall, Leah**

**University of Oregon**

**Research Mentor(s): Ben Chaloupka, Dasa Zeithamova**

**Poster**

### **Effect of Negative Emotions at Retrieval on Memory for Neutral Information**

**Co-Author(s): Ben Chaloupka, Dasa Zeithamova**

Negative emotions are shown to affect memory, but research on how emotion affects memory at retrieval is limited. The current study attempts to answer how fear or anger at retrieval affects memory of neutral information. Participants read a neutral story then completed a distractor task. To induce the intended emotion, the participants watched an emotion inducing video then completed a free recall test and multiple choice test. They self-reported on their emotions from watching the video. A one way between-subjects ANOVA was used to analyze the data. For 80% power with an alpha level of 0.05, 90 participants were needed. 225 participants were recruited from the UO Human Subjects Pool. Participants that did not effectively complete the study were excluded. Analysis of every participant regardless of self-reported emotion scores showed no significant results. However, within the 72 participants who reported feeling the intended emotion for their condition, there was a significant main effect of emotion on the free recall test and a trending main effect on the multiple choice test. In the free recall test, the neutral condition had the best scores, then fear, then anger. In the multiple choice test, the fear condition had the best scores, closely followed by neutral, then anger. More data is needed from participants who felt the intended emotion. This study has implications for real situations, such as eye witnesses in emotionally charged situations asked to recall an event.

**Hall, Maggie**

University of Oregon

Research Mentor(s): Andrew Marcus, Claire Albrecht

Poster

### **Determining local DNA base conformations by two-photon excitation 2D fluorescence spectroscopy**

The recipe for the 'building blocks of life' is encoded within the base sequence of DNA. For this genetic code to be useful, proteins must interact with the DNA and 'read out' the gene sequences. These protein-DNA interactions occur most frequently at junctions where single-stranded (ss) DNA meets the double-stranded (ds) DNA helix. The double helix is stabilized by base stacking interactions but tends to fluctuate in a process called 'DNA breathing.' These thermally driven fluctuations cause local disruptions to the double helix structure and may allow for proteins to bind. We are studying the structure of these local conformations with a fluorescent base analogue of guanine, called 6-methylisoxanthopterin (6-MI). This molecule absorbs and fluoresces separate from the native bases giving us a probe of the local base structure. We use two-photon excitation two-dimensional fluorescence spectroscopy (2PE-2DFS) to investigate the structure of the DNA bases near a ds - ssDNA junction. Specifically, this study is an initial proof of principle that we can measure the 2PE-2DFS signal from the 6-MI nucleoside. Developing this technique to study nucleic acid base structures will give us a tool to study how the local conformations of DNA bases explored during breathing fluctuations may be important for protein-DNA interactions at ss-dsDNA junctions.

**Harrington, Jordan**

University of Oregon

Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson

Virtual

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were

there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Harris Caceres, Alejandra**

**University of Oregon**

**Research Mentor(s): Michelle Marneweck**

**Poster**

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

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

Every action, from picking up your phone to dribbling a basketball, requires the ability to transform positional information of the object with reference to one's eye, body, and hand into an actionable plan to interact with the object. This process of encoding reference frames occurs continuously and seamlessly in our everyday life; however, it is understudied in humans as many previous studies have only investigated the neural code by which reference frames are represented in non-human primates. In this experiment, we address this gap by measuring fMRI activity in human subjects while they engage in a button-pressing task that dissociates reference frames between the eye and target, the hand and target, and the hand and eye. There are 8 conditions that isolate spatial activity pattern differences between small and large distances for each of the reference frames of interest. Preliminary results show an overlap in the spatial representation of reference frames within the posterior parietal cortex. Translating and understanding the neural encoding of sensory information into an actionable plan could improve neural prosthetics to better serve patients such as amputees.

**Harrison, Maya**

University of Oregon

Research Mentor(s): Angela Long

Poster

## **Mental Health Access Discrepancies between Cisgender, Transgender and Gender Non-Conforming Students**

Real or perceived discrimination in healthcare settings impacts transgender and gender nonconforming people's desire and ability to access appropriate care (Safer JD et al). The University of Oregon (UO) University Health Services (UHS) administered the 2022 American College Health Assessment's National College Health Assessment III (ACHA-NCHA), an assessment of lifestyle habits and behaviors across a myriad of student demographics. The survey comprised 338 UO respondents, including cisgender men and women, transgender, and gender non-conforming students. While these data reflect a small number of 338 respondents, national reference data includes 69,131 individuals attending 129 colleges and universities. A qualitative review of UO and national reference data suggests transgender and gender non-conforming students utilize psychological or mental health services at higher percentages than their cisgender counterparts (UO 65% vs. 44%, National 64% vs. 34%). Analysis shows transgender and gender non-conforming UO students use campus-based mental health and medical services on campus at lower percentages than their national reference group counterparts (21% vs. 42%). The Health Equity Action Project of the Student Health Advisory Committee recommends that UHS implement changes to close these gaps, ensuring that everyone—regardless of gender identity—is informed about UO medical and mental health services and is able to receive accessible, equitable healthcare on campus.

**Hearn, Ava**

University of Oregon

Research Mentor(s): Josh Snodgrass

Poster

## **The Effects of Allostatic Load on Cognitive Decline in Mexico: Results from SAGE**

Co-Author(s): Alicia DeLouize, Tian Walker, Josh Snodgrass

As the world's population ages rapidly, cognitive decline is quickly becoming a major threat to global health. The present study uses data from the WHO's Study on global AGEing and adult health (SAGE) to investigate whether allostatic load (AL) is a predictor of cognitive decline in older adults.

Previous research suggests that elevated levels of stress hormones and chronic inflammation are associated with cognitive impairment, but few studies have investigated this relationship using metabolic markers that typically accompany the stress response. We looked specifically at older populations in Mexico with no history of stroke ( $n = 1888$ ), to examine whether AL—operationalized here as C-reactive protein (CRP), systolic blood pressure, diastolic blood pressure, waist-height ratio, and glycated hemoglobin (HbA1C)—influenced cognitive ability between Waves 1 (2009) & 2 (2014). It was hypothesized that increased AL, as well as its components, would show a positive correlation with mild cognitive impairment; however, results were mixed. Although AL ( $bs = -.04$  to  $.09$ , ns) and CRP ( $bs = -.02$  to  $.02$ , ns) did not significantly predict decline in cognitive test scores between waves, however HbA1c predicted decline in immediate recall ( $b = 0.17$ ,  $p = .04$ ). By expanding research to low- and middle-income countries through minimally invasive biomarkers we can better determine what factors are essential for cognitive decline and which are correlates in certain populations.

**Heinonen, Jake**

**University of Oregon**

**Research Mentor(s): Angela Lin, Bob Guldberg**

**Poster**

### **The Creation of a Compressive Load Osteoarthritis Model**

**Co-Author(s): Nick Pancheri, Sruthi Ranganathan, Angela Lin, Bob Guldberg, Salil Karipott**

Osteoarthritis is a disease that impacts millions of people's lives worldwide. A significant amount of research has been directed toward studying osteoarthritis, specifically post-traumatic osteoarthritis. The research model that is most common to study post-traumatic osteoarthritis is by performing a medial meniscus transection (MMT) on a rat. This research looks at a less common, meaningful way of examining post-traumatic osteoarthritis in rats through a non-invasive compressive load knee model (NIKI). Over two years, a non-invasive compressive load model for rats has been built at the University of Oregon in the Guldberg lab. The concept of how the device would look was formed with input from the Sharma lab, and the device was built. Following the creation of the device, the circuitry was figured out with assistance from the Ong lab. Once the machine was running, spring testing calibration/validation was done. The device was calibrated and validated to ensure that voltage inputs would output the correct loads imparted to the knee joint. Once the device was calibrated, rat cadaver testing was done until ACL rupture was confirmed on a cadaver. The implications of the machine working are that the ACL rupture model may provide more relevance to actual knee injuries

compared to surgically inducing a mechanical instability. The NIKI device could produce different structural and biochemical responses compared to surgical models.

**Henriques, Joseph**

University of Oregon

Research Mentor(s): **Monika Fischer, Matthias Vogel**

Poster

### **Pakistan's plan to revitalize their country through reforestation**

We are going to look into the Pakistani Ministry of Climate Changes' nationwide reforestation program called the '10 billion tree tsunami.' The initiative is a government funded environmental restoration project, which aims at planting 10 billion trees by 2023 to combat the environmental effects of climate change and global warming in the arid plains at the base of the Himalayas. Our theory is that the rising temperature of the Earth is drastically affecting the climate, especially in developing third world countries such as Pakistan. We hypothesize that the reforestation program will aid in the revitalization of the forests all over Pakistan. Its execution has many purposes including helping strengthen the mountains with the strong roots of trees as well as using the trees for stabilizing the land and helping prevent landslides. We can conclude that this project will be beneficial for Pakistan's future because it has created green spaces in a once dusty landscape. This example of government funded nationwide reforestation can be seen as environmentally beneficial to both the urban and rural communities of Pakistan. This community based model of reforestation allows for countries around the globe to follow in these footsteps, improving their overall environmental impact.

**Hernandez, Alex**

University of Oregon

Research Mentor(s): **Professor Mitchell Block, Katherine (K'iya) Wilson**

Virtual

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it

all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Hill Sparks, Zo**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

***The Big Year***

I am sharing a five minute long excerpt from my short story, *The Big Year*. It was written and workshopped as part of the KIDD Program this year and follows a year in the life of Russell, a calm and careful man, as he falls in love with excitable, beautiful Isabella. The piece was inspired by my own relationship with my partner and draws on my love of birds to follow the couple through the changing seasons and into their blooming love story.

**Hill Sparks, Zo**

University of Oregon

Research Mentor(s): Lisa Munger

Virtual

**The Effects of Anthropogenic Sound Pollution on Birds Around the Willamette River**

Human noise pollution has become a widespread environmental stressor that can impact wildlife behavior and communication. This research project aims to investigate the relationship between bird vocalizations and anthropogenic noise pollution. Data will be collected for six weeks at three

separate sites, each with varying levels of human noise pollution. The number of bird calls will be recorded using audio sensors, and the data will be analyzed to determine the effect of human noise pollution on bird vocalizations. This study will provide insights into the potential impacts of human noise pollution on bird communication and contribute to our understanding of the ecological effects of anthropogenic noise pollution.

**Hlebechuk, Aiden**

**University of Oregon**

**Research Mentor(s): Katelyn McDonough, Richard Rosencrance**

**Oral Session**

### **Cultural Chronology and Late Holocene Features at Connley Cave 6, Oregon**

**Co-Author(s): Katelyn McDonough, Richard Rosencrance**

This project investigates late Holocene occupations and cultural chronology in the northern Great Basin through collections-based research of the Connley Caves archaeological site in the Fort Rock Basin of central Oregon. Connley Caves is one of the oldest archaeological sites in Oregon and was first excavated in the 1960s by Stephen Bedwell who proposed that people were using stemmed projectile point technology there more than 13,000 years ago. Recent University of Oregon investigations at the Connley Caves have focused on late Pleistocene (>11,700 years ago) deposits, while less is currently known about the site's Holocene chronology. We address this gap through radiocarbon dating hearth charcoal and analyzing tool assemblages in the legacy collection curated at the University of Oregon Museum of Natural and Cultural History. The results of this research confirm that people recurrently visited Cave 6 over the last ~2,500 years and reveal technological changes over the last 10,000 years that complement patterns observed elsewhere in the northern Great Basin. This new information expands our knowledge of human activity at the Connley Caves, assists ongoing studies about settlement and technology, and reaffirms the importance of collections-based research in answering questions about cultural change in the Great Basin.

**Hoban, Áine**

University of Oregon

Research Mentor(s): Zach Walbrun, Cathy Wong

Poster

**Aggregation-dependent excited-state dynamics of a highly absorptive organic dye**

Co-Author(s): Zach Walbrun

Squaraines (SQs) are organic dyes targeted for use in photovoltaic cells because they absorb efficiently in the near-infrared solar emission range, and generate electron-hole pairs (excitons) upon electronic excitation. When SQ thin films are formed via solution deposition, the molecules are disordered monomers, but thermal annealing induces rearrangement into electronically coupled aggregates. In-situ UV-Vis measurements are used to quantify the populations of monomer, weakly coupled, and aggregated species. Traditional absorption spectroscopy operates on an inadequate timescale to sufficiently characterize the rapid evolution of SQ's morphology-dependent excited state dynamics, so our lab has developed a novel ultrafast transient absorption technique. Single-shot transient absorption (SSTA) is a pump-probe spectroscopic method capable of measuring the excited-state decay of rapidly evolving systems using a spatially encoded time delay. Subsequent global fitting analysis provides evidence for two excitonic processes: a rapid energy transfer process and a slower exciton decay process. Pairing UV-Vis population measurements and excited state dynamics from SSTA allows us to quantitatively demonstrate the connection between the extent of aggregation and the evolution of excited state processes.

**Hoeckel, Miles**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

**The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful

in regard to the modern world. This project will show the importance of reevaluating notable pieces from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Hoffert-Hay, Bella**

**University of Oregon**

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

**Poster**

### **Neighbors in Need: Aiding The Venezuelan Refugee Crisis**

Between 1999 and 2013 Hugo Chávez's authoritarian rule as well as extreme reliance on oil provided the circumstances for Venezuela's economic crisis. Since then, Nicolás Maduro's presidency has done little to fix the economic issues plaguing Venezuela. Rigged elections have allowed Maduro to maintain his power and contribute to the extreme political unrest and instability. Since 2015 over 7 million Venezuelans have fled, mainly into surrounding countries and the United States. In recent years, the overload of Venezuelan refugees has resulted in many refugees being turned away from entering the United States and forced to migrate into other countries such as Mexico, or to return to Venezuela along the dangerous Darien Gap. Our proposal seeks to provide more resources to these countries in order to aid Venezuelan refugees after the failure of the Venezuelan government. These resources would provide adequate housing, healthcare, and jobs for the Venezuelans who have taken refuge. While temporary protection status has been given to Venezuelan refugees currently residing in the United States, there remains concerns for those who are still seeking to escape from their dangerous homeland. Utilizing this information we seek to analyze this crisis and its significance and implications within the larger scheme of foreign affairs and international relations as well as to propose potential steps to create positive change.

**Hofmann, Matthew**

University of Oregon

Research Mentor(s): Gabriella Lindberg

Poster

## **Integration of a hyaluronic acid-based synovial fluid mimetic in joint-organoid models**

Co-Author(s): Malley Gautreaux, Nataliia Shchotkina

Post-traumatic osteoarthritis (PTOA) is a costly, debilitating disease characterized by degradation of joint tissues following injury [1]. In vitro joint-organoid models that recapitulate early PTOA conditions may allow for the investigation of potential therapeutics. However, engineering useful models is challenging, as synovial fluid's (SF) interaction with cartilage remains obscure. We aim to integrate hyaluronic acid (HA), the main structural component of SF, in a PTOA model for the study of these interactions. The viscosities of various Streptococcus-derived HA concentrations (0.1, 0.3, 0.5 wt%; 1.5-1.8 MDa) were characterized at physiologically relevant shear rates (0.5-10 Hz) to yield a SF-mimetic with similar viscoelastic properties to SF in PTOA patients (0.16-0.49 Pa\*s) [2]. Cartilage tissue was produced using pelleted articular chondrocytes in chondrogenic media under physoxic conditions, and subsequent exposure to inflammatory cytokines (TNF- $\alpha$ , IL-1 $\beta$ ; 1 ng/mL) resulted in glycosaminoglycan depletion that mirrored PTOA onset. Throughout a 14-day incubation period, biochemical assays indicated that the presence of 0.3 wt% HA within the SF-mimetic did not significantly affect chondrogenesis in the diseased cartilage spheroids. Our HA-containing PTOA model reflects native disease conditions, demonstrating its utility to study SF-cartilage interactions in vitro. 1. Carbone & Rodeo, J Orthop Res, 2017. 2. Mazzucco et al., J Orthop Res, 2002.

**Hoglund, Cassie**

University of Oregon

Research Mentor(s): Dorothy Ostmeier

Oral Session

## **Video Games: A New Frontier for Folklore**

As a professional games marketer, I have spent the last six years working with all manner of teams on developing and sharing their stories. Folklore is essentially the study of the history of storytelling, from the classical oral and literary traditions to, more recently, the use of multimedia as a medium for this beloved art form. Unfortunately, the broader academic community of folklorists has, in my

opinion, yet to effectively tackle the subject of digital games as a legitimate form of folklore. My professional experience, combined with a lifetime of story consumption and my academic studies here at UO, lead me strongly to the conclusion that video games are undoubtedly a form of modern folklore. I will demonstrate this by considering myriad trusted definitions of the genre and drawing clear lines between them and the stories of digital games.

This presentation represents the midpoint of this introductory topic research. There are many facets to folklore yet to be explored via the avenue of digital games. My work up until this point is focused on addressing the foundational, basic questions for considering whether these games qualify as folklore. From here, my research into the topic will expand in anticipation of submitting to the Libraries' Award for Undergraduate Research Excellence (LAURE) and, eventually, academic journals focused on folklore topics.

**Holt, Sadie**

University of Oregon

Research Mentor(s): Christopher Chapman

Poster

## **Prolonged Mild Hypohydration Increases Acute Kidney Injury Biomarkers in Young Males and Females**

**Co-Author(s): Christopher Minson, John Halliwill, William Howells, Cameron O'Connell, Shaun Brazelton**

It is unknown whether prolonged mild hypohydration increases acute kidney injury (AKI) risk in healthy young adults. We tested the hypothesis that urinary AKI biomarkers are elevated following prolonged mild hypohydration compared to a hydrated state (euhydrated). In a block-randomized crossover design, 22 healthy adults [11 females, 11 males; 21(3) years] completed 24 h of fluid deprivation (HYPO) or normal fluid consumption (EUHY). Urine samples were collected immediately following the 24-h protocol. Body fluid losses were estimated using the percent change in body mass over the 24-h protocol ( $\Delta$ BM). Urinary AKI biomarkers insulin-like growth factor binding-protein 7 (IGFBP7), tissue inhibitor of metalloproteinase-2 (TIMP-2), kidney injury molecule-1 (KIM-1), and neutrophil gelatinase associated lipocalin (NGAL) were measured.  $\Delta$ BM was greater in HYPO vs. EUHY [-2.5% (-2.9, -2.1) vs. 0.0% (-0.4, 0.4),  $P < 0.01$ ]. HYPO caused marked increases in urinary [IGFBP7·TIMP-2] [1.9 (ng/ml)<sup>2</sup>/1000 (1.0, 2.8) vs. 0.2 (ng/ml)<sup>2</sup>/1000 (0.1, 0.3),  $P < 0.01$ ] and KIM-1 [1.0 ng/ml (0.8, 1.3) vs. 0.3 ng/ml (0.2, 0.4)  $P < 0.01$ ] compared to EUHY. Urinary NGAL was not different

between conditions [HYPO: 0.7 ng/ml (0.3, 1.1); EUHY: 0.8 ng/ml (0.3, 1.3),  $P=0.75$ ]. These data indicate that prolonged mild hypohydration increases biomarkers that are suggestive of increased AKI risk. Supported by NIH R01HL144128 and F32HL164021, and the Knight Campus Undergraduate Scholars Program.

**Hougham, Olivia**

University of Oregon

Research Mentor(s): Tory Herman

Poster

### **An age-dependent decrease in Syd-1 may be responsible for age-dependent memory decline**

Most organisms experience an age-dependent decline in memory that is caused by a failure to maintain synapses, the connections between neurons. Despite the importance of maintaining synapses during adulthood, the molecular mechanisms responsible are unknown. In aging *Drosophila*, memory decline occurs because pre-synaptic sites called active zones (AZs) accumulate an excess of the essential structural component Bruchpilot (Brp), but why this happens is unclear. During development, Brp is recruited to AZs by the conserved AZ protein Syd-1. I am testing the hypothesis that age-dependent changes in Syd-1 cause the age-dependent accumulation of Brp. I first used an enhancer trap to monitor Syd-1 expression during adulthood. I found that Syd-1 levels decrease with age, consistent with a model in which an age-dependent decrease in Syd-1 causes the increase in Brp. To test this, I asked whether prematurely reducing Syd-1 levels prematurely increases Brp. Because Syd-1 is required during development, I specifically decreased Syd-1 levels starting on day one of adulthood and then measured Brp levels in brains. I found that young flies who prematurely expressed less Syd-1 had higher Brp levels than wild-type flies of the same age. This supports a model in which a gradual loss of Syd-1 causes the increase in Brp and consequent decline in memory in old flies. These results deepen our understanding of the components involved in aging that could be manipulated to delay this process.

**Howell, Madeline**

University of Oregon

Research Mentor(s): Darren W. Johnson, Douglas H. Banning

Poster

### **Evaluating the Impacts of Receptor Pocket Size in Water Contamination Sensors**

Co-Author(s): Douglas Banning, Grace Kuhl, Darren Johnson

The presence of certain anions in aqueous environments pose a threat to ecology and human health. Having the ability to easily detect these anions in real time is an important step for improving water quality monitoring and pollutant remediation processes. Bambusuril macrocycles are a class of organic macromolecules that can act as hosts to anions and form an hourglass-like shape in 3D space. Bambusurils can be incorporated into electrochemical sensors to serve as receptors for aqueous anion detection. Using synthetic chemistry to alter the bulkiness of bambusuril functional groups can expand or contract the binding pocket, and in-turn influence sensitivity towards particular anions. We incorporate bambusurils in the membrane of a specific type of electrochemical sensor called a Chemically-sensitive Field Effect Transistor (ChemFET) to explore this phenomenon. To assess the effects of altering the bambusuril macrocycle pocket size on aqueous anion detection, ChemFET sensors were constructed with a membrane containing either bulky (benzyl) or non-bulky (n-butyl) functionalized bambusuril and evaluated through a series of common anions in the Hofmeister series. Significant improvements to perchlorate and nitrate sensitivities were observed by the (less bulky) n-butyl bambusuril sensors over the benzyl bambusuril sensors.

**Howell, Marly**

University of Oregon

Research Mentor(s): Larry Ulibarri, Frances White

Poster

### **Interspecies dominance hierarchies in captive lemur populations**

This study considers dominance hierarchies of mixed lemur populations in captivity to examine possible sources of agonistic interactions and assesses how behavior changes when such hierarchies emerge. Informed by prior research that monopolized resources alter behavioral patterns (Cameron & Gould, 2013; Sauter, 1992; White, 2022), this study posits that ring-tailed lemurs would be subordinate to red-ruffed lemurs, exhibit a separate intraspecies hierarchy, and would avoid confrontation with red-ruffed lemurs. Data was collected at the Oregon Zoo on three related ring-

tailed lemurs and two related red-ruffed lemurs over eight hours. All lemurs were female. A coded ethogram revealed agonistic interactions directly correlated with feeding and increased as time progressed. Dominance matrices depicted the relationships between individuals. These findings supported the hypothesis that ring-tailed lemurs would be subordinate to ring-tailed lemurs; however, the ring-tailed lemurs did not avoid confrontation with the red-ruffed lemur and consistently engaged in interspecies agonistic behavior typically associated with male lemurs. Data analysis suggests that monopolized resources in mixed captive female lemur populations may increase agonistic behavior. Findings raise additional questions for conservationists to consider as they respond to changing habitats within lemur populations due to deforestation and climate change.

**Howell, Marly**

**University of Oregon**

**Research Mentor(s): Frances White, Sara Cotton**

**Poster**

### **Order from Chaos: Post-Pandemic Curation of the Primate Osteology Collection**

**Co-Author(s): Olivia Ferrell, Mariam Fischer, Gabe Westensee, McKenna Williams, Frances White**

The Museum of Natural and Cultural History's Comparative Primate Collection comprises over 700 primate skeletal specimens consisting of lemurs, monkeys, and apes. It also includes well over 100 non-primate vertebrate skeletal specimens including a wide variety of placental and marsupial mammals from sloths to bats as well as a varied collection of birds, reptiles, amphibians, and fish. In 2019, before the onset of the Covid pandemic, the collection was in the midst of a major reorganization effort. In March 2020, when all undergraduate research in the lab was terminated, lab activities were abruptly halted, the reorganization was left unfinished, and past students working on the project graduated. In 2022, new students arrived with the daunting task of picking up where previous students left off. With the loss of a database computer and its records, we needed to reshelve, relabel, identify, and organize the numerous specimens to rebuild an updated database containing species and skeletal element identifications as well as their locations within the collection's cabinets. Many specimens were in need of urgent care to remove accumulated grease that naturally exudes from bones over time. Each student in the lab took on a degreasing project and contributed to a lab-wide effort of rebuilding and cataloguing the database which necessitated learning skills in anatomical identification and species determination from skeletal traits.

**Howells, William**

University of Oregon

Research Mentor(s): Christopher Chapman

Poster

## **Prolonged Mild Hypohydration Reduces Oral Protein Loading Induced Renal Hyperemia**

**Co-Author(s): Christopher Minson, John Halliwill, Sadie Holt, Cameron O'Connell, Shaun Brazelton**

We tested the hypothesis that increases in segmental artery blood velocity and vascular conductance following oral protein loading are attenuated during prolonged mild hypohydration compared to euhydration. In a block-randomized crossover design, twenty-two healthy participants [11/11 M/F; age: 21(3) y] completed 24 h of fluid deprivation (HYPO) and 24 h of normal fluid intake (EUHY). Participants ingested a whey protein shake (1.0 g protein and 10 ml water per kg of body mass) to stimulate increases in renal blood flow. Body fluid losses were estimated via the change in body mass over 24 hours ( $\Delta$ BM). Blood pressure and segmental artery blood velocity were measured at baseline and 150-minutes post-protein ingestion (POST). Segmental artery vascular conductance was calculated as blood velocity divided by mean arterial pressure.  $\Delta$ BM was greater in HYPO vs. EUHY [2.5% (-2.9, -2.1) vs. 0.0% (-0.4, 0.4),  $P < 0.0001$ ]. At POST, increases in segmental artery blood velocity were attenuated in HYPO vs. EUHY [1.4 cm/s (0.4, 2.5) vs. 3.2 cm/s (1.7, 4.6),  $P = 0.0061$ ] and increases in vascular conductance were abolished in HYPO vs. EUHY [0.00 cm/s/mmHg (-0.02, 0.02) vs. 0.04 cm/s/mmHg (0.02, 0.06),  $P = 0.0004$ ]. These data indicate that prolonged mild hypohydration attenuates protein induced renal hyperemia. This suggests that a high protein beverage is not advantageous for restoring renal blood flow following prolonged mild hypohydration. Supported by NIH R01HL144128 and F32HL164021.

**Hudock, Aaron**

University of Oregon

Research Mentor(s): Kait Leggett

Creative Work

## **Why must all wounds heal?**

Reading my poetry, on the surface one finds three large overarching themes: Nature, Love, and Nostalgia. However, it's not quite right to separate those themes as distinct from one another in my poetry. Rather, they often go hand-in-hand as they've gone hand-in-hand in my life. As one will read,

my speaker tries to fathom how loving someone can hurt so much; they try to make sense of a past and childhood that was dear to them yet equally riddled with abuse, both witnessed and experienced; they try to heal from a history that does not want to be healed. If the speaker was to heal, would they no longer remember the love and blissful childhood memories that equally existed in these moments of hurt? Life is full of oxymorons, and as a result, so is my poetry; my one hope as a poet is to attempt to make sense of these oxymorons, these rulebreakers, these anomalies. That is also why my poetry at times relies so heavily on nature—what breaks its own rules more?

**Hughes, Lorissa**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Poster

### **Argument Revision**

In English 335: Inventing Arguments we have looked over various relevant historical and revolutionary arguments throughout history such as Sojourner Truth's *Ain't I a Woman*, Rachel Carson's *The Obligation to Endure*, Jonathan Swift's *A Modest Proposal* and Emma Goldman's *Patriotism, A Menace to Liberty* to understand the various components that build a strong argument. We will be using the practiced skills from this class to analyze and evaluate a well-known argument within its historical context. Then after researching the context, audience, and purpose, we will be adapting the argument to suggest how it would be better perceived through a modern perspective.

**Hurley, Annabelle**

University of Oregon

Research Mentor(s): Peg Boulay, Marissa Lane-Massey

Oral Session

### **Native Pollinator Enhancement Through Riparian Restoration in the McKenzie River Valley**

Riparian areas support aquatic and terrestrial ecosystems through habitat provision, water filtration, and temperature regulation. These areas are particularly sensitive to environmental disturbances such as invasive species takeover. Impacts to plant communities in riparian areas can adversely affect native pollinators, which play important roles in ecosystem functions. The 2023 Environmental Leadership Program's Restoration and Research Team is restoring native plant-pollinator systems and

riparian habitat at Whitewater Ranch, a blueberry farm in the McKenzie River Valley, contributing to an ongoing restoration project that began in 2014. To do this, we will remove invasive species, continue native revegetation efforts that promote pollinator resources, and monitor subsequent changes to ecosystem services by analyzing stream temperature, pollinator presence, and plant growth. Based on findings from prior years, we anticipate these actions will decrease stream temperatures and increase native plant establishment at Whitewater Ranch, as well as increase native pollinator visitation to the ranch's blueberry fields. This project can inform management methods for riparian restoration and native pollinator enhancement, especially in semi-natural and agricultural lands. Our research can be particularly useful to agricultural managers seeking to implement land use practices that benefit native flora and fauna.

**Ingraham, Ellie**

**University of Oregon**

**Research Mentor(s): Peg Boulay, Marissa Lane-Massey**

**Oral Session**

## **Native Pollinator Enhancement Through Riparian Restoration in the McKenzie River Valley**

**Co-Author(s): Buck Afelin, Yausaman Khajavei, Beatrice Hemstreet, Peyton Carl**

Riparian areas support aquatic and terrestrial ecosystems through habitat provision, water filtration, and temperature regulation. These areas are particularly sensitive to environmental disturbances such as invasive species takeover. Impacts to plant communities in riparian areas can adversely affect native pollinators, which play important roles in ecosystem functions. The 2023 Environmental Leadership Program's Restoration and Research Team is restoring native plant-pollinator systems and riparian habitat at Whitewater Ranch, a blueberry farm in the McKenzie River Valley, contributing to an ongoing restoration project that began in 2014. To do this, we will remove invasive species, continue native revegetation efforts that promote pollinator resources, and monitor subsequent changes to ecosystem services by analyzing stream temperature, pollinator presence, and plant growth. Based on findings from prior years, we anticipate these actions will decrease stream temperatures and increase native plant establishment at Whitewater Ranch, as well as increase native pollinator visitation to the ranch's blueberry fields. This project can inform management methods for riparian restoration and native pollinator enhancement, especially in semi-natural and agricultural lands. Our research can be particularly useful to agricultural managers seeking to implement land use practices that benefit native flora and fauna.

**Jackson, William**

University of Oregon

Research Mentor(s): David Garcia

Poster

## **Examining the Conservation of Prion Formation between Yeast and Human RNA-Modifying Enzymes.**

Co-Author(s): Ethan Shaw, David Garcia

Prions are proteins that can switch from a native conformation to one that allows them to aggregate and perform different cellular functions, thereby causing phenotypic changes. The presence of beneficial prions in yeast and other organisms raises the question of whether human proteins have the capacity to form prions. Using a CRIPSR-Cas9 mediated gene replacement, the yeast pseudouridine synthase gene PUS4 was replaced with its human orthologs TRUB1 and TRUB2 at the endogenous PUS4 locus. Potential transformant colonies were screened via PCR and sanger sequencing to ensure insertion of the human ortholog without mutations. Growth assays were performed to ensure that insertion of the human ortholog did not significantly reduce growth, indicating the human orthologs can functionally replace their yeast counterpart. Following transient overexpression of TRUB1 or TRUB2 and exposure to the aminoglycoside antibiotic Paromomycin, the humanized strains were screened for resistant growth phenotypes, a hallmark of prion formation. It is unknown whether the human orthologs of these RMEs also have an inducible prion conformation, or if prions are responsible for any phenotypes in humans besides disease. Testing prion induction in humanized yeast cells is an important first step in determining whether prions play any role in important biological processes in humans.

**James, Dante**

University of Oregon

Research Mentor(s): Lisa Munger

Virtual

## **The Effects of Sound On The University of Oregon Dining Halls**

Soundscapes are a vital component of the human experience, as they shed light on important aspects that define human existence and relations with one's environment. By studying soundscapes, one develops the ability to understand human acoustic ecology in a given location, biodiversity across time and space, effects on public health, human behavior, and so much more. This study investigates

the impact of dining halls' eco-acoustics on academic and living environments. With new construction and dining options available, we will explore the relationship between dining halls, noise levels, foot traffic, building layout, and time of day. Using consistent methods, we will focus on three dining halls across the University of Oregon campus (GSH, LLC, and DeNorval Unthank) while performing data collection over the span of four weeks. Spectrographs, spectrums, and wavelengths will be analyzed using RavenLite to compare frequency peaks, variations in power, and sound classifications across different time periods. This study's purpose is to improve our understanding of the role of sound in academic and residential domains and its impact on productivity and studying. As such, the implications for the design and management of dining halls and public spaces could be improved and developed based on the findings of this study. The significance of this research is in its potential to inform sound design strategies for public spaces and ultimately contribute to students' well-being and success.

**James, Dante'**

**University of Oregon**

**Research Mentor(s): Caitlin Kowalski, Matt Barber**

**Poster**

### **Last but not Yeast: Staphylococcus aureus evolves resistance to yeast antimicrobial activity**

Human skin contains many microbes, termed the microbiome, that secrete antimicrobials to prevent infection; in response, pathogens may adapt to overcome these defenses. *Staphylococcus aureus*, a bacterial pathogen of the skin, is a major concern due to its antibiotic resistance. Our lab discovered a host resident-fungi *Malassezia*, often overlooked in the microbiome, has bactericidal properties against *S. aureus*. When exposed to *Malassezia*, *S. aureus* develops resistance through activation of the sigma factor SigB. This study focuses on downstream mechanisms of *S. aureus* resistance to *Malassezia* beyond SigB. We aim to characterize the resistance mechanism, identify consequences of resistance, and help identify toxic effector(s). To accomplish this, we generated *S. aureus* mutations based on resistance evolved in the absence of SigB and relevant literature, then investigated their resistance to the yeast. We found sizable contributions to resistance through an evolved *stp1* allele and activity of the regulator SarA. Both SigB and the *stp1* evolved allele provide resistance through increased activation of SarA; this resistance is coupled with resistance to antibiotics and antimicrobial fatty acids. Currently, SarA is central to our research. We intend to study downstream components of SarA to complete this mechanism. Our work contributes to understanding how the

microbiome prevents infection and can drive pathogen evolution, while aiding in the fight against antibiotic resistance.

**Jones, Anessa**

**University of Oregon**

**Research Mentor(s): Adam Glass**

**Poster**

### **Color Tunability of Benzofulvene Dimers**

Benzofulvenes and their derivatives have many implications as synthetic precursors and molecular materials, as well as in medicinal applications. The conjugation of benzofulvenes reveals many interesting properties that raise the possibility of color tunability. Through our synthesis we have also been able to create benzofulvene dimers in moderate yield which show interesting spectral properties in both the UV and visible range which indicates that these dimers may be very useful in studying electronic and optical effects within a large network of structures. We are specifically looking to explore push/pull dynamics related to different substituents on the dimers in regards to electron flow and movement. 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 dimer benzofulvene synthesis, optimize yield, and manipulate the dimers with substituents in order to gain a better understanding of their properties and implications in scientific scenarios.

**Jorgensen, Morgan**

**University of Oregon**

**Research Mentor(s): Chantelle Russell**

**Oral Session**

### **Effective Study Skills Can Improve Overall Well-Being**

Implementing more effective study habits can increase time for well-being activities, such as journaling, resting, and connecting with others. Our goal is to expose University of Oregon students to a variety of researched-backed study habits so they can gain autonomy over their time. In a search for more effective tactics, we referred to academic literature, analyzed studies on factors that set college thrivers and divers apart, and watched TEDTalks on how to study smarter and not harder. We found that elaborative rehearsal, retrieval practice, and a good night's sleep improve performance

significantly. Interviews conducted with University of Oregon faculty in the Tutoring and Academic Engagement Center (TAEC) and Teaching Engagement Program (TEP) confirmed these findings. They also informed us that common strategies such as maintenance rehearsal and highlighting just don't work. Students compromise their well-being in a time-consuming effort to succeed academically. If they are knowledgeable about the study habits that aren't as efficient and know which ones to implement, students will have an opportunity to make space for well-being activities.

**Jorgenson, Shanie**

**University of Oregon**

**Research Mentor(s): Shannon Snyder**

**Poster**

### **Daphnia's Evolutionary Response to Ecological Disaster**

**Co-Author(s): Shannon Snyder**

Recent warm and dry conditions of Lane County, Oregon attributed to the burning of 500,000 hectares of forest on Kalapuya land within a week (Quinn et al., 2021), severely damaging its ecosystems. While community structure consequences and aspects of water quality following a fire have been investigated (Angeler & Moreno, 2007; Scordo et al., 2021), there has not been thorough investigation into how genetics and composition of the zooplankton community evolve over the fire recovery process. *Daphnia*, a common freshwater crustacean, and keystone species are especially responsive to environmental changes making them a significant factor in ecological recovery (Abdullahi et al., 2022; Müller et al., 2018). Sediment cores collected from impacted water systems contain eDNA from *Daphnia* resting eggs. Using the recovered eggs and current zooplankton communities in the water column, we predict a possibility of three outcomes. One, we observe changes in species composition relative to the time of the fire. For example, one species of zooplankton may be more tolerant to fire related water pollution than another, leading to species composition disturbance. Two, observable changes in allele frequency of same species relating to thermoregulation or water quality adaptation. Third, we find no evidence of *Daphnia* in affected water bodies, indicating the disastrous effects of severe wildfires. This project fuels my current and future studies of evolutionary response to ecological disasters.

**Juan, Adam**

University of Oregon

Research Mentor(s): Chantelle Russell, Mariko Lin

Oral Session

## **Facilitating Peer-Led Events to Enhance College Student Conversation Surrounding Mental Health**

Mental health disorders are quite common among college students worldwide, including at the University of Oregon. The following statistic supports that, in 2022, it was found that college students across the nation struggle with mental health; that is 35% of students were diagnosed with anxiety and 27% with depression (College Student Mental Health Statistics). If the conversation around mental health improves on campus, then students will feel more comfortable decreasing the stigma around seeking help for their well-being. We have interviewed University of Oregon faculty and staff, in addition to accessing articles and personal experiences regarding mental health. These all account for primary and secondary sources in our project. Mariko Lin, from the University of Oregon's Counseling Center, specifically addressed that, relating to positive mental health, 25% of students at UO in 2021 felt like they had a positive mental health, compared to 38% nationally (The Healthy Minds Network). In response to this, two potential methods for breaking the stigma around mental health include a mandatory peer-led presentation similar to Get Explicit and a weekly seminar held by graduate students for undergraduates. Ultimately, through more peer-led events, such as the ones listed above, the conversation surrounding mental health on campus will increase as students learn how to have a positive relationship with their health and struggles.

**Jurva, Chloe**

University of Oregon

Research Mentor(s): Prof. Lisa Munger

Poster

## **Characterizing Study Spots Based on Their Sound Qualities**

The University of Oregon campus is a diverse environment, bustling with a wide range of sounds. Understanding the relationship between soundscapes and studying habits can provide valuable insights into how sound impacts our cognition in different settings. For example, white noise has been demonstrated to aid with logic and analytical thinking, whereas natural sounds have a greater benefit for creative and collaborative thinking.

This project aims to study 12 different soundscapes on the UO campus. Our two hypotheses are as follows: Hypothesis 1: Indoors at Knight Campus, one will study logical topics best because of the low-level white noise present. Hypothesis 2: Outside at Tykeson, one will study creative topics best because of the ambient noise present.

To conduct this research we will record 21 minutes each week from different locations using a simple phone adaptor and recorder. We will then use RavenLite software to examine frequency and volume. Qualitative research will be taken on-site to note the type of crowd, contributing noise factors, possible error sources, etc.

The results of this study will provide valuable insights into how the soundscape can influence the academic performance of students. The results may also have practical implications for campus planning, design, and management, as well as for new approaches to education. The findings of this research will pave the way for further interdisciplinary studies in the field of sound and place.

**Kamata, Shochiro**

**Lane Community College**

**Research Mentor(s): Caroline Lundquist, Stacey Kiser**

**Works in Progress: Lightening Rounds**

### **The Impact of Personal Identity on Students' Attitudes Toward Learning as "Failure" and/or "Play"**

The Sigma Zeta chapter of Phi Theta Kappa (PTK) National Honor Society at Lane Community College would like to present on its 2023 Honors in Action (HIA) project on the topic of The Art and Science of Play. PTK HIA projects combine multimodal research, practical problem-solving, and service in order to identify and help solve a problem that is impacting our community. Our project focuses on students' identities in relation to play. Our working research question is: "What aspects of students' identities may stand in the way of developing a playful attitude about learning, and/or a sense that productive failure is a part of learning?" The aim of our research is to discover a practical problem related to learning and play that we can help to address at Lane Community College through a service project. This topic is relevant to many stakeholder groups at LCC, including students who, due to aspects of their identity, do not feel able to approach learning and/or failure as "play," and faculty who incorporate play and/or productive failure into their pedagogy. For this project we will identify and critically assess the 8 most relevant pieces of scholarly literature we can find on our topic. We also plan to collect data specific to our campus community. We hope to elicit audience feedback regarding

potential data collection methods, and the relevance of our project to real-world problems impacting our local, national and global communities.

**Kavanagh, Emily**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

### ***Empty Alibis (short story)***

This short story piece I wrote in my Kidd workshop fiction writing class. It is set in 19th century San Francisco and follows the character Raven through a chaotic night in which her businesses are being threatened by a series of fires being set by an unruly gang. She decides to seek refuge with her friend Estelle, but the journey there is treacherous, and there's much for the two women to discuss.

**Kelm, Katelyn**

University of Oregon

Research Mentor: Alexander Dracobly

Poster

### **The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World**

"The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War" is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Khachatourian, Jenna**

University of Oregon

Research Mentor(s): Alycia Galindo, Marian Hettiaratchi

Poster

### **Optimization of a Hyaluronic Acid-Alginate Hydrogel for Sustained Protein Delivery**

Spinal cord injuries resulting from trauma to the central nervous system (CNS) have debilitating implications on neurological capabilities causing dysfunction in both autonomic and somatic nervous systems. Injectable hydrogels can be modified to match properties of native tissue and act as a support to promote axonal growth. Hyaluronic acid (HA) interacts with cellular receptors on target tissues to promote cellular homeostasis. Alginate (Alg) produces protective and regenerative environments for cells. We hypothesize that crosslinking HA and Alg to form a hydrogel will produce an environment that stimulates neural cell growth while serving as a platform for therapeutic protein delivery. To fabricate these hydrogels, we exposed aldehyde groups on Alg through an oxidation reaction with NaIO<sub>4</sub>. Then, we functionalized HA with adipic acid dihydrazide (ADH) groups to expose crosslinking sites that react with oxidized Alg, forming a hydrazone-crosslinked hydrogel network. We also functionalized HA with a norbornene (Nor) group for bioconjugation of affinity proteins called affibodies to allow for controlled protein release at an injury site. We are currently optimizing compression modulus, gelation time, and mass change of the hydrogels by crosslinking oxidized Alg and HA-ADH-Nor at various weight percentages to closely mimic the CNS. Optimizing this hydrogel will provide a promising platform for therapeutic protein delivery with the potential to improve the lives of SCI patients.

**Khalil, Sylvia**

University of Oregon

Research Mentor(s): Caitlin Kowalski, Matt Barber

Poster

### **Last but not Yeast: Staphylococcus aureus evolves resistance to yeast antimicrobial activity**

Co-Author(s): Caitlin Kowalski, Matt Barber

Human skin contains many microbes, termed the microbiome, that secrete antimicrobials to prevent infection; in response, pathogens may adapt to overcome these defenses. Staphylococcus aureus, a bacterial pathogen of the skin, is a major concern due to its antibiotic resistance. Our lab discovered

a host resident-fungi *Malassezia*, often overlooked in the microbiome, has bactericidal properties against *S. aureus*. When exposed to *Malassezia*, *S. aureus* develops resistance through activation of the sigma factor SigB. This study focuses on downstream mechanisms of *S. aureus* resistance to *Malassezia* beyond SigB. We aim to characterize the resistance mechanism, identify consequences of resistance, and help identify toxic effector(s). To accomplish this, we generated *S. aureus* mutations based on resistance evolved in the absence of SigB and relevant literature, then investigated their resistance to the yeast. We found sizable contributions to resistance through an evolved *stp1* allele and activity of the regulator SarA. Both SigB and the *stp1* evolved allele provide resistance through increased activation of SarA; this resistance is coupled with resistance to antibiotics and antimicrobial fatty acids. Currently, SarA is central to our research. We intend to study downstream components of SarA to complete this mechanism. Our work contributes to understanding how the microbiome prevents infection and can drive pathogen evolution, while aiding in the fight against antibiotic resistance.

**King, Nathan**

**University of Oregon**

**Research Mentor(s): Brian Trapp, Jesse Sawyer**

**Poster**

### **Poetic line break**

Since joining the Walter and Nancy Kidd Creative Writing Workshop this past Fall, my creative writing work has dramatically improved. My continued exposure to advanced curriculum, individual workshopping, and classmates' writing has elevated my comprehension and appreciation of poetry and creative writing. I have developed a personal taste for line break and metonymic doubling and wish to share it with the creative community. Through the workshop, I have developed my ability to create convincing images and understandable metaphors, through purposeful word choice and tactful line break. Before I joined the Kidd, readers struggled to follow my writing and I failed to understand why. Now, I understand where my poems may be asking too much of the reader and how to combat that as a writer. My presentation will showcase a selection of poems that make purposeful and unique line break choices. I am grateful for my time in the program and how it has developed my understanding of writing and craft. I hope to use my new skills to show both an appreciation for the program and how complex ideas and images can be created through tactful line break choices.

**King, Samantha**

University of Oregon

Research Mentor(s): Chantelle Russell

Oral Session

### **Social Media's Effect on Personal Relationships**

It's important to make students at the University of Oregon recognize the impact that social media has on their relationships. As technology evolves, social media and dating apps put a barrier between the way students connect with each other. Engaging with social media too much does more harm than good. In college, students may begin to date online and have accounts on several social media apps. Frequent use of these apps takes away the value of conversation between UO students because they have the option to look at their phones to avoid social situations. In addition, a study in October 2019 conducted by the Pew Research Center found that many Americans are struggling with navigating romantic relationships due to technology-related issues. Dating apps give access to a wider range of people who would not be able to connect with one another if it weren't for these apps. These specific connections monetize extrinsic value, making it harder to develop relationships face-to-face; people focus on how they look online and forget to look beneath the surface. We talked to students around campus regarding their personal opinion on the question: How has social media affected our personal relationships and connections with one another? Especially in college, it's critical to feel like we belong and have a community of people who support us. Cultivating awareness around social media usage has the potential to strengthen relationships amongst students at the University of Oregon.

**King Watt, Lauren**

University of Oregon

Research Mentor(s): Angela Long

Poster

### **Mental Health Access Discrepancies between Cisgender, Transgender and Gender Non-Conforming Students**

Real or perceived discrimination in healthcare settings impacts transgender and gender nonconforming people's desire and ability to access appropriate care (Safer JD et al). The University of Oregon (UO) University Health Services (UHS) administered the 2022 American College Health Assessment's National College Health Assessment III (ACHA-NCHA), an assessment of lifestyle habits

and behaviors across a myriad of student demographics. The survey comprised 338 UO respondents, including cisgender men and women, transgender, and gender non-conforming students. While these data reflect a small number of 338 respondents, national reference data includes 69,131 individuals attending 129 colleges and universities. A qualitative review of UO and national reference data suggests transgender and gender non-conforming students utilize psychological or mental health services at higher percentages than their cisgender counterparts (UO 65% vs. 44%, National 64% vs. 34%). Analysis shows transgender and gender non-conforming UO students use campus-based mental health and medical services on campus at lower percentages than their national reference group counterparts (21% vs. 42%). The Health Equity Action Project of the Student Health Advisory Committee recommends that UHS implement changes to close these gaps, ensuring that everyone—regardless of gender identity—is informed about UO medical and mental health services and is able to receive accessible, equitable healthcare on campus.

**Kioussi, Rea**

**University of Oregon**

**Research Mentor(s): Heather K. Le Bleu, Kryn Stankunas**

**Poster**

### **The voltage-gated T-type calcium channel *cacna1g* retrains outgrowth to restore regenerated fin size**

**Co-Author(s): Heather K. Le Bleu, Astra L. Henner, Scott Stewart, Kryn Stankunas**

Adult zebrafish fins regenerate to their initial proportions irrespective of the extent or type of damage, providing a striking example of organ size control. However, the genes and molecular mechanisms underlying fin size control are largely unknown. Several zebrafish mutants, including the classic *longfint2*, regenerate extraordinarily long fins. The Stankunas lab has shown that *longfint2* phenotype is caused by ectopic expression of the *kcnh2a* potassium channel, which prolongs the outgrowth period. These studies and other long-finned zebrafish models indicate that ion signaling regulates fin size and shape. We recently generated a bonafide  $\text{Ca}^{2+}$  channel fin overgrowth model *cacna1g* to investigate the role of  $\text{Ca}^{2+}$  signaling in fin development and regeneration. We performed fin outgrowth studies to characterize the *cacna1g* mutant. First, we show *cacna1g* mutant fish regenerate their fins to comparable lengths of the *longfint2* mutant. Next, we found low voltage-gated T-type  $\text{Ca}^{2+}$  channel is essential for retaining fin outgrowth during regeneration. We conclude *cacna1g* is involved in scaling fin size and shape during regeneration. Furthermore, this phenomenon

has not been observed in existing long-finned mutants. Our studies link voltage-gated Ca<sup>2+</sup> channels to fin growth control mechanisms. This work is supported by NIGMS, NRSA, NICHD awards, and the O'Day Fellowship and UROP at the University of Oregon.

**Kirkpatrick, Rowan**

University of Oregon

Research Mentor(s): Matthias Vogel, Monika Fischer

Poster

### **International Systems of Discrimination through Incarceration**

This project aims to investigate the patterns that lie within the systems of incarceration worldwide, arguing that they are inherently discriminatory and have historically been used to target racial and ethnic minorities. The demographic statistics of the population of three separate countries, the United States, Canada, and Norway, will each be individually analyzed and compared to the demographics of the prison population of each country in order to determine any patterns of discrepancies or biases present within the system of incarceration internationally. Through our analysis, we have found that, in each country, racial and ethnic minorities are disproportionately represented in prisons, exposing the failures of international governments to uphold the civil rights and liberties of all of their citizens, perpetuating a system that targets and ostracizes already marginalized communities. Although the extent of dehumanization and discriminatory practices within penitentiaries varies in each country, the disproportionate representation of racial and ethnic minorities constitutes a violation of their right to freedom from discrimination. Therefore, we conclude that the system of incarceration itself is inherently flawed and perpetuates discriminatory practices across international borders.

**Kitagawa, Seira**

University of Oregon

Research Mentor(s): Catalina de Onis

Creative Work

### **From Perspectives; Exploring the minoritized community in Japan with author's lived experiences.**

Latinx/o/ne communities in the United States are well known and there have been numerous people who strive to get their voices heard. By growing up mostly in a homogeneous country, Japan, I was

not exposed to seeing a minoritized community; however, living in a diverse environment in the US provided perspectives that I would never think of in Japan. In my home country, there is a history of emigration to Brazil, creating 1.3 million of the Japanese Brazilian community today. Foreign workers in Japan face a lack of support, discrimination, and the loss of a sense of “home.” The ability to discover and research these concerns was valuable for me personally, and I hope the audiences learn new things and are encouraged to reflect on their own perspectives and how that could bring some discoveries and ideas. This work is a collection of research, visuals, a poem, music, drawings, and a survey with a focus on minoritized communities in Japan that I conducted myself online. I used Canva to create this zine and use multiple supporting materials. I am passionate about how my unique background can make a connection in this form of creative work and research, as well as how this contribution can impact the audience’s passions.

**Kitagawa, Seira**

**University of Oregon**

**Research Mentor(s): Monica Fischer, Matthias Vogel**

**Poster**

### **Cultural Genocide Against Uyghurs; An Ethnic Minority Group in China**

The Uyghurs are an ethnic minority, Muslim-majority group of about 12 million people in the Xinjiang region of China. China has violated the human rights of the Uyghur people by restricting religion, re-educating, and even subjecting them to torture, forced labor, and imprisonment. This project will address the issues with the United Nations Security Council and what can be done to put pressure on China and how the US and other Western countries must implement the Uyghur Forced Labor Prevention Act. Overall, the UN Security Council must change the permanent members of the security council to allow for more initiative to be taken towards human rights violations. Currently, there are five permanent member countries in the UN Security Council, which includes the United States, China, Russia, France, and the United Kingdom. Those countries possess veto rights, which makes it hard to pass laws and sanctions that would harm any of the countries. The United Nations Security Council should be reformed and empowered to address issues such as the Uyghurs’ human rights crisis and Russia’s invasion of Ukraine.

**Kleinberg, Kelly**

University of Oregon

Research Mentor(s): Kait Legget

Creative Work

**KIDD Workshop Poems**

My work often explores intersections between hope and grief. Deeply confessional, my poetry is an incarnation of young adulthood, looking at the processes of growing out of, growing into, growing up, and how ultimately these things shape every individual's perception of the world. I tend to allow optimism leverage over cynicism, choosing to reflect on the forces that move people forward, reconstructing our perspectives day by day. I am heavily influenced as a writer mostly by modern, female poets like Mary Oliver and AE Stallings.

**Knispel, Tim**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Oral Session

**The Relevance of Smokey the Bear**

In English 335 Inventing Arguments, we have analyzed different types of arguments that have been presented to the general public, and have been used throughout different expertise. Our presentation will take a well known argument and will critically analyze it, dissect it, and evaluate how it stands in today's world. The argument that we've chosen to analyze would be the famous debate of if Smokey the Bear is still relevant, and if they are, how can they apply to children and adults and be represented in the broader field of social media.

**Knoll, Julianna**

University of Oregon

Research Mentor(s): Chantelle Russell

Oral Session

**Social Media's Effect on Personal Relationships**

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harm than good. In college, students may begin to date online and have accounts on several social media apps. Frequent use of these apps takes away the value of conversation between UO students because they have the option to look at their phones to avoid social situations. In addition, a study in October 2019 conducted by the Pew Research Center found that many Americans are struggling with navigating romantic relationships due to technology-related issues. Dating apps give access to a wider range of people who would not be able to connect with one another if it weren't for these apps. These specific connections monetize extrinsic value, making it harder to develop relationships face-to-face; people focus on how they look online and forget to look beneath the surface. We talked to students around campus regarding their personal opinion on the question: How has social media affected our personal relationships and connections with one another? Especially in college, it's critical to feel like we belong and have a community of people who support us. Cultivating awareness around social media usage has the potential to strengthen relationships amongst students at the University of Oregon.

**Komons, Ava**

**University of Oregon**

**Research Mentor(s): Dr. Jennifer Michel, Dr. Adam Miller**

**Poster**

## **Proteomic Analysis of the Electrical Synapse**

**Co-Author(s): Jennifer Michel, Adam Miller**

Electrical synapses are complex cellular and biochemical structures. The electrical synapse is a key component in the sensory, central, and motor circuits, but much is unknown about the proteomic makeup of the synapse. Using the Mauthner cell of zebrafish as a model, we aim to identify the proteins which are present in the electrical synapse and in the gap junction (GJ). We are using TurboID, a tag evolved in *E. coli* that allows for in vivo, high affinity, proximity-dependent labeling of proteins with biotin (Branon et al. 2018). Using a fish line engineered to express Cx34.1-TurboID from its endogenous locus, we plan to induce in vivo biotinylation of nearby proteins, isolate these biotinylated proteins, and identify them using mass spectrometry. The work thus far has been piloting experiments, understanding the correct conditions to make these techniques possible, and collecting preliminary data to understand the ideal genotype to use moving forward. We have collected data that suggests more biotinylation in heterozygous alleles than in homozygous using immunofluorescent imaging techniques. The findings of this study will be beneficial to form a foundation of proteins present in the electrical synapse and inform future research.

**Kondo, Emily**

University of Oregon

Research Mentor(s): Catalina de Onís

Creative Work

## **Restructuring Disaster Relief in Puerto Rico: The Impacts of Colonialism and Environmental Racism**

This project draws from academic and popular media sources to analyze the complex, systemic issues shaping disaster prevention and relief efforts in Puerto Rico. In HC 301: Environmental, Climate, and Energy Justice in Latinx Communities (Fall 2022), I utilized concepts from borderlands theory, including creating a third space through a digital zine format to challenge research production and communication norms. This zine argues that preventative infrastructural changes and disaster relief efforts should be restructured from federal projects into local, community-centered, grassroots initiatives to better serve the needs of Puerto Rican communities and aid the most-affected populations. I link Puerto Rico's colonial history with present-day experiences—including environmental racism and ineffective governmental policies—to give a comprehensive overview of disaster prevention and relief efforts. I also use artifacts to highlight local organizations and show visual examples of concepts to increase accessibility and promote engagement with members of affected communities. It is important to note that this zine is informative and does not take an active role in the reimagining and restructuring process. From my position in the United States, this zine encourages readers to learn more about colonialism's continued effects, support local organizations, and endorse legislative actions to decolonize disaster efforts by moving toward self-determination and energy independence.

**Kondo, Emily**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

## **Examining the Role of Imagery in Children's Literature**

As a cocurator planning an exhibit on “book love” for a course with Professor Cheng, I identified and researched items in Special Collections and examined them in the context of course readings. I chose to approach the project by studying illustrations in different forms of children's literature to find out how they influence the reader and their imagination because I want my audience to understand the

role of imagery in literature and the author's function as a co-creator. This project utilizes concepts from *What We See When We Read* by Peter Mendelsund to analyze *The Little Golden Book of Words* by Selma Lola Chambers, *Baby's House* by Gelolo McHugh, and *Who needs a Cat?* by Clara Cassidy. The illustrations in the books are compared to demonstrate the use of imagery as a tool for children to develop their sense of imagination and internal imagery when reading. The comparison of children's books of varying reading ages shows a distinct difference in the quantity and complexity of the illustrations. Additionally, the function of an author as a co-creator is explored in the context of their decision to use specific types of images. Overall, this project aims to study the role of imagery in literature as a tool for the reader's imagination by examining illustrations in different types of children's books.

**Konigsfeld, Abby**

**University of Oregon**

**Research Mentor(s): Mai-Lin Cheng**

**Poster**

### **The Effect of Style Choices in Books on the Reader's Experience**

We are developing this project for a course with Professor Cheng in Winter 2023. Our class assignment was to plan an exhibit on "book love; or, reading commonplaces." As co-curators, our task is to identify and research an item in Special Collections and situate the item in the context of our relevant course readings. We chose to approach the project by studying *What We See When We Read*, *Northanger Abbey*, and *A Commonplace Book of Cookery*. Through these works of literature, we hope to find out how style choices in books, like font, size, use of blank space, etc., affect the engagement of the reader, as well as their motivation throughout the work. Although style choices may seem minuscule or go unnoticed by many readers, authors have the opportunity to use them to create a whole reading experience for their audience. After this project, we want our audience to understand aspects of reading that are often taken for granted. Unique stylistic choices are important and allow the author to have an impact on the audience through more than just the words on the paper. While it is still true that there is more to a book than just its cover, the style choices of a piece of literature can be just as important as the actual meaning of the work.

**Krantz, Louisa**

University of Oregon

Research Mentor(s): Dasa Zeithamova, Troy Houser

Poster

**Determining the Underlying Cognitive Mechanisms behind Acquired Equivalence**

Co-Author(s): Dasa Zeithamova, Troy Houser

The ability to generalize between previously encountered stimuli and novel stimuli is a fundamental cognitive tool used in decision-making. Acquired equivalence is a form of generalization where one assumes that if two stimuli (e.g, two people) share one characteristic, then they likely share another characteristic as well. Previous studies have attempted to explain the underlying cognitive mechanisms behind acquired equivalence via integrative encoding while others have suggested it relies on recursive retrieval of individually learned associations. This study employs a between-subjects method carefully designed to dissociate the competing hypotheses of integrative encoding and recursive retrieval. To test this, groups of participants were exposed to pairs of stimuli that differed in how frequently they were seen together. The results indicate that consistently co-occurring stimuli facilitates acquired equivalence. Together, this study suggests that integrative encoding might offer a better explanation for acquired equivalence than recursive retrieval.

**Krebs, Mary**

University of Oregon Recent Alumni

Research Mentor(s): Alyssa Quiogue, Bruce Bowerman

Virtual

**Oocyte Meiotic Division: Cortical Stiffness versus Cortical Contractility**

Co-Author(s): Alyssa Quiogue

Oocyte meiosis is a highly asymmetric cell division process that produces a haploid oocyte and two small polar bodies. Unlike in mitosis, the meiotic spindle migrates to the cortex, where the contractile ring assembles and ingresses past one set of chromosomes to ultimately extrude a polar body. As the contractile ring ingresses, we observe other parts of the membrane ingressing due to cortical actomyosin contractility. Defects in this process may leave oocytes with an abnormal number of chromosomes, which can lead to developmental defects. In *C. elegans* oocytes that lack CLASP/CLS-2 (a TOG domain protein that stabilizes microtubules), membrane ingression is increased during meiosis II. Since CLS-2 localizes to patches on the cortex, cortical microtubules are reduced in

cls-2 mutants compared to control oocytes, and our preliminary data show that increased levels of cortical microtubules suppress excessive membrane ingression in cls-2 mutants, we hypothesize that cortical CLS-2 patches stabilize cortical microtubules to counteract membrane ingression caused by actomyosin contractility during oocyte meiosis. By live imaging fluorescent reporter strains expressing markers for chromosomes and the plasma membrane or microtubules, we discovered that knocking down microtubule depolymerases KLP-7 and ZYG-9 reduces excessive furrowing in cls-2 mutants, supporting our hypothesis that CLS-2 patches counteract furrowing by stabilizing cortical microtubules.

**Krueger, Kayla**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **Authorship within Commonplace Books and Scrapbooks**

The act of curating a commonplace book or scrapbook is an intimate process. The curator is outlining a portrait of themselves through the piecing together of media. Peter Mendelsund wrote: “Authors are curators of experience. They filter the world’s noise, and out of that noise they make the purest signal they can - out of disorder they create narrative.” Through this lens, commonplace books and a scrapbook are reduced to their author. Thus, making a commonplace book and scrapbooking is linked to the definition of an author, resulting in authorship. Through analyzing a scrapbook of 19th and 20th century greeting and advertisement Cards, along with *A Commonplace Book of Cookery* by Robert Grabhorn, as well as a commonplace book I’ve authored over ten weeks. The audience will learn that being an author manifests in many forms, ultimately curating a message to the reader, whether it be intended or not. Although both commonplacing and scrapbooking both involve taking passages and materials from other work, the act of compiling materials is a form of authorship.

**Kuhns, Liz**

University of Oregon

Research Mentor(s): Jesse Sawyer

Creative Work

### **Selected poems**

There’s always been a writer inside of me, not that I’ve always known it. I was eleven when I started writing poems, a couple angsty lines here and there in a locked diary; I’ve come a long way since

then. I see poetry as a sort of salvation- it's comforting to know that a negative experience can be rewritten into a piece of art. Oftentimes my subject matter can be painful and I like it that way. I never expected myself to be comfortable reading any of it in front of my peers let alone a roomful of strangers! This is one of the many ways that the Walter and Nancy Kidd Workshops have pushed me. The feedback I've received this year from my fellow poets has challenged my willingness to revise and persevere through frustrating aspects of the craft. Getting comfortable with critique has allowed my confidence as a writer to bloom. The poems I'm sharing today have seen many variations and I'm sure that I'll look back on them years from now through a completely different lens. Expanding my perspective on poetry-what it can look like, read like, feel like-that's what these workshops have really been about and I've enjoyed every second of them.

**Kulis, Siena**

**University of Oregon**

**Research Mentor(s): Jennifer Phillips, Monte Westerfield**

**Oral Session | Poster**

### **Preclinical Trial of Antioxidant Compound Hexafluoro in a Zebrafish Model of Usher Syndrome Type 1F**

**Co-Author(s): Sara Buchner, Eric Fox, Jennifer Phillips, Monte Westerfield**

Usher syndrome type 1F (USH1F) is an inherited disorder characterized by deafness from birth and loss of vision beginning in childhood. There is no treatment for the vision loss, and current research is focused on a range of therapies to preserve or restore sight. A previous Westerfield Lab student found that the antioxidant compound hexafluoro (Hex) increased visual function in young zebrafish models of USH1F reared in dim light. We modified this experimental design to test whether Hex could improve visual symptoms in these zebrafish raised in light conditions consistent with normal daytime environments. USH1F mutant zebrafish and their siblings raised in elevated illumination were treated daily with either Hex or DMSO added to the growth medium. We assessed visual function after 4 days of treatment by optokinetic response assay. Upon termination of the experiment, we analyzed sectioned and stained retinas to tally the number of surviving cells. We found that Hex's effect on visual function persisted in mutant fish raised in brighter light, and observed a significant increase in the number of retinal cells retained in the treated mutant fish compared to controls. We are now investigating the mechanism(s) of the antioxidant effect in retinal cells. Antioxidant treatments

do not address the root cause of USH1F retinal pathology, but such drugs could provide a critical intermediate intervention, preserving useable vision until more targeted therapies are clinically available.

**Kurtz, Amanda**

**University of Oregon**

**Research Mentor(s): Paul Dalton, Kelly O'Neill**

**Poster**

## **Phase Separated Hydrogel Coatings for Porous Scaffolds in Biomedical Applications**

Co-Author(s): Kelly O'Neill, Naomi Paxton, Ievgenii Liashenko, Paul Dalton

The field of tissue engineering (TE) works to produce artificial replicas of tissues and organs for clinical applications. To achieve this ambitious outcome, TE works at the interface of biology, engineering, and medicine to produce reasonable substitutes. Additive manufacturing (AM), commonly known as 3D printing, allows for the production of porous 3D structures, termed scaffolds, to replace previously 2D models of cell culture study for TE. Within AM, melt electrowriting advances the resolution possible through its unique fabrication of high precision, micron thin fibers. These microfibers are applicable on a biological scale and allow for the formation of highly porous scaffold structures for cell culture studies. The polymer used in this thesis is poly( $\epsilon$ -caprolactone) (PCL) which, with its low melting point, rapid solidification, and biocompatibility, is the gold standard for MEW. PCL, however, is limited in its efficacy for 3D cell culture due to its hydrophobic nature, resulting in poor cell attachment. A possible solution to this limitation is with a hydrophilic hydrogel coating, such as poly(2-hydroxyethyl methacrylate) (pHEMA). Prior to implementation in TE studies, it must be understood how pHEMA coats these scaffolds and whether this coating interferes with important cell culture techniques. This project therefore investigates the relevance of the combination of these two materials from a coating and cell culture standpoint.

**Kyathsandra, Nisha**

University of Oregon

Research Mentor(s): Angela Lin, Bob Guldberg

Poster

### **Gait analyses to assess functional differences in a rat model of post-traumatic osteoarthritis**

**Co-Author(s): Aletta Combs, Sruthi Ranganathan, Jake Heinonen, Julia Harrer, Lina Mancipe Castro**

Osteoarthritis is a debilitating joint disease that affects millions of people globally causing disability in older adults. Moreover, post-traumatic osteoarthritis (PTOA) is a prevalent complication of joint injuries in younger individuals such as athletes who incur ACL or meniscus tears, with no available disease-modifying therapies. Our study aimed to investigate the therapeutic efficacy of PEG-4MAL encapsulated hMSCs in treating the preclinical medial meniscal transection (MMT) model of PTOA, and my part of the project involved a pilot comparison of longitudinal gait analysis results.

Our hypothesis was that joint destabilization in the MMT model subjects would result in measurable functional impairments and gait alterations at all analyzed time points post-MMT compared to sham subjects. Preliminary results from MMT subjects show alterations in spatial symmetry in forelimbs two weeks postoperatively. MicroCT analysis confirmed increased joint tissue damage in the MMT group, consistent with the development of PTOA and the observed gait changes in MMT animals. Our study aims to offer a novel treatment option for younger individuals with PTOA and prevent the development of debilitating osteoarthritis in individuals with joint injuries. This study will provide valuable insights into the structural and functional changes associated with PTOA and the efficacy of different treatment options, contributing to the development of disease-modifying therapies for osteoarthritis.

**Lance, Rowan**

University of Oregon

Research Mentor(s): Monika Fischer, Matthias Vogel

Poster

### **A Comparison of the Effects and Solutions to Climate Change Exemplified in China and Japan**

Climate change and environmental destruction are some of the most serious issues we have yet to face on this planet. One of the biggest contributing factors of climate change is the growing amount

of carbon emissions being put into the air from various industrial production companies, cars, and other fossil fuel-dependent industries. While regulations on big business have been enforced, it is not enough and oftentimes is subject to corruption. For our project, we chose to focus specifically on China and Japan to compare the causes and outcomes of climate change in these East Asian countries, and reflect on what is being done in each of them to combat the adverse effects of carbon emissions. We will explore the comparison of these two countries while discussing the unique obstacles they face in relation to climate change. From our research, we have found that Japan has an active plan to almost completely eliminate carbon emissions by 2050, whereas China has yet to make any plans, despite the fact that they are one of the largest producers of greenhouse gasses in the world. From the data provided by these scenarios we will compare the economic, political, cultural, and environmental problems and solutions affecting these countries. We hope to gain a better global understanding from this representative study by using it as a lens to analyze the broader politics of climate change.

**Lane, Eric**

**University of Oregon**

**Research Mentor(s): Corbett Upton**

**Oral Session**

### **Representations of Destruction, Violence and Creation in 21st Century Asian American Poetry**

This project analyses the poetry of Ocean Vuong and Mai Der Vang within the larger context of immigrant and Asian American literature, as well as specific developments in Hmong American and Vietnamese American literature. My research question is, “How do representations of violence in 21st century Asian American poetry shape diasporic identity?” In order to answer this question, I utilize close-reading of primary texts, social and historical context, literary criticism, and cultural studies to understand how these poets respond and contribute to a tradition of Asian American poetry. Through a close reading of Vuong’s “Notebook Fragments,” “Self-Portrait as Exit Wounds,” and “The Gift” from his collection *Night Sky with Exit Wounds* as well as Der Vang’s “Mother of People without Script,” “Your Mountain Lies Down with You,” and “Afterland” from her collection *Afterland*, I argue that their poetry is deeply concerned not only with what is destroyed in war and displacement, but also what is created. I identify three crucial aspects of Asian American identity—language, geography, and the body—that are subject to intense violence but also become reborn and reimagined in these poems.

Thus, these 21st century works suggest a movement within the Asian American literary tradition towards an understanding of the Asian American diaspora as a creation of a new culture, rather than a loss of a traditional culture.

**Lashchuk, Emily**

University of Oregon

Research Mentor(s): Sanjay Srivastava, Pooya Razavi

Poster

### **Variability in Anger Experiences and Justifications Among Men and Women**

Co-Author(s): Evan Doloszycki, Pooya Razavi, Sanjay Srivastava, Andrew Castillo

Societal expectations and stereotypes point to gender differences in the experience and expression of anger. In the present research, we compared the antecedents, behavioral reactions, and lay theories related to justified and unjustified anger experiences among men and women. Participants (N = 747) were randomly assigned to write about a time they experienced justified or unjustified anger. They provided details about the situation and their rationale for interpreting their anger as (un)justified. These narratives were thematically analyzed to extract semantic and latent themes. Results demonstrated considerable similarities between men and women in terms of antecedents of anger (e.g., goal obstruction, mistreatment, and irritation), expressive response (e.g., verbal retaliation, inaction), and rationale for perceiving anger as justified (e.g., feeling vulnerable, disrespected) or unjustified (e.g., lack of perspective taking). Contrary to expectations, negligible gender differences were observed in the themes. These results challenge some of the common stereotypes about gender differences in anger processes and inform future research on gender norms and emotional processes.

**Lashley, Olivia**

University of Oregon

Research Mentor(s): Shannon Peake

Poster

### **Disentangling the Relationship Between Caregiver Stress and Child Executive Function**

While parenting is often rewarding, there are some aspects of parenthood that are stressful. One potential source of stress for parents is child behavior, especially for parents of children with

low executive function (EF), who may have difficulties with focus, task completion, and emotion regulation. This form of stress, which is directly related to the parent-child interaction, is called parenting stress. Stress experienced by parents may also be related to more general stress factors, such as chronic stress, trait worry, or perceived stress. This study aims to determine if parenting stress is more strongly related to child executive function than other forms of stress in order to gain insight as to what resources may best support stress reduction in parents of children with low EF. If child EF is strongly correlated with parenting stress, interventions that help parents better support their child's needs may be most effective in reducing their stress. However, if child EF is strongly correlated with general forms of stress, then interventions to target general stress management would be more effective in parent stress reduction. Results showed that EF was not related to parenting stress, nor was it related to parent chronic stress, trait worry, or perceived stress. This suggests that targeting parenting stress is not specifically more favorable than other types of support for parents of children with low EF.

**Latta, Adagia**

**University of Oregon**

**Research Mentor(s): Steve Haring**

**Poster**

### **Filbertworm presence among varying habitats during peak mating flights could indicate infestation**

**Co-Author(s): Steve Haring, Lauren Hallett, Cal Penkauskas**

Imagine a perfume that attracts anyone you desire. Wherever this perfume is sprayed, people will follow... even if it leads right into a trap. This is exactly how pheromone traps capture filbertworm moths (*Cydia latiferreana*) in hazelnut orchards. These moths are the focus of an ongoing project at Dorris Ranch near Springfield, OR. It aims to address a decades-long filbertworm infestation of hazelnut trees in the Willamette Valley, which produces 99% of the nation's hazelnut crop. Adult moths lay their eggs, and larvae hatch and grow within in the hazelnuts themselves, rendering the hazelnut crop undesirable for consumption. Dorris Ranch is surrounded by oak forest, another habitat commonly inhabited by the filbertworm where they lay their eggs near the acorns of oaks. The question is, "To what extent do filbertworms reside in hazelnut orchards and oak forests during their mating season?" Pheromone traps were set up in 5 groups of 3, with one orchard, one oak, and one orchard/oak edge trap per group, being checked weekly throughout the summer of 2022. This gathering of baseline data helped further our understanding of the degree of infestation

of filbertworm moths at Dorris Ranch, and these traps show to be a promising alternative to insecticides as a means for pest control.

**Laufer, Ellie**

University of Oregon

Research Mentor(s): Zach Stevenson, PhD Candidate

Poster

### **High-throughput Fitness Estimates of Epistatic Contributions to Ivermectin Resistance in *C.elegans***

Lineage tracking enables highly precise measurements of fitness effects among different mutant backgrounds. The Phillips lab has pioneered the development of high-throughput lineage marking using barcodes in animal systems. This has been implemented through “Transgenic Arrays Resulting in Diversity of Integrated Sequences” or T.A.R.D.I.S. This method utilizes a unique genetic feature in *C.elegans*, which is the formation of artificial chromosomes from experimentally injected DNA fragments. These fragments form into large circular chromosomes which can be used as a ‘library’ in which to draw sequences from. The T.A.R.D.I.S. process allows us to experimentally input random nucleotides that are passed down through generations into targeted chromosome locations, allowing for the identification of lineages within a population. My research question focuses on measuring the individual contributions to fitness from three separate alleles associated with ivermectin resistance. By removing the expression of these three genes through a knockout, it is possible to greatly increase ivermectin resistance in *C. elegans*. For my project, I will investigate the selective advantage of each of the individual mutations by creating six new strains of *C. elegans*. I have ‘barcoded’ these six new strains using the T.A.R.D.I.S. system so that they can be identified after several generations of competition in ivermectin. I will use this data to determine the selective advantage of each mutation.

**Lawrie, Braden**

University of Oregon

Research Mentor(s): Dylan Wood

Poster

### **Locking Bilayer Assemblies, Self-Shaping Long Span Mass Timber Vaults**

Mass timber has drastically increased the capabilities of wood construction and what structures are achievable through it. Introducing material programming into this process can further push what

is possible. This study examines how a material programming process of wooden bilayer laminates with differing moisture contents can produce self-shaping curved components for high performance structures. The material parameters within this process are moisture content, grain angle, species, and thickness. The process works by laminating two layers of wood together with crossing grain angles and one layer having a higher moisture content than the other. This difference in moisture content is what produces self-shaping curvature, as the “wet” layer dries out its’ cells shrink causing it to deform and produce curvature. The species, grain angle and thickness of each layer dictate the radius of the curvature produced. This process can be predicted using a modified version of Timoshenko’s Equation adapted to wood through a Rhino Grasshopper workflow. In this project that methodology was used along with Karamba to analyze the structural performance of the produced curvature in the context of a long span vault roof. The importance of this study lies within the increased efficiency the material gains through simple processes that could be adapted to current manufacturing methods to reduce material usage and increase structural performance.

**Le, Thuong**

**University of Oregon**

**Research Mentor(s): Clifford Keller, Dr. Michael Wehr**

**Oral Session**

## **Mice’s Use of Smell During Prey Capture Behaviors**

**Co-Author(s): Clifford Keller**

Mice are skilled and ferocious hunters; by studying their prey capture behaviors, similarities between their underlying cortical circuitry and ours can be observed. Previous research has shown that mice are able to capture prey in complete darkness, but are they solely using hearing alone? This project investigates their potential use of smell to capture prey by pharmacologically removing their olfactory epithelium, which abolishes their ability to smell, to measure its effects on their ability to capture prey in the dark. Brain slices from the anosmic mice were stained and read, to show if the olfactory epithelium was successfully removed. Vast variabilities and behavioral changes after ablation, potentially due to loss of motivation to hunt and eat, resulted in inconclusive data. It is still unclear if mice use smell to capture prey, but preliminary data show that smell may play a major role in their motivation to capture.

**Lee, Sofia**

University of Oregon

Research Mentor(s): Rachel Robinson, Michael Hahn (PhD)

Poster

### **Effect of Speed on Lower Limb Joint Stiffness During Decline Running**

Co-Author(s): Rachel Robinson, Aida Chebbi, Michael Hahn

Joint stiffness can be defined as a given joint's resistance to angular displacement under mechanical loading expressed as moment of force. Increased joint stiffness is associated with a decrease in range of motion, and the inability to attenuate shock; all of which are associated with running related injuries. Increases in running speed have been correlated with increased joint stiffness, however, this relationship has only been examined during level ground running. Running at varying grades is a common challenge that distance runners encounter in the real-world, but is an area that remains relatively unexplored. The purpose of this study is to examine the effect of speed on joint stiffness and quantify differences in stiffness between the hip, knee and ankle during decline running. Kinetic data were collected from participants during four 30s running trials on a 7.5° declined treadmill at three speeds; joint stiffness was quantified by calculating sagittal plane joint angles and internal moments of the hip, knee, and ankle. A significant main effect was detected for joint type on joint stiffness, but there was not an effect of speed on joint stiffness. While joint stiffness differs between joints while running on a decline surface, stiffness does not appear to change in response to speed. Understanding the factors that influence stiffness has potential application in injury rehabilitation, such as determining optimal exercises to reduce running related overuse injuries.

**Lefevre, David**

University of Oregon

Research Mentor(s): Markus Allgaier, Brian Smith

Poster

### **Retrieval of snow properties from LiDAR pulse broadening**

Co-Author(s): Markus Allgaier, Brian Smith

Producing distributed data of snow properties remains a central challenge in physical modeling in snow hydrology. Snow grain size, absorption coefficient and density are typically required inputs for physical snow albedo models. However, data co-located with surveys of snow depth like those produced using laser altimetry are usually not widely available. Here, we show that the snow grain

size and absorption coefficient can be retrieved by analyzing LiDAR pulses used in laser altimeters, as the interaction with snow imprints those properties onto the temporal pulse envelope. For the retrieval, we use a hybrid algorithm: First, an initial guess for the parameters is produced by fitting a diffusion model. Then, we iterate a computationally efficient and radiometrically accurate Monte Carlo radiative transfer code which reproduces both pulse broadening and attenuation. We show that this method is feasible using ICESat-2 data from the western Greenland ice sheet. Since the method could integrate into any kind of full waveform laser altimeter, it is in principle also compatible with terrestrial and airborne instruments.

**Legass, Feruza**

**University of Oregon**

**Research Mentor(s): Feather Crawford, Kemi Balogun**

**Poster**

## **The Unseen Numbers: Missing and Murdered Indigenous Women and Black Women**

Throughout history, Black and Indigenous women have had very low attention when it came to their well being. Which has transferred into the present day, with murder and missing rates of both demographics being very high. The question that became of study is, 'Why do Black and Indigenous women go missing in larger numbers, and in comparison to white women get little to no attention?' The purpose of this study was to bring light to lives being lost and communities being immensely impacted. Much of the research was based in history sought out through books, movies, music, etc. As social media and media continue to play a role within this topic, they were used to study how the lack of media attention is critical as well. Through the longstanding, deep rooted effects of colonialism and patriarchy, Black and Indigenous women go missing and murdered within the United States at alarmingly high rates, with little to no attention, in comparison to white women. This is a neglected process because addressing this neglect of these lives, would mean facing the current system of capitalism we continue to support

**Lewack, Hannah**

University of Oregon Recent Alumni

Research Mentor(s): Patrick Phillips, Rose Al-Saadi

Poster

## **The Tissue-Specific Effects of *daf-2* Degradation on Healthspan in *Caenorhabditis elegans* Males**

Co-Author(s): Rose Al-Saadi, Patrick Phillips

Neurodegenerative diseases affect 50 million Americans each year and place a substantial economic burden on our healthcare system. Despite this cost, studies that aim to prevent aging are outnumbered by those treating it, bringing up the important question: how can we enhance healthy aging? We addressed this question with the model system *Caenorhabditis elegans*. *C. elegans*' short lifespan and genetic homology to humans make them good for aging studies. Male *C. elegans* have 91 sex-specific neurons that are necessary for reproduction, making successful mating an indicator of neuronal health. This system has been used to identify several genes that regulate reproductive development and aging, including the insulin-like growth factor receptor DAF-2. Mutations in *daf-2* extend lifespan and prolong male mating ability at old age. *daf-2* is ubiquitously expressed, therefore, its role in male mating is difficult to differentiate among specific tissues. The auxin-induced degron (AID) system allows for the spatial and temporal degradation of proteins. The effects of DAF-2 degradation in a tissue-specific manner on lifespan are known, however, the tissues where DAF-2 regulates healthspan are still unexplored. Using the AID system, I tested the effects of DAF-2 degradation in the intestine, neurons, hypodermis, germline, and muscle on male mating success. This project offers additional insights to the importance of signaling pathways that modulate aging and neuronal functions.

**Linnenkohl, Katie**

University of Oregon

Research Mentor(s): Scott Fisher, James Imamura

Poster

## **Transit Trekking with Photometry: Capturing HD198733b's Transit and Light Curve**

Exoplanets, first discovered in 1992, are planets orbiting other stars. One way to detect an exoplanet is by observing transits, which occur when the planet passes between their star and our line of sight. Our group hypothesized that observing a transit would help us quantitatively understand the

performance and sensitivity of Pine Mountain Observatory's new telescope system. We decided to observe the hot Jupiter exoplanet HD 189733b due to its proximity to Earth and its well documented transit history. A transit can be detected by precisely measuring the brightness of the star-planet system over time. We gathered three hours of images of the target and two reference stars during a known transit event, which has a duration of approximately two hours. We then performed relative photometry on roughly 260 individual images to generate two light curves. To test for a significant difference in the transit and non-transit data, we conducted a T-test. Our T-value confirmed that the data sets were statistically different. With this, we can conclude that our system was able to detect a transit event with a 3% change in brightness of the star-planet system.

**Lo, Julia**

**University of Oregon**

**Research Mentor(s): Mark Carrier, Trond Jacobsen**

**Poster**

## **Food Insecurity and Worsening Health Outcomes in Low Income Oregon Populations**

Food insecurity affects hundreds of millions of people globally, spanning from acute needs to deep famine. Food insecurity can exacerbate the challenges individuals and families experience, especially regarding one's health. Emergency department visits tend to be some of the most expensive utilizations of healthcare that individuals and the government are faced with in America. To reduce spending we must understand the underlying barriers reducing access to healthcare outside of the emergency department. This thesis explores food insecurity and health outcomes, defined by visits to the emergency department, within Oregon low-income populations. I hypothesize that food insecurity and worsening health outcomes are correlated and that this relationship will be more prevalent in systemically marginalized communities within America. Across social inequity, food insecurity and worsening health outcomes were correlated. Further, identifying as non-White was correlated with increased visits to the emergency department within a year.

**Locke, Abiel**

University of Oregon

Research Mentor(s): Alicia DeLouize, Josh Snodgrass

Poster

### **Evidence the inverse care law applies to depression diagnosis and under-diagnosis in six countries**

Co-Author(s): Alicia DeLouize, Melissa Liebert, Tian Walker, Josh Snodgrass

Older adults experience depression at almost twice the rate of other groups, but underdiagnosis is likely due to low socioeconomic status (SES) and limited healthcare access. This phenomenon is described by the inverse care law, which states access to healthcare is less available for the populations in greatest need. Here we investigate the inverse care law and its relationship to depression using data from Wave 1 of the World Health Organization's Study on global AGEing and adult health (SAGE), which includes nationally representative samples of people age 50 years and older from China, Ghana, India, Mexico, Russia, and South Africa (N = 23,351). This study collected self-reported depression diagnoses and asked symptom-based questions. It was hypothesized there would be an interaction between SES and symptom-based depression when predicting diagnosis rates, such that there would be a higher likelihood of having depression without a clinical diagnosis in lower SES groups. Results from a multiple linear regression showed an interaction between wealth and depression when predicting diagnosis in all six countries (bs = -0.07 to 1.15, ps < .001). Rates of depression without a diagnosis were high in low SES groups whereas rates of diagnosis without the presence of depression in the last 12 months was higher in high SES groups. These findings illustrate an imbalance of care and highlights discrepancies when measuring depression exclusively based on self-reported clinical diagnoses.

**Lohf, Haley Mae**

University of Oregon

Research Mentor(s): Felix Deku, Rebecca Frederick

Oral Session | Poster

### **Testing into the Future; Neural Interfaces and Accelerated Aging**

Neurodegenerative disorders affect the lives of roughly 1 billion people globally (WHO, 2005), making everyday life incredibly difficult. Recent expansion of neural research and engineering has led to major advances in brain-computer interfaces. However, implanted thin-film devices are susceptible

to layer delamination and material degradation caused by factors such as liquid ingress and encapsulation in scar tissue. In this study, I am testing the overall fabrication quality and durability of two neural interface devices with iridium oxide microelectrodes; one insulated with solely polyimide substrate and one with an amorphous silicon carbide (a-SiC) layer within the polyimide substrate. Similar a-SiC thin films were shown to improve electrical insulation and liquid ingress resistance (Deku et al, 2018). Initial device measurements are recorded in phosphate buffered saline (PBS) at room temperature, then are placed into 3 groups for aging tests: PBS at room temperature, PBS at 37°C, PBS at 87°C. In 7 day intervals, impedance and charge storage capacity of each electrode are recorded until device failure. Expecting heat to be the primary factor of failure, the goal is to find potential failure of our devices early to facilitate fabrication of devices with improved performance and longevity to remain effective in vivo for the lifetime of the patient.

**Lopez Padilla, Celine**

**University of Oregon**

**Research Mentor(s): Melanie Spero**

**Poster**

### **Characterizing and Understanding Synergistic Drug Interactions for Killing in *Pseudomonas aeruginosa***

Many antibiotics are ineffective at killing pathogens in oxygen-limited (hypoxic) environments, such as those found in chronic wounds and lung infections. We are studying the therapeutic potential of chlorate, which kills pathogens under anoxic conditions by hijacking a form of anaerobic metabolism called nitrate respiration. Antibiotic treatment and chlorate treatment are marginally effective at killing the pathogen *Pseudomonas aeruginosa* in hypoxic conditions on their own. We hypothesize that combined antibiotic and chlorate treatment will be able to kill *P. aeruginosa* under hypoxic conditions at a higher rate than the sum of the two drugs alone (i.e. chlorate-antibiotic combinations will display synergy). We found that chlorate interacts synergistically with antibiotics from a variety of classes to effectively kill *P. aeruginosa* under hypoxic conditions. Interestingly, we did not observe synergistic killing when we tested different pairs of antibiotic combinations. This suggests that chlorate has a unique property to synergize with other drugs under hypoxic conditions. Future studies will focus on understanding the mechanism by which chlorate interacts synergistically with antibiotics, while antibiotic-antibiotic pairings fail to interact synergistically. Our identification of synergistic combinations of chlorate and antibiotics holds promise for improved treatments of chronic infections since current antibiotic-only treatments routinely fail patients.

**Lorenz, Jacob**

University of Oregon

Research Mentor(s): James May, Ramesh Jasti

Poster

### **Supramolecular Chemistry of Water-Soluble Cycloparaphenylenes**

The unique structural, chemical and photophysical properties of [n]cycloparaphenylenes (CPPs) make them promising as multifunctional tools for biological applications. However, the total insolubility of the parent structures in aqueous media has hindered the realization of these molecules' utility in biological systems. This research has shown that high aqueous solubility can be achieved by incorporating polar carboxylate or sulfonate salts into the CPP backbone, allowing the attractive characteristics of CPPs to be extended to aqueous systems. Previously, our group reported a CPP based rotaxane which was shown to be an effective fluorescent probe for selectively sensing hydrogen sulfide (HS<sup>-</sup>) in organic solvents. My research has partly focused on designing an analogous system compatible with aqueous environments with the goal of developing a platform for the en vivo detection of this biologically important analyte. I have also investigated methods that leverage the hydrophobic effect to encourage the binding of a variety of non-polar guest molecules within the hydrophobic cavity of water soluble [n]CPPs. Synthetic routes to several sizes of water-soluble CPPs were developed to target analytes of varying size, ranging from small hydrocarbons to large systems of fused rings. Initial NMR, fluorescence, and isothermal calorimetry titration experiments suggest that the smallest CPP in the series engages in the expected supramolecular interactions with small molecules.

**Lovgren, Noah**

University of Oregon

Research Mentor(s): Hans Dreyer

Oral Session

### **Effect of Essential Amino Acid Supplementation and Blood Flow Restriction on Muscle Structure**

Co-Author(s): Helia Megowan, Adam Shuaib

Healthy muscle is maintained by its ability to recover from atrophy after immobilization, such as surgery. Trained individuals regain strength and size faster than untrained (muscle resilience). This occurs because individuals with a higher density of myonuclei are better able to regain strength after

atrophy, although this mechanism is not well understood. Previously, we have shown that ingesting 23 grams of essential amino acids 3x/day for 7 days increases satellite cell numbers, which are the source of new nuclei in muscle cells. Blood Flow restriction (BFR) exercise, a form of low-load exercise that restricts extremity blood flow, has been shown to increase muscle mass and strength, and satellite cells. We hypothesize that combining EAA with BFR (EAAs 3x/day for 7 days with BFR on days 2, 4, and 6) would maximize resilience by increasing nuclei and satellite cell numbers measured in biopsies taken one day later vs. placebo. We are in the process of analyzing our data for cross-sectional area, satellite cell numbers, fiber type, muscle nuclei, and centrally located nuclei. These measurements will offer insight into muscle cell denervation, cell membrane damage, and recent muscle damage repair. This study may provide an intervention for sarcopenia and other muscle-wasting conditions. Moreover, it may provide insights into how EAA+BFR may positively influence muscle resilience and improve outcomes in clinical settings where atrophy is a prominent feature, such as surgery.

**Lovgren, Noah**

**University of Oregon**

**Research Mentor(s): Hans Dreyer**

**Poster**

### **Effect of Essential Amino Acid Supplementation and Blood Flow Restriction on Muscle Structure**

Healthy muscle is maintained by its ability to recover from atrophy after immobilization, such as surgery. Trained individuals regain strength and size faster than untrained (muscle resilience). This occurs because individuals with a higher density of myonuclei are better able to regain strength after atrophy, although this mechanism is not well understood. Previously, we have shown that ingesting 23 grams of essential amino acids 3x/day for 7 days increases satellite cell numbers, which are the source of new nuclei in muscle cells. Blood Flow restriction (BFR) exercise, a form of low-load exercise that restricts extremity blood flow, has been shown to increase muscle mass and strength, and satellite cells. We hypothesize that combining EAA with BFR (EAAs 3x/day for 7 days with BFR on days 2, 4, and 6) would maximize resilience by increasing nuclei and satellite cell numbers measured in biopsies taken one day later vs. placebo. We are in the process of analyzing our data for cross-sectional area, satellite cell numbers, fiber type, muscle nuclei, and centrally located nuclei. These measurements will offer insight into muscle cell denervation, cell membrane damage, and recent muscle damage repair. This study may provide an intervention for sarcopenia and other muscle-

wasting conditions. Moreover, it may provide insights into how EAA+BFR may positively influence muscle resilience and improve outcomes in clinical settings where atrophy is a prominent feature, such as surgery.

**Lu, Chi-An**

University of Oregon

Research Mentor(s): Dan Chapman

Poster

### **Examining the Role of the Dark Triad in Pro-Environmental Attitudes, Emotions, and Intentions**

Co-Author(s): Dan Chapman, Ellen Peters, Ariel Nadratowski

Research has begun to investigate the relationship between the Dark Triad traits (Machiavellianism, narcissism, and psychopathy) and pro-environmental attitudes and behaviors. Past research has found that those higher in such traits are less likely to report intentions to behave pro-environmentally (e.g., reducing meat consumption). To date, this research has primarily been conducted in Europe and Asia. One aim of this project was to replicate and extend these findings in a large U.S. sample. We recruited participants (n = 1503) through an online survey platform to answer measures of the Dark Triad and several measures of pro-environmental attitudes, behaviors, and emotions. We also measured demographic characteristics that previous research has linked to the Dark Triad and pro-environmentalism, including gender, political ideology, and education. Consistent with past research, all three components of the Dark Triad were negatively correlated with pro-environmental attitudes and behavioral intentions, but the correlations were weaker than previous findings. Contrary to our expectations, all three Dark Triad traits were positively correlated with feelings of guilt about climate change, but not necessarily other emotions such as sadness or fear. We consider the implications of this finding for environmental psychology research and highlight the need for future cross-cultural research to view the relationships between Dark Triad traits, emotion, and behavior in more detail.

**Lucero, Mattie**

University of Oregon

Research Mentor(s): Hannah Cutting-Jones

Oral Session

### **Inaccessibility and Ableism in Food Justice Movements**

Food activism focuses on increasing equitable food access. This project explores how people with disabilities may be excluded from these food justice goals, and how their voices can be included in these activist movements in order to create a more accessible and accommodating food system for people of all ability levels.

People with disabilities are often more heavily impacted by food insecurity and food-related illness or injury, yet their voices are not being heard in movements meant to combat these same issues. By bringing in more disabled voices, we can make more progress in creating an equitable food system that helps the environment and the political climate surrounding food.

This study investigates if people with disabilities are pushed away, excluded from, or simply absent from food activism movements, and if so, how can these movements amplify disabled voices and create better outcomes for people with disabilities.

A literature review contextualized the history of food activism and disability activism. Research methodology includes interviews with food groups and disability groups around UO campus and the city of Eugene. Overall, a survey of social media platforms, community organizations, and food studies literature reveals a lack of established leadership, visibility, and solidarity that is specifically meant to bolster people with disabilities. Moving forward, this project aims to decrease these barriers and aid those working in food or disability studies.

**Lucy, Larkin**

University of Oregon

Research Mentor(s): Alison Burggren

Poster

### **Assessing the impact of heat therapy on cardiovascular disease and Alzheimer's disease risk**

Co-Author(s): Alison Burggren, Chris Minson, Lindy Comrada

Alzheimer's disease is one of the most damaging diseases to the quality of life in older adults and is always fatal. As the aging population continues to grow, it is of the utmost importance that

Alzheimer's disease and its related implications continue to be studied. This project analyzed the impact heat therapy and exercise had on the risk of Alzheimer's disease. We analyzed the MRI-based biomarkers of the hippocampus from 15 subjects who have completed 30 sessions of either heat therapy or exercise in a controlled lab setting. Alzheimer's disease develops in the hippocampus by destroying neurons that underlie memory performance. The hippocampus is crucial for processing novel associations and creating new memories, which is why it is important to analyze this part of the human brain in a study of Alzheimer's disease risk. The purpose of this research was to investigate the impacts of heat therapy or exercise on an individual's risk of Alzheimer's disease. It was hypothesized that heat therapy would result in greater increased cognitive functioning of biomarkers (hippocampal thickness) than exercise therapy. After analyzing initial results from MRI subject hippocampal morphometry before and after exercise and heat therapy, it was determined that heat therapy subjects had a 0.3% increase in hippocampal thickness as opposed to a decrease in thickness in exercise therapy subjects.

**Luerken, Kate**

**University of Oregon**

**Research Mentor(s): Scott Fisher, James Imamura**

**Poster**

### **Transit Trekking with Photometry: Capturing HD198733b's Transit and Light Curve**

**Co-Author(s): Abby Lewis, Alton Luken, Meah Mccraw**

Exoplanets, first discovered in 1992, are planets orbiting other stars. One way to detect an exoplanet is by observing transits, which occur when the planet passes between their star and our line of sight. Our group hypothesized that observing a transit would help us quantitatively understand the performance and sensitivity of Pine Mountain Observatory's new telescope system. We decided to observe the hot Jupiter exoplanet HD 189733b due to its proximity to Earth and its well documented transit history. A transit can be detected by precisely measuring the brightness of the star-planet system over time. We gathered three hours of images of the target and two reference stars during a known transit event, which has a duration of approximately two hours. We then performed relative photometry on roughly 260 individual images to generate two light curves. To test for a significant difference in the transit and non-transit data, we conducted a T-test. Our T-value confirmed that the data sets were statistically different. With this, we can conclude that our system was able to detect a transit event with a 3% change in brightness of the star-planet system.

**Luu, Thomas**

Visiting McNair Scholar

Research Mentor(s): Sandip Patel, Mercedes Quintana-Serrano

Poster

### **Examining If Gender and Tobacco Use Affects NSCLC Patients Response to Immunotherapy**

Non-small cell lung cancer (NSCLC) has a low survival rate, mainly due to tumor environment and delayed detection. Smoking negatively affects the overall health of individuals, however it is less clear the role that gender-related differences in smoking plays in how women and men respond to immunotherapy. Nonsmokers do not respond as well to immunotherapy due to outlying variables such as the lack of immunogenic neoantigens. Further examination of the relationship between smoking exposure in pack-years and immunotherapeutic response characteristics will help identify potential gender-based factors in response to cancer immunotherapy in NSCLC. Specifically, we want to investigate whether gender-based smoking exposure in pack-years results in differential responses to immunotherapy. We reviewed the UCSD EMR through Epic Slicer Dicer for patients with metastatic NSCLC who received anti-PD-1 or anti-PD-L1 directed therapy from 1/1/2010 to 7/1/2022 in whom smoking history and gender data was available. Further research is needed to explore the impact of additional comorbidities on treatment response among smokers. Conducting extensive research on immunotherapeutic response is crucial for enhancing patient treatment outcomes.

**Lyons, Za'Nya**

University of Oregon

Research Mentor(s): Lauren Ccyk

Poster

### **Code-Switching Patterns of Preschoolers from Spanish-speaking Backgrounds**

Co-Author(s): Lauren Ccyk, Stephanie De Anda

This cross-sectional study directly observes young children from Spanish-speaking Latinx origins and characterizes their code-switching in interactions with their parents. Growing up multilingual usually entails code-switching, or the alternation or mixing of languages within conversation. The research questions include: What are the patterns of CS used by Spanish-speaking children regarding (a) the frequency of CS; (b) the frequency of inter-sentential (across sentences) vs. intra-sentential (within sentences) CS; (c) the types of words code-switched (content vs. function)? and (d) the

communicative functions of CS? Fifty parent-child dyads observations were analyzed for child code-switching. All children were enrolled in Head Start preschool, identified as Latina/o, and spoke Spanish at home. Child utterances were transcribed verbatim, and a matrix language was assigned to determine instances of CS. Instances of CS were categorized based on whether they were intra-sentential or inter-sentential. Inter-sentential CS were coded to determine if the CS was a function or content word. Coding for CS function (reason behind the CS) is currently underway. Twenty percent of the samples will be recorded for interrater reliability. Out of 50 children, 15 (30%) did not CS. Of the 35 children who code-switched between sentences an average of 5.9 times and within sentences an average of 4.6 times. Additional results and implications will be presented once analyses are finalized.

**Mac Carvill, Eoin**

**University of Oregon**

**Research Mentor(s): Fischer Harvel**

**Poster**

## **Refining Synthesis Methods of Superconducting Iron Selenide**

**Co-Author(s): Fischer Harvel**

The main goal of this research project is to discover and refine techniques used to synthesize iron selenide. Two main drivers that have laid the groundwork for this project are the notable lack of published research on molybdenum diselenide and any iron selenides grown in a heterostructure, as well as the discovery of a tetragonal iron selenide compound capable of achieving superconductivity at 85 Kelvin. Misfit compounds are the class of heterostructures utilized in this project and are defined as 2D materials containing layers of differing chemical compositions. Synthesis of the heterostructures is performed utilizing a custom-built deposition chamber belonging to the Dave Johnson Solid State Research Lab. This term, my mentor Fischer Harvel and I are attempting to deposit niobium and lead in conjunction with iron and selenium in an attempt to make an iron selenide, niobium diselenide, lead selenide heterostructure. This project will help to determine the conditions under which iron selenide forms. Additionally, this project will build off previous attempts to form iron selenide in an iron selenide, molybdenum diselenide heterostructure, as lead and niobium in tandem may allow for interlayer interactions within the heterostructure without interlayer mixing. With the use of niobium and lead, we anticipate the formation of more uniform and uncontaminated iron selenide heterostructures.

**Macdonald, Lily**

University of Oregon

Research Mentor(s): Chantelle Russell, Mariko Lin

Oral Session

## **Facilitating Peer-Led Events to Enhance College Student Conversation Surrounding Mental Health**

Mental health disorders are quite common among college students worldwide, including at the University of Oregon. The following statistic supports that, in 2022, it was found that college students across the nation struggle with mental health; that is 35% of students were diagnosed with anxiety and 27% with depression (College Student Mental Health Statistics). If the conversation around mental health improves on campus, then students will feel more comfortable decreasing the stigma around seeking help for their well-being. We have interviewed University of Oregon faculty and staff, in addition to accessing articles and personal experiences regarding mental health. These all account for primary and secondary sources in our project. Mariko Lin, from the University of Oregon's Counseling Center, specifically addressed that, relating to positive mental health, 25% of students at UO in 2021 felt like they had a positive mental health, compared to 38% nationally (The Healthy Minds Network). In response to this, two potential methods for breaking the stigma around mental health include a mandatory peer-led presentation similar to Get Explicit and a weekly seminar held by graduate students for undergraduates. Ultimately, through more peer-led events, such as the ones listed above, the conversation surrounding mental health on campus will increase as students learn how to have a positive relationship with their health and struggles.

**Mallari, Melina**

University of Oregon

Research Mentor(s): Gretchen Soderlund, Carol Stabile

Oral Session

## **The Impact of Online Communities on the Identity Reconciliation of Queer Christians**

This thesis examines how interaction with online social networks shapes queer American Christians' identities—more specifically, their abilities to reconcile (or negotiate) their sexual and religious identities. Christian denominations have historically discriminated against the queer (LGBTIA+) community and left those identifying with both spaces to feel conflicted. Receiving support from a

community with shared identity plays an especially important role in the identity formation process. Now, with advancing digital technology comes necessary exploration of how this group receives support from online spaces.

By interviewing 10 queer Christians (aged 22-45) from organizations and chat groups across the nation, I found that these online spaces provided them with the necessary tools to facilitate reconciliation. While many people preferred physical community, these groups were easily accessible and often boosted in-person interaction, making them more comfortable openly embracing their identities. They also provided a safe space for members to seek answers and even inspired some to take on leadership roles. Participants reported that the strategies they used for reconciliation primarily involved redefining and individualizing their faith to match their values. From this research, I conclude that online communities with shared identities provide queer Christians with the support and affirmation they need to reconcile—or simply negotiate—their sexual and religious selves.

**Mantel, Chester**

University of Oregon

Research Mentor(s): Graham Kribs, Pouya Asadi

Oral Session

### **Quarky Dark Matter**

Dark matter makes up most of the matter in the universe. Despite this, what dark matter is made of remains unknown. We investigate a class of theories of composite dark matter, likening it to a dark neutron made of many dark quarks. Using a variety of theoretical frameworks, including a novel generalization of the quark model, we find the magnetic dipole moments of the dark matter candidate vanishes to leading order. Since direct detection experiments are highly sensitive to magnetic dipole interactions, our results imply that such a class of composite dark matter is compatible with the current non-observation of particle dark matter.

**Marcum, Jasper**

University of Oregon

Research Mentor(s): Jayson Paulose

Oral Session

### **Melting a Non-Equilibrium Lennard-Jones Crystal through Parametric Modulation**

The ordering of atoms and molecules into periodic arrangements underpins the physical properties of natural and artificial crystals. Crystalline systems in equilibrium are well-studied, but the mechanics

and phase behavior of crystal structures driven out of equilibrium by periodic external fields are less understood. We investigate the physics of a model non-equilibrium system for which the departure from the equilibrium crystal can be controlled by varying a tunable parameter. Specifically, we introduce non-equilibrium external drive to the well-studied Lennard-Jones interaction in two dimensions, by sinusoidally modulating the pairwise equilibrium distance over time. Using molecular dynamics simulations of a few hundred particles, we explore the parameter space of amplitude and frequency, quantifying crystal formation through a crystalline order parameter. Our simulations reveal distinct regions in the parameter space that promote crystal formation similar to the equilibrium system, as well as parameter regions that induce “melting”, characterized by an inability to form stable crystals. These results suggest a new type of phase transition from a solid to a liquid, driven not by a temperature change but by external modulation of interactions. Our study provides insights into the dynamic behavior of non-equilibrium crystalline systems and could inspire new types of artificial materials with highly tunable structural and mechanical properties.

**Marek, Kristine**

**University of Oregon**

**Research Mentor(s): Jesse Sawyer**

**Creative Work**

### **Kidd Poetry Workshop**

Though I've been writing for as long as I can remember, I spent most of that time avoiding poetry at all costs- I found it intimidating, and somehow untouchable for a writer like me. Last year I found myself in an introductory poetry writing class I'd registered for on a whim, and after plenty of initial skepticism I began to recognize the genre as far more expansive than I'd assumed. I found that the poems we discussed inspired me more than anything else I'd read, challenging my whole world view alongside my own writing. This year, the Walter and Nancy Kidd Workshop has expanded on this foundation exponentially, and I could not be more grateful for the unique opportunity to build my writing skills with such a talented group of writers. Sharing my work, another element of writing I avoided until recently, has enabled it to grow while expanding my appreciation for the craft. I'm fascinated by the vulnerability of poetry, how it can act as a vessel for the rawest human emotions and experiences. Now, there are few things more cathartic to me than poetry; more than a difficult art, it's become a lens through which I understand myself and the world we all share.

**Martin, Greg**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

### **The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful in regard to the modern world. This project will show the importance of reevaluating notable pieces from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Mason, Jazmin**

University of Oregon

Research Mentor(s): Matthias Vogel, Monika Fischer

Poster

### **A Population Divided is a Country Divided: The Volatile Ethnic and Socioeconomic Situation in Cyprus**

Until recently, Cyprus has been a nation under occupation by a foreign power. Independence from the Ottoman Empire in 1960 led to establishing Cyprus as a federated state, with the ethnically Turkish portion becoming a unique region. Turkey's subsequent invasion of the island following a military coup laid the foundation for what would become the Turkish Republic of Cyprus. The role of ethnic and socioeconomic conflicts in the international community's refusal to recognize the Turkish Republic of Cyprus as a sovereign nation is a pressing issue. This study aims to analyze the ethnic and social differences of Greek and Turkish Cypriots, investigating the effect these factors may have on the separation of the nation. Incorporating evidence from case studies, peace and diplomatic negotiations, census data, and ethnic narratives, this study demonstrates that diverging socio-political identities remain instrumental in reinforcing opposition towards reunification efforts. Possible reunification or continued separation scenarios require a deeper understanding of the

conflict, and potential solutions can be achieved. Although it is unlikely the United Nations would recognize Turkish Cypriots as a separate entity from its Greek counterpart, it is to be believed that looking into all options and situations would have Cyprus's best interest considering its history and socioeconomic standings within its people.

**Mastan, Katie**

**University of Oregon**

**Research Mentor(s): Savanah Bird, Nelson Ting**

**Poster**

## **The effects of season and species identity on the gut microbiome of African elephants**

**Co-Author(s): Savanah Bird, Nelson Ting**

Kibale National Park (KNP) in Uganda is home to threatened African elephant species *Loxodonta africana* and *L. cyclotis* as well as their hybrids. The surrounding area has undergone major habitat loss in the last century as well as climatic and phenological fluctuations that affect plants essential to the diet of KNP elephants. Gut microbial plasticity can aid in host adaptability, helping in digestion as diets shift with seasonal changes. Though the gut microbiome has been studied thoroughly in several wild animal populations, many species of conservation concern lack research into this area of their ecology.

I investigated the impact of species hybridization and seasonality as a pilot study on the elephant gut microbiome using 23 elephant dung samples collected in KNP by collaborators in both the wet and dry seasons. I extracted microbial DNA, sequenced the V4 region of the 16s rRNA gene, then calculated alpha and beta diversity metrics using the QIIME 2 bioinformatics pipeline.

I found that species identity had no significant effect on gut microbiome variation, and I found no significant difference in alpha diversity between the wet and dry seasons. However, I did find significant beta diversity differences across seasons. Further study should increase sample size to better understand how elephants are affected by seasonal fluctuations and hybridization, providing valuable information about their ability to cope with environmental change.

**Matsell, Emma**

University of Oregon

Research Mentor(s): Kaitlyn DiMarco

Poster

## **Association of PFO, Inflammatory Cytokines and White Blood Cells With Hemoglobin Mass in Men**

Co-Author(s): Kaitlyn DiMarco, Andrew Lovering

A patent foramen ovale is a source of intracardiac shunt, and preliminary data suggests that those with a PFO have higher concentrations of inflammatory cytokines. Cytokines and white blood cells negatively impact red blood cell regulation, but no studies have examined the effect of the PFO on this relationship. The purpose of this study was to investigate the relationships between the presence of a PFO, inflammatory cytokine concentrations, and WBCs on RBC mass. We hypothesized that those with a PFO would have both a higher WBC count and cytokine concentrations, negatively impacting hemoglobin mass. Twenty healthy, male participants completed the study (10 with and 10 without a PFO). Participants underwent ultrasound screening with saline contrast echocardiography to determine the presence or absence of a PFO. Hb mass was measured twice on the same day via the 10-minute CO-rebreathe method, and venous blood samples were drawn for measurements of WBC counts and inflammatory cytokines. No differences were found for absolute and relative Hb mass, WBC count and cytokine concentrations between PFO+ and PFO- participants. There was no significant relationship between WBC count and absolute or relative Hb mass. There was a relationship between IFN- $\alpha$ 2 and the whole group data for absolute Hb mass. There was a relationship between MCP-1 and IL-23 levels and absolute Hb mass in PFO+ participants. There was a relationship between IL-10 levels and absolute Hb mass in PFO- participants.

**Matyas, Jacob**

University of Oregon

Research Mentor(s): Kathryn Lynch, Mirabai Collins

Oral Session

## **Trailblazing Accessibility: Auditing Regional Hiking Trails for More Equitable Outdoor Recreation**

In the United States, over 25% of the public is disabled and might experience inaccessibility in outdoor recreation. Specifically, the lack of information regarding accessibility features, amenities,

trail conditions, and sensory experiences prevents many disabled people from having positive experiences outside. The Trails Team from the University of Oregon's Environmental Leadership Program (ELP) collaborated with our community partners, Travel Lane County (TLC) and Willamette Valley Visitors Association (WVVA), to gather and disperse trail information to the public so that users can determine whether a trail is accessible for them. The team initially performed a literature review to learn about disability and establish relevant factors regarding trail accessibility. The team then assessed ten trails in Lane, Linn, and Benton Counties and surveyed trail characteristics such as slope, cross-slope, tread surface, and trail width, in addition to documenting amenities and obstacles. The team created a protocol detailing best practices for future use, a spreadsheet of data collected at each site, brief trail profiles summarizing qualitative and quantitative data, trail photographs, and a team website. We provided our community partners with this information to disperse to the public so that community members can determine whether or not a trail is accessible to them based on their personal access needs before visiting.

**Mauelshagen, Sophia**

**University of Oregon**

**Research Mentor(s): Sarah D. Hodges**

**Poster**

### **Moral self-superiority and evaluations of morally relevant behaviors performed by self and others**

**Co-Author(s): Sara D. Hodges, Vera Hoorens**

Do you think you are better than other people on a variety of dimensions? This tendency (i.e., the self-superiority effect) has been repeatedly found by social psychologists. In this study, we explore whether people believe they are better than others in the domain of morality, and if so, how belief in one's moral superiority shapes judgments of moral and immoral behaviors performed by the self and by others. Using a sample of university undergraduates ( $n=176$ ) who completed a questionnaire online, we studied how rating one's own morality relative to others affected judgments of morally relevant behaviors. We predict that people who view themselves as generally more moral than others will rate a moral behavior they've performed as more admirable than the same behavior performed by another person; they will rate an immoral behavior performed by the self as worse than the same behavior performed by another person. By situating the project in a moral domain, we can explore the effects of holding self-superiority beliefs on consequential outcomes such as assignments of credit and blame.

**Mazur, Hana**

University of Oregon

Research Mentor(s): Aris Hall

Poster

### **The Lack of Diversity Black Students Face**

For my research question I wanted to focus on the lack of diversity that some Black students have face when they start to enter their major-specific courses. I have noticed that after finish your general education requirements, there is less diversity in some classes. As a University of Oregon Black student I have felt this. I am a SOJC student and can confirm that there is nearly no other Black students in my major classes. I feel less supported in these classes. This limits Black students and often leads them to feeling excluded from their other classmates. I remember walking into one of my major classes and not seeing a single other Black student. It makes you stand out and feel alone. I do believe that the University of Oregon does a good job with creating specific clubs and spaces like NABJ, BWA and ASU. These resources have helped other Black students navigate their way into finding their own communities. For example, the NABJ has helped create a supportive space for specifically Black students that are interested in Journalism. I personally still have yet to explore this club but I think it would the next step in the right direction for me as a Black journalism student.

**McCabe, Aisling**

University of Oregon

Research Mentor(s): Chantelle Russell

Poster

### **The benefits of resistance training for college students' emotional and physical well being.**

Resistance exercise, defined in this study as training for muscular strength and endurance, is crucial for maintaining a healthy lifestyle. To study the benefits of resistance exercise, our group has interviewed current faculty in the UO Department of Physical Education and Recreation. As part of our findings, there is a very clear relationship between a reduction in stress and resistance exercise, as endorphins that reduce stress are released during exercise.

The benefits of weight lifting we found were surprising. According to one of the journals, students that participated in weight lifting had an increase in self efficiency and friendships. This is because students that partook in resistance training were more consistent with their commitment to weight

lifting than the students that partook in aerobic exercise, this made it possible for the students to build community and friendships. It is also beneficial for your brain. According to Pete McCal, high strength workouts increase your BDNF levels which increases memory and academic performance. Resistance training is beneficial to not just your physical health but also your relationships, memory, and lifestyle. We did interviews in UO and research about university students to find the importance of resistance training for college students. This information is valuable to UO students because it can enhance their health, relationships, and academic performance, leading to an overall more productive college experience.

**McCarthy, Ryan**

University of Oregon

Research Mentor(s): Lisa Munger

Oral Session

## **Seasonal Variation of Ultrasonic Vocalizations Produced By Weddell Seals With Ambient Illumination**

Co-Author(s): Lisa Munger

Weddell Seals (*Leptonychotes weddellii*) are a species of polar seal found circumpolar in the waters of Antarctica that use highly complex vocalizations to communicate in aquatic environments over vast distances with extensive vocal repertoires. Until last year it was believed that all seals did not utilize vocalizations in the ultrasonic frequency range ( $>20$  kHz) and only used sonic vocalizations. In a paper by Cziko et al., it was demonstrated that Weddell Seals frequently used ultrasonic vocalizations. The vocal repertoire of Weddell Seals varies in the composition of unique call types throughout the year. The reason for these yearly variations is unknown and understudied but may fluctuate with abiotic factors in the Weddell Seal's habitat, such as illumination. The aim of this study is to ascertain the purpose of ultrasonic vocalizations in the lives of Weddell Seals. Acoustic data were collected by the McMurdo Observation Station in McMurdo Sound, Antarctica (S 77.8510, E 166.6645) for 25 months. This data was analyzed by a human analyst with the acoustic analysis software, Raven, created by the Cornell Ornithology Lab. Ambient illumination levels were calculated using a Solar Elevation Calculator created by NOAA. There was a distinct peak in gross documented ultrasonic vocalizations in June. There were also predominant vocalization category variations in documented calls, the duration of specific calls, and the spectrographic signatures of calls.

**McCarthy, Ryan**

University of Oregon

Research Mentor(s): Richard Emlet, Maya Watts

Oral Session

## **The Role of Color in Territorial Response of Three Spot Damselfish (*Stegastes planifrons*)**

Co-Author(s): Adriana Diaz

Territorial and aggressive behavior of damselfish is a well-known and documented phenomenon, though the reasons behind such behaviors are not always understood. Several species of damselfish will create defined territories along a reef for themselves to live within that they will defend. The most commonly observed reasons for damselfish territoriality are the defense of its own shelter, its offspring, or its food source. In these defensive scenarios, it is typically an allogeneic or allospecific species that prompt an aggressive response from a territorial damselfish, rarely a conspecific or congeneric species. Even though intraspecies interactions are very well documented, there are large gaps in knowledge surrounding interspecies interactions. Each species can have a range of responses, such as chasing or nipping, to an equally wide range of stimuli, which are external environmental factors and interactions that are either biotic or abiotic. For this reason, it is unknown how many damselfish species can react to individual and unique territorial threats.

**McClain, Devan**

University of Oregon

Research Mentor(s): Nicole Ngo, Charles Drum

Poster

## **Public Health Information Sources and COVID-19 Vaccine Hesitancy in Adults with Disabilities**

People with disabilities are at increased risk of experiencing severe COVID-19 outcomes and should receive COVID-19 vaccinations and boosters. However, COVID-19 vaccine hesitancy has been observed in this population and little is known about its underlying contributors. The purpose of this study was to expand upon the 2021 COVID-19 and Vaccine Survey Project from the American Association on Health and Disability through utilizing a survey-based methodology to inquire into COVID-19 vaccine and booster hesitancy, sources of public health information, vaccination and hesitance rationales, misinformation susceptibility, and political ideology. Results found that 71.9% of previously-hesitant

respondents had received a primary dose of a COVID-19 vaccine and that 91% of all respondents had received a booster. Both hesitant and non-hesitant groups reported health care professionals as the most trusted source for reliable COVID-19 vaccine information. Additionally, the ability to correctly identify COVID-19 misinformation was related to the uptake of vaccines and boosters among all respondents, but the degree of identification accuracy statistically varied between groups. Findings reiterate the value of health care providers in the provision of accessible and accurate COVID-19 vaccine messaging as a means of combatting misinformation, and public health policymakers will be interested by the multidimensionality of vaccination decisions outlined by this research.

**McDowall, Zag**

**University of Oregon**

**Research Mentor(s): Jeffery Measelle, J. Josh Snodgrass**

**Oral Session**

### **What is “Normal”: A scoping review of neurodevelopmental disorders in Psychology literature**

**Co-Author(s): Tian Walker, J. Josh Snodgrass, Jeffery Measelle**

Research and interest in neurodevelopmental disorders and neurodivergence are increasing significantly, challenging how these disorders have been understood or framed in psychology, psychiatry, and society. This scoping review aims to explore how psychology conceptualizes normality, examining the literature on the neurodevelopmental disorders attention deficit hyperactivity disorder (ADHD) and autism (ASD). Initial databases include APA PsychNet and Web of Science, with keywords including ASD, ADHD, normality, psychiatry, neurodevelopment, terminology, and labels. Articles have been systematically excluded for reasons including language of publication, relevance to the field and practice of psychology and psychiatry, and the extent to which the article focuses on the neurodevelopmental disorders of interest. Preliminary findings show a subset of psychology literature discussing the importance of terminology and language used to describe these populations. A smaller subset focuses on the field more specifically—the complexities of diagnostic criteria, who creates them, and how psychology has upheld a binary of “normal” and “abnormal,” with the biomedical approach at risk of pathologizing aspects of human nature. This review aims to bring these areas of research together, grounding it with existing research on neurodevelopment. Assessing the literature of these disorders can provide an understanding of how psychology conceptualizes normality in the face of divergence.

**McDowall, Zag**

University of Oregon

Research Mentor(s): Tian Walker, J. Josh Snodgrass

Poster

## **Evaluating the burden of caregiving on diabetes in the Study on global AGEing and adult health**

Co-Author(s): Tian Walker, Alicia DeLouize, J. Josh Snodgrass

Rates of diabetes continue to rise globally, with disproportionate impacts on low- and middle-income countries. The risks of complications, including eye damage and limb loss, increase exponentially with high glucose levels. Caregivers, who are balancing their caregiving responsibilities with managing their diabetes, are at higher risk for complications. Additional societal pressures, cultural expectations, and chronic psychosocial stress may further increase this risk. This study was designed to assess how caregiving impacts diabetes through measures of glycated hemoglobin (HbA1c - an average of blood glucose levels over 2-3 months) by examining survey and biomarker data on women age 50 and older (n = 420) with diabetes (by HbA1c or diagnosis) collected in the World Health Organization's Study on global AGEing and adult health (SAGE) in Mexico. While we found no significant difference in HbA1c levels,  $b=-0.41$ , 95% CI [-1.21, 0.39], there was a significant difference in rate of diagnosis, with caregivers being more likely to have a diagnosis than non-caregivers,  $b=0.07$ , 95% CI [-0.40, -0.09]. This was an unexpected finding, based on similar studies in high-income countries and suggest variations in efficacy of diabetes treatments, the notion of caregiver burden, and impacts of caregiving on health. With increasing needs for caregivers and rising diabetes rates, understanding the variation in the relationship between the two is vital to public health.

**McKissick, Victoreya**

University of Oregon

Research Mentor(s): Lisa Munger

Virtual

## **The Effects of Sound on the University of Oregon Dining Halls**

Soundscapes are a vital component of the human experience, as they shed light on important aspects that define human existence and relations with one's environment. By studying soundscapes, one develops the ability to understand human acoustic ecology in a given location, biodiversity across time and space, effects on public health, human behavior, and so much more. This study investigates

the impact of dining halls' eco-acoustics on academic and living environments. With new construction and dining options available, we will explore the relationship between dining halls, noise levels, foot traffic, building layout, and time of day. Using consistent methods, we will focus on three dining halls across the University of Oregon campus (GSH, LLC, and DeNorval Unthank) while performing data collection over the span of four weeks. Spectrographs, spectrums, and wavelengths will be analyzed using RavenLite to compare frequency peaks, variations in power, and sound classifications across different time periods. This study's purpose is to improve our understanding of the role of sound in academic and residential domains and its impact on productivity and studying. As such, the implications for the design and management of dining halls and public spaces could be improved and developed based on the findings of this study. The significance of this research is in its potential to inform sound design strategies for public spaces and ultimately contribute to students' well-being and success.

**McNamara, Alayha**

**Visiting McNair Scholar | Southern Oregon University**

**Research Mentor(s): Dr. Paul Condon**

**Poster**

### **Mindfulness apps: How effective are they?**

The consensus throughout various studies is that mindfulness meditation apps are cost-effective, easily accessible, and may empower people to manage their health better. Mindfulness can be used as a tool to return individuals to their baseline mode of functioning when under elevated levels of stress. Similarly, mindfulness effects can be extended to many high-stress situations; for example, mindfulness improved college students' resilience in a four-week mindfulness-based emotion management intervention. The current study seeks to understand whether the positive effects of mindfulness interventions extend to online delivery treatment methods.

A systematic literature review was conducted by selecting journal articles from PsychINFO that included empirical studies on mindfulness interventions comparing online treatments to in-person interventions. The results suggest that app-based mindfulness treatments have benefits and disadvantages and that specific populations and circumstances enhance positive online treatment effects. For example, participant state mindfulness or state anxiety, contact with a researcher, and incentives contribute to successful app engagement.

In conclusion, in-person treatments may be more effective than online mindfulness treatments. However, online interventions may positively contribute to vulnerable populations such as cancer patients, physicians experiencing burnout, and other high-stress populations.

**Medved, Hannah**

University of Oregon

Research Mentor(s): Christopher Chapman

Poster

## **Prolonged Mild Hypohydration Abolishes Sex Differences in Response to Exercise Pressor Reflex**

**Co-Author(s): Christopher Minson, John Halliwill, Sadie Holt, Cameron O'Connell, Shaun Brazelton**

We tested the hypothesis that increases in blood pressure during the exercise pressor reflex (EPR) remain attenuated in females vs. males during prolonged mild hypohydration. In a block-randomized crossover design, 22 healthy adults (11 females) 24 h fluid deprivation (HYPO) and 24 h normal fluid consumption (EUHY). Subjects performed 2 min static handgrip at 30% maximum voluntary isometric contraction (HG) and 2 min arterial occlusion (OCC) to stimulate the EPR. Body fluid loss was estimated by the percent change in body mass over 24 h ( $\Delta$ BM). Blood pressure was measured via finger photoplethysmography.  $\Delta$ BM was not different between sexes ( $P=0.54$ ) during HYPO [F: -2.2% (-2.9, -1.6); M: -2.8% (-3.4, -2.3)] or EUHY [F: -0.1% (-0.8, 0.5); M: 0.1% (-0.3, 0.6)]. During HYPO, there were no sex differences at end HG and OCC in systolic [HG, F: 18 mmHg (12, 24), M: 25 mmHg (15, 35); OCC, F: 12 mmHg (4, 19), M: 16 mmHg (10, 22),  $P\geq 0.20$ ] and diastolic [HG, F: 16 mmHg (10, 22), M: 22 mmHg (16, 28); OCC, F: 16 mmHg (10, 22), M: 22 mmHg (16, 28),  $P\geq 0.12$ ] blood pressure. During EUHY, increases in systolic [ $P\leq 0.05$ ] and diastolic [ $P\leq 0.04$ ] blood pressure were attenuated in females vs. males at end HG and OCC. These findings indicate that prolonged mild hypohydration abolishes sex differences in blood pressure to the EPR. Supported by NIH R01HL144128 and F32HL164021, and the UO Summer Program for Undergraduate Research.

**Megowan, Helia**

University of Oregon

Research Mentor(s): Hans Dreyer

Oral Session | Poster

## **Essential Amino Acids and Blood Flow Restriction on Myonuclear Accretion in Single Muscle Fibers**

**Co-Author(s): Kaitlyn Augienello, Esben Schroeder, Noah Lovgren, Jaslena Gill**

Healthy muscle is maintained by its ability to recover from atrophy (i.e., resilience) after surgery, immobilization, or bedrest. Muscle resilience is exemplified by previously trained individuals

re-acquiring strength and cross-sectional area faster than untrained. Mechanistically, muscle resilience is attributable to myonuclei gained with training, not lost during atrophy, accelerating the return of muscle function. We aim to determine if the combined effects of essential amino acid supplementation (EAAs) and blood flow restriction (BFR) exercise would upregulate muscle resilience by stimulating satellite cell proliferation to increase myonuclei numbers. Methods: Healthy (22±2 years) male and female (N=4 and 3, respectively) subjects were randomized to ingest 23 grams of EAA or Placebo 3x/day for 7 consecutive days. On days 2, 4, and 6, a single leg (right leg) BFR exercise was performed followed by supplement (EAA or Placebo) for that day. Bilateral biopsies were obtained on day 8 to determine the impact of supplement (left) vs. EAA/Placebo+BFR (right). Single fibers were analyzed using immunohistochemistry to quantify myonuclei (DAPI) per fiber type (MyHC I). Analysis was performed in a blinded manner (treatment condition). Results: Tissue samples are currently being analyzed. Conclusions: Based on published and preliminary data we expect EAA will increase satellite cell and myonuclei numbers (left leg). We also anticipate that BFR be additive vs. placebo.

**Melo, Fox**

**University of Oregon**

**Research Mentor(s): Lisa Munger**

**Virtual**

### **The Effects of Sound On The University of Oregon Dining Halls**

Soundscapes are a vital component of the human experience, as they shed light on important aspects that define human existence and relations with one's environment. By studying soundscapes, one develops the ability to understand human acoustic ecology in a given location, biodiversity across time and space, effects on public health, human behavior, and so much more. This study investigates the impact of dining halls' eco-acoustics on academic and living environments. With new construction and dining options available, we will explore the relationship between dining halls, noise levels, foot traffic, building layout, and time of day. Using consistent methods, we will focus on three dining halls across the University of Oregon campus (GSH, LLC, and DeNorval Unthank) while performing data collection over the span of four weeks. Spectrographs, spectrums, and wavelengths will be analyzed using RavenLite to compare frequency peaks, variations in power, and sound classifications across different time periods. This study's purpose is to improve our understanding of the role of sound in academic and residential domains and its impact on productivity and studying. As such, the implications for the design and management of dining halls and public spaces could be improved and developed based on the findings of this study. The significance of this research is in its potential to

inform sound design strategies for public spaces and ultimately contribute to students' well-being and success.

**Meloy, Ella**

University of Oregon

Research Mentor(s): Dr. Dan Tichenor, Gordon Lafer

Poster

### **Participant Action Research: Undergraduate Worker Unionization at the University of Oregon**

This research aims to be an exploratory investigation on best practices for effective labor organizing of undergraduate workers. This research is important as labor unions serve as vehicles for change for both permissible and non-permissible demands from workers. Other universities across the United States have undergraduate unionized labor forces; however, none of these schools have as large or expansive of an undergraduate work force as the University of Oregon (UO). The UO is among many schools attempting to create a wall-to-wall union of undergraduate workers at this moment, along with other labor movements such as Starbucks Workers United and Amazon Labor Union. Very little research currently exists on undergraduate student-worker unionization, especially at public universities where the workers are public employees.

**Metzger, Sam**

University of Oregon

Research Mentor(s): Peg Boulay, Dhruv Modi

Oral Session

### **Monitoring Fuel and Vegetation Characteristics of Thurston Hills Natural Area**

Through using our protocol, we aim to provide data on fuel loads in Thurston Hills Natural Area (THNA) that can be used to inform future management. THNA is located at the wildland urban interface (WUI)- an area between unoccupied land and human development, meaning it is a critical site for fuel load assessment and reduction. This is important because it will help preserve historic oak savanna habitat, which is critical to plants, animal and avian species diversity in the Willamette Valley. Oak savanna provides both suitable habitat for wildlife and reduces the risk of wildfire for nearby inhabitants. Since fire does not spread as fast or burn as intensely as it does in conifer forest, protected oak savanna habitat in THNA will act as a buffer for the nearby community in the event of a

wildfire. THNA also has outdoor recreational opportunities for inhabitants of Lane County. THNA offers a unique model of mixed land use, providing outdoor recreation and preserving oak savanna habitat. In order to support THNA in continuing its wildlife preservation and outdoor recreation use, we will assess fuel loading, species diversity, and canopy cover at the site.

**Meyer, Walker**

University of Oregon

Research Mentor(s): Bill Cresko

Poster

### **Epigenetic Basis for Inducible Defenses in *Daphnia lumholtzi***

The genus *Daphnia* contains a diverse set of keystone freshwater zooplankton with unique inducible defenses. In the species *Daphnia lumholtzi*, chemical kairomones produced by vertebrate and invertebrate predators cause the growth of exoskeleton spines that effectively ward off predators. Interestingly, this response can be inherited over several generations, possibly through a mechanism of transgenerational epigenetic inheritance. Both the inducibility and inheritance of this defense are key evolutionary adaptations that allow for adaptability and success of these organisms. Through artificial exposure of *D. lumholtzi* in a series of related experiments, I hope to uncover the evolutionary importance and path of epigenetically regulated inducible defenses.

**Meza Macias, Edgar**

University of Oregon

Research Mentor(s): Andrew Marcus, Claire Albrecht

Poster

### **Determining local DNA base conformations by two-photon excitation 2D fluorescence spectroscopy**

The recipe for the 'building blocks of life' is encoded within the base sequence of DNA. For this genetic code to be useful, proteins must interact with the DNA and 'read out' the gene sequences. These protein-DNA interactions occur most frequently at junctions where single-stranded (ss) DNA meets the double-stranded (ds) DNA helix. The double helix is stabilized by base stacking interactions but tends to fluctuate in a process called 'DNA breathing.' These thermally driven fluctuations cause local disruptions to the double helix structure and may allow for proteins to bind. We are studying the structure of these local conformations with a fluorescent base analogue of guanine, called 6-methyl-

isoxanthopterin (6-MI). This molecule absorbs and fluoresces separate from the native bases giving us a probe of the local base structure. We use two-photon excitation two-dimensional fluorescence spectroscopy (2PE-2DFS) to investigate the structure of the DNA bases near a ds - ssDNA junction. Specifically, this study is an initial proof of principle that we can measure the 2PE-2DFS signal from the 6-MI nucleoside. Developing this technique to study nucleic acid base structures will give us a tool to study how the local conformations of DNA bases explored during breathing fluctuations may be important for protein-DNA interactions at ss-dsDNA junctions.

**Miko, Jena**

**University of Oregon**

**Research Mentor(s): Dr. Caitlin M. Fausey, Allyson Kuznia**

**Poster**

### **Toys and Words In Everyday Spaces**

**Co-Author(s): Allyson Kuznia, Kayla McComb, Dr. Caitlin M. Fausey, Dr. John Franchak**

How do infants learn object names? We aim to discover patterns in everyday life that structure opportunities for language learning. We use multiple methods to capitalize on what each can best reveal about infants' everyday lives. First, we use Ecological Momentary Assessment to discover what objects infants encounter across hours, days, and months at home. Over four months, parents tell us (via text) up to 10 times per day for four days whether or not their infant is holding an object and, if so, what the object is. Second, we use in-home video recording to detect dynamic multi-modal behaviors like holding and naming objects during play. Over two hours, we record what naturally occurs at home. Third, we use the MB-CDI (standardized parent report) to quantify how many words infants understand and/or say. Data collection and analyses are ongoing. We expect to discover that infants encounter many different objects but repeatedly play with a subset of them and that this repetition is positively associated with vocabulary. We also expect that play dynamics like naming objects while infants hold them will be positively associated with vocabulary. Importantly, we may also discover object and play patterns that are absent from current theories because nobody has yet captured the contexts of everyday life over time. Our findings will inform theories of language learning, along with messaging for parents, clinicians, and educators, featuring multiple pathways for healthy development.

**Miller, Chloe**

University of Oregon

Research Mentor(s): Jennifer Ruef

Oral Session

## **Combatting Math Anxiety Through Interdisciplinary Studies**

Co-Author(s): Jennifer Ruef

Many agree that one of the most anxiety-provoking subjects in school is mathematics. As a future high school math teacher, I'm specifically interested in who is being affected by math anxiety and how we combat this and get students interested and excited about math. My thesis explores math anxiety through varying lenses focusing on historically and currently underrepresented and marginalized groups (women, people of color, and English language learners) within mathematics. While keeping in mind those students who are more likely to experience math anxiety, we can think about potential solutions to help combat math anxiety. In my own experience struggling with math anxiety, what has been most impactful for me in getting interested and feeling confident in my math classes was when I could find connections to other subjects that I was passionate about. In my thesis, I look at interdisciplinary studies as a potential combatant of math anxiety. My thesis includes interdisciplinary lesson plans which combine math with the subjects of ecology, art, and literature. This project will give educators (and myself) a much-needed resource of who math anxiety impacts specifically and an example of how we can incorporate students' interests in other subjects to get them excited about math!

**Miller, Chloe**

University of Oregon

Research Mentor(s): Madelon Case

Poster

## **Exploring Vegetation Patterns Around Cattle Watering Holes Via Satellites**

Co-Author(s): Madelon Case, Lauren Hallett

Cheatgrass is one of the most problematic issues for land managers. This invasive weed smothers native plant life needed for native animal habitats. And once dry, it then becomes a liable source of kindling to ignite and spread intense and wide-reaching wildfires. Current research in the field involves how land use affects cheatgrass invasion, specifically cattle grazing. My research uses satellite imaging to look at watering holes for cattle in Eastern Oregon to find the radius of impact

they have on the environment. Satellite imagery is then combined with GPS points collected from the field to create maps and graphs (via coding in R) showing relationships and patterns between distance from the watering holes and cover type (invasive, native, and bare ground (land with no vegetation)). The most significant result found was that both invasive and native species are most abundant when closest to the watering hole, within 100 meters radius. This suggests that watering holes are hot spots for activity and while there are many predictions as to why the reason is not yet clear. Further research should be done to explore additional variables such as soil water content that may explain why we are seeing this pattern. Identifying and exploring patterns can help land managers prevent the spread of invasive species like cheatgrass, limit the fire-cheatgrass cycle, and help to preserve native species in the area.

**Miller, Lily**

**University of Oregon**

**Research Mentor(s): James Prell**

**Poster**

### **iFAMS Imager: A Workflow for Mass Spectrometry Imaging, Protein Localization, and Heatmap Comparison**

**Co-Author(s): Andrew Swansiger, Manxi Yang, Julia Laskin, James Prell**

Pixel-by-pixel spectral deconvolution of nano-DESI mass spectrometry imaging (MSI) data of biological tissue sections of Sprague-Dawley rat brain and Wistar Hannover rat kidney facilitates quantitation of overlapped protein signals. However, the large amount of data generated in nano-DESI-MSI experiments presents challenges for data analysis and image generation, especially when protein signals strongly overlap in the mass spectra. We address these issues by introducing a highly automated data transformation pipeline with our publicly available Gábor-Transform (GT) based iFAMS (Interactive Fourier Algorithm for Mass Spectrometry) software for generating protein heatmap images. These tools allow for rapid imaging and comparison of multiple proteins and isotopes in nano-DESI datasets. Analysis of nano-DESI-MSI data using GT and iFAMS enables high-resolution image generation for low-abundance protein ions in biological tissue samples, allowing proteins to be isolated in congested spectra. Selection of proteins of interest, and integration parameters is done using iFAMS. Afterwards, nano-DESI data is integrated in a batch fashion using a parallelized Python script on UO's Talapas computing cluster. Using iFAMS imager, separate images can be generated for each protein using all charge states or selected charge states, and instantly normalized to each

other. Protein selection and imaging using iFAMS based software allows for analysis of full tissue datasets in a single day.

**Milne, Scooter**

Lane Community College

Research Mentor(s): Caroline Lundquist, Stacey Kiser

Works in Progress: Lightning Rounds

**The Impact of Personal Identity on Students' Attitudes Toward Learning as "Failure" and/or "Play"**

The Sigma Zeta chapter of Phi Theta Kappa (PTK) National Honor Society at Lane Community College would like to present on its 2023 Honors in Action (HIA) project on the topic of The Art and Science of Play. PTK HIA projects combine multimodal research, practical problem-solving, and service in order to identify and help solve a problem that is impacting our community. Our project focuses on students' identities in relation to play. Our working research question is: "What aspects of students' identities may stand in the way of developing a playful attitude about learning, and/or a sense that productive failure is a part of learning?" The aim of our research is to discover a practical problem related to learning and play that we can help to address at Lane Community College through a service project. This topic is relevant to many stakeholder groups at LCC, including students who, due to aspects of their identity, do not feel able to approach learning and/or failure as "play," and faculty who incorporate play and/or productive failure into their pedagogy. For this project we will identify and critically assess the 8 most relevant pieces of scholarly literature we can find on our topic. We also plan to collect data specific to our campus community. We hope to elicit audience feedback regarding potential data collection methods, and the relevance of our project to real-world problems impacting our local, national and global communities.

**Mimms, Ellis**

Visiting McNair Scholar | University of Oregon Alumni

Research Mentor(s): Scott Fisher

Virtual

**Pine Mountain Observatory and Beyond**

The Hubble Telescope is a Space Telescope that was launched into low Earth orbit as part of international cooperation between the National Aeronautics and Space Administration (NASA) and the

European Space Agency (ESA). While Hubble has been used to observe many different celestial objects and phenomena, one of the most famous pieces of data to come from it is known as the Hubble Deep Field Image. For 10 straight days in 1995, Hubble stared at a tiny, nearly empty patch of sky near the Big Dipper. The telescope gathered all the light it could, slowly building the picture that would come to be known as the Hubble Deep Field. This image, showing a sliver of our early universe, contains over 3,000 galaxies, large and small, shapely and amorphous, burning in the depths of space. In the original Pine Mountain Observatory Deep Field project (PMODF), we created our own deep field image by imaging the central region of the Coma Cluster in order to determine how many galaxies we could detect within it and to what magnitude the telescopes at Pine Mountain can see into space. With the Pine Mountain Observatory and Beyond project (PMOAB), we have developed more efficient software intended to resolve issues surrounding dark frame subtraction that were first discovered in the creation and analysis of the PMODF. Through the PMOAB, we have developed new methods and techniques to aid in the reduction of all astronomical data taken at Pine Mountain Observatory.

**Miner, Madeline**

**University of Oregon**

**Research Mentor(s): Alison Carter**

**Poster**

### **Filling in the Gaps: Investigating Ancient Ceramics From Cambodia**

Ancient ceramics are often a significant source of information for archaeologists, providing evidence on the types of food eaten, the activities taking place, and sometimes the societal changes during different time periods and places. Complete ceramics, often found in a burial context, also provide archaeologists with information on the types of ritual practices that might have occurred. Unfortunately, many complete artifacts are subject to looting, which poses a challenge in answering these questions due to the lack of provenance. This project analyzed a collection of 27 complete looted ceramic vessels reported to be from Iron Age sites (500 BCE - 500 CE) in Cambodia. The ceramics were investigated based on their shape, size, style, color, and decoration to recognize any similarities to documented ceramics from Cambodian archaeological sites. The study results concluded that many of the vessels in the collection had stylistic similarities to those from Iron Age sites in northwest Cambodia. The completeness and similarities of these ceramics to Iron Age Cambodian sites also point toward the idea that they were found in a burial context and had a ritual significance.

**Minu-Sepehr, Ava**

University of Oregon

Research Mentor(s): Dr. Jason Younker, Dr. Liska Chan

Oral Session

## **Counter-mapping the Coos Bay Estuaries: Amplifying Indigenous and Environmental Histories**

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 live in and steward Coos Bay. As a recently colonized landscape, Coos Bay is an ideal site to study the urgent issues of indigenous and water justice. Over 150 years of colonial back-filling and diking for farmland has caused massive repercussions for the health of the river and Native ecologies. Critically, changes made to this estuary also mask the deliberate efforts to eradicate peoples of the CTCLUSI and neighboring tribes.

I approach this environmental and indigenous history using creative and decolonial practices of mapping as a form of inquiry. Specifically, I use an 'overdrawing' method—a mapping technique developed by Dr. Liska Chan, that allows for integrating many kinds of knowledge into a map. "Overdrawings are layered collages of drawings and photographs about place that allow both the maker and the viewer to apprehend imperceptible features of a place" (Chan, personal communication, 2022). I hypothesize that these maps will problematize the (in)visibilities of landscapes, revealing how space is politically and culturally created.

I present my work as my own perspective on a history diverse in experience and background. I acknowledge that I currently work and study on Kalapuya territory, the original land of the Kalapuya people, who were also violently displaced.

**Mishra, Anjali**

University of Oregon

Research Mentor(s): Krystale Littlejohn

Poster

## **Understandings of Disability and Sexuality via High School Sexual Health Curricula**

This research investigates the ways by which sexual health curriculum impacts stereotypes, stigma, and perceptions of sexual health regarding individuals with disabilities. The study will use in-depth, semi-structured interviews with individuals with and without disabilities who have received

sexual health education to gather data. Thematic analysis will be utilized in order identify patterns and themes in the data. The research will examine how sexual health education influences the participants' perceptions of individuals with disabilities in a sexual health context and their broader implications for the understandings of ability.

The findings of this research will provide insight into the experiences of individuals with disabilities accessing sexual health education and the impact of such curricula on their perceptions of sexual health. The research can inform the development of more inclusive sexual health curricula that promote positive attitudes and behaviors toward individuals with disabilities. Additionally, the study can contribute to the broader conversation around disability rights and sexual health, highlighting the need for accessible sexual health education for all individuals, regardless of their ability status. Understanding the impact of sexual health education on individuals with disabilities can significantly shape attitudes and behaviors toward this population.

**Mitchem, Owen**

**University of Oregon**

**Research Mentor(s): Scott Fisher, James Imamura**

**Poster**

### **Transit Trekking with Photometry: Capturing HD198733b's Transit and Light Curve**

Exoplanets, first discovered in 1992, are planets orbiting other stars. One way to detect an exoplanet is by observing transits, which occur when the planet passes between their star and our line of sight. Our group hypothesized that observing a transit would help us quantitatively understand the performance and sensitivity of Pine Mountain Observatory's new telescope system. We decided to observe the hot Jupiter exoplanet HD 189733b due to its proximity to Earth and its well documented transit history. A transit can be detected by precisely measuring the brightness of the star-planet system over time. We gathered three hours of images of the target and two reference stars during a known transit event, which has a duration of approximately two hours. We then performed relative photometry on roughly 260 individual images to generate two light curves. To test for a significant difference in the transit and non-transit data, we conducted a T-test. Our T-value confirmed that the data sets were statistically different. With this, we can conclude that our system was able to detect a transit event with a 3% change in brightness of the star-planet system.

**Mole, Troy**

University of Oregon

Research Mentor: Alexander Dracobly

Poster

**The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World**

“The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War” is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Montagne, Cam**

University of Oregon

Research Mentor(s): Wendy Feng, Katie Lynch

Oral Session

**Connecting Youth to the Land and Environment: Climate Science Climate Justice**

The greatest threat to our planet is the belief that someone else will save it. In taking action, the Climate Science Climate Justice team of the Environmental Leadership Program demonstrates that environmental education is vital in providing the next generation with skills to address and adapt to the impacts of climate change. Through culturally aware and diverse pedagogy, our team connects middle school students to hands-on outdoor experiences at H.J. Andrews, an experimental old-growth forest located deep in the Cascade mountains. Students are introduced to climate science and evidence of climate change through four investigations: microclimates, tree ID, phenology, and climate justice. Developed by the Environmental Leadership team, these interdisciplinary lessons cover a range of topics, including plant identification, impacts of the changing climate on plants and

animals, qualities and significance of an old-growth forest ecosystem, development of observational skills, and the intersection of climate change and social justice. Our project exposes students to scientific methods and concepts, developing critical thinking skills, and encouraging them to develop a deeper connection to their surrounding environment while engaging in ideas for how they can participate in creating solutions. By empowering young people to be scientists, the climate team paves the way for future environmental stewardship and takes action against climate change one student at a time.

**Moore, Symone**

University of Oregon

Research Mentor(s): Celena Simpson

Poster

### **How Does Attending the UO shrink or grow my insecurities while being a Black Woman?**

In my research paper, the only material I used was my phone. I think so often I always try to overstress myself and try to make thing picture perfect. I created art the way that I view my life and the world around me. I recently just received a Polaroid where you can create retro and nostalgic moments in your life. So I decided to gain inspiration and capture pictures where I feel the most home and nostalgic. I am a photographer on the side, but I enjoy taking pictures in any type of medium including a Canon, Polaroid, and even an iPhone. The subject matter is how does being my insecurities shrink or grow while being a Black woman at the University of Oregon. I think that there was controversy on TikTok where the trend of attending a PWI and an HBCU are two completely different experiences. My hope in this research project is to show how this experience has challenged me in the worst and best ways. My vision for this work was to use pictures that I felt inspired me to be the woman that I am striving to be. I use photos of hope, great moments, and pictures to remind myself that I am right where I need to be.

**Moorhead, Ann**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **What is a work?**

What is a work? Michel Foucault poses this question in his paper *What is an Author?* Foucault uses this question to open the doors to many more such as what unifies a work, of what elements is it composed, do only authors write works, and, of the millions of things a person writes down in their life, what makes one worthy of being called a work? Books and papers are worthy of being works, certainly. Rough drafts and notes, maybe. But what about laundry lists and calendar notes? Surely, there must be a line somewhere. The Special Collections at the University of Oregon is full of works: books, stories, photobooks and more. Yet, there are also collections of correspondences, scrapbooks filled with stickers and photos, commonplace books, journals with sporadic diary entries, to do lists, and expense lists, and more. Are these works? And if they are not, as I suspect Foucault would believe, why are they valuable enough to collect and care for? This project, part of a collection of projects made for Professor Cheng's class on "book love; or commonplaces," uses course readings and items from Special Collections in an attempt to push back on Foucault's proposition and define in clear terms what is a work?

**Morales Warne, Reyes**

University of Oregon

Research Mentor(s): Nadia SIngh

Poster

### **University of Oregon's Microbiome: A look into bacteria found around Eugene**

Though invisible to the naked eye, bacteria are ubiquitous in nature and found on everything. Bacteria can thrive in warm, moist environments making a college campus, with countless surfaces and densely populated students, a perfect breeding ground. What bacteria can be found in such an environment? To address this question, we explored the bacterial diversity of the University of Oregon, specifically in several dining establishments on campus and around Eugene. We focused on the total number of species on the observed surfaces, the relationship between location and sample diversity, and the bacteria's characteristics to understand their dangers. Groups of students attended dining venues, each with LB plates and sterile cotton swabs. Bacterial samples were

collected from several surfaces and allowed to grow for two days. After picking the colonies, PCR amplification was conducted on a fragment of the 16S rRNA, after which Sanger sequencing was performed to determine the DNA sequence. Finally, the BLAST program was used to determine the species of bacteria. We sequenced 557 samples, which represented 208 distinct species. Every sample contained bacteria, and each location was diverse in species. At least two species were pathogenic. This is cause for concern as these swabbed areas are commonly used and laden with bacteria. Proper sanitation is vital for the prevention of disease, particularly in dining establishments. The results reiterate that bacteria are everywhere.

**Motta, Hannah**

**University of Oregon**

**Research Mentor(s): Professor Kathryn Lynch**

**Oral Session**

### **A Shared Sky: Celebrating the Cultural Connections of Migratory Birds**

Their stunning plumage and catchy melodies make migratory birds difficult to miss. For elementary students at River Road/El Camino del Río Elementary School, learning about migratory birds helps expand their ecological knowledge while developing an ethic of care for the environment. Studying migratory birds also provides intercultural connections which broaden students' understanding of the world and cultivates empathy. This presentation highlights the impact that Aves Compartidas educators from the Environmental Leadership Program have on local students. Our interdisciplinary curriculum builds relationships between students in the Willamette and Laja watersheds in Oregon, USA, and Guanajuato, MX through the birds both regions share. Our Spanish and English instruction promotes intercultural connections and environmental stewardship through observation, critical thinking, and a series of five student-centered and action-based lessons, culminating in a field trip to Mt. Pisgah Arboretum. Students learn about the challenges birds face during migration and develop tools to make positive changes. Instilling a sense of capability to be a changemaker helps students move from an awareness of issues to helping to resolve them. Upon program completion, students can recognize migratory birds of both watersheds, communicate about their characteristics in Spanish and English, and use their leadership skills to enact change in their own communities that help migratory birds thrive.

**Mozipo, Esther**

University of Oregon

Research Mentor(s): Marian Hettiaratchi

Oral Session

## **A Design of Experiments Approach to Engineering Hyaluronic Acid Hydrogels for Bone Regeneration**

**Co-Author(s): Alysia Galindo, Veronica Spaulding, Marian Hettiaratchi**

Large bone defects have difficulty healing without intervention, leading to nonunion fractures. Hydrogels are a promising solution to this problem due to their biocompatibility and potential as a drug delivery vehicle.

Hyaluronic acid (HA) is a naturally-occurring polymer in the extracellular matrix that can be functionalized to create a hydrogel. However, hydrogels of arbitrary composition may not have the physicochemical properties required for their clinical application. Hydrogel stiffness, gelation time, and mass change over time must all be tuned to ensure a hydrogel is best suited for its environment. Because of this, we looked to optimize HA hydrogels for bone regeneration applications using design of experiments (DOE).

HA hydrogels were synthesized via a hydrazone click reaction of aldehyde-modified HA (HA-Ox) and adipic acid dihydrazide-modified HA (ADH-HA). DOE was used to model interactions between ADH-HA and HA-Ox at various ratios and to generate hydrogel formulations that would have maximal stiffness, gelation time less than 5 minutes, and 0% mass change over 28 days.

3 different hydrogel formulations were generated, and their physicochemical properties evaluated. Each hydrogel demonstrated gelation times less than 5 minutes but all 3 formulations failed to exhibit 0% mass change over 28 days. Moving forward we will increase the crosslinking of the hydrogel to probe a wider range of physicochemical properties and try to optimize the hydrogel from there.

**Mullen, Nicole**

University of Oregon

Research Mentor(s): Karen Guillemin

Virtual

## **The Role of Microbiota in the Development of Insulin-producing Cells in *Drosophila melanogaster***

Co-Author(s): Karen Guillemin, Steph VanBeuge

Resident microbiotas can influence many aspects of host health and disease. This research investigates the role of microbiota, bacteria, and BefA protein to promote analogous insulin-producing cell (IPC) development in the fruit fly, *Drosophila melanogaster*. In *Drosophila*, 7 IPCs are present in each lobe of the larval brain. The first aim of this research established the effect of germ-free (GF) rearing on IPC numbers in *Drosophila*. The second and third aims tested if feeding flies BefA or if transgenic expression of BefA could restore IPC numbers in GF flies. We compared the number of IPCs present in flies that were GF, conventionally reared (CV), GF and fed BefA protein, and GF flies with transgenic expression of BefA. Tissue-specific Dilp3:GAL4/UAS:GFP in all groups made IPCs visible after dissection and immunohistochemistry. Results showed that GF flies have fewer IPCs per brain lobe than CV flies, indicating that microbiota is required for normal IPC number and development. Further, GF larvae fed BefA protein showed a slight but significant increase in IPCs per lobe compared to CV, indicating that BefA has the potential to rescue the effects of GF treatment. Transgenic expression of BefA, using the GAL4/UAS system, yielded a trending rescue of IPCs. This information directs research and treatment for diseases like diabetes, helps researchers better understand growth and development, and has implications for the microbiota's effect on the brain.

**Munson, Haden**

University of Oregon

Research Mentor(s): Keaton Miller

Oral Session

## **Attention or Inattention; An examination of Network-Effects and Switching Costs Among Tech Firms**

Over the last two decades, technology has evolved at an increasing rate and is responsible for the proliferation of internet-enabled platforms and devices. Popular instances include Facebook, the revolutionary social media platform that was launched in 2004. Similarly, Instagram, a competitor

of Facebook's who debuted in 2010, took hold of millennials and the Gen Z generation. While acting as competing services for several years, Instagram was acquired by Meta Inc in 2012. In the years ensuing this acquisition combined with consumer's increasing demand for network-based services, many other platforms would seek to enter this lucrative and seemingly infinitely profitable industry. In today's attention driven economy, manipulating, and designing services that attract and retain consumers are at the forefront of leading technology organizations. Behind the intricate software languages, millions of miles of internet cables, and eloquent post captions that make up these platforms lie two key economic elements; network effects and switching costs. My goal is to examine the nature and implication of network-effects and switching costs to better frame the relationship between firms and consumers from an economic standpoint and draw on an array of moral philosophies in hopes of creating a lens to observe our modern attention driven economy.

**Myers, Julianne**

**University of Oregon**

**Research Mentor(s): CJ Pascoe, Jessica Vasquez-Tokos**

**Poster**

### **Queer Representation in Streaming Service TV Shows**

This study is designed to explore the nature of queer characters and relationships in contemporary media. Specifically, this is through the exploration of the question: How are gay and lesbian presenting relationships and characters portrayed in streaming service teen drama TV shows in the last 5 years? As the numbers of LGBTQ+ identifying people in the US have increased significantly in recent years, these types of characters have also become far more frequent within media. Therefore, this is one attempt at gaining an understanding of what these portrayals look like. Eight television shows were analyzed, four consisting of a main queer male couple and four with a main queer female couple. These shows include: *The Wilds*; *Teenage Bounty Hunters*; *Dickinson*; *Atypical*; *Heartstopper*; *Young Royals*; *Love, Victor*; and *The Bastard Son and the Devil Himself*. A variety of elements were examined, including screen time and affection, intersectional identities, couple dynamics, coming out storyline, religion and heteronormativity. Generally speaking, it was found that the normalization of queerness has become more common and frequent, but significant differences still remain in the portrayals of queer men and queer women and an underlying message of heteronormativity persists. These results provide a glimpse into what current shows with predominantly teenage and young adult audiences are saying about homosexuality.

**Myers, Sadie**

University of Oregon

Research Mentor(s): Chantelle Russell

Oral Session

### **Effective Study Skills Can Improve Overall Well-Being**

Implementing more effective study habits can increase time for well-being activities, such as journaling, resting, and connecting with others. Our goal is to expose University of Oregon students to a variety of researched-backed study habits so they can gain autonomy over their time. In a search for more effective tactics, we referred to academic literature, analyzed studies on factors that set college thrivers and divers apart, and watched TEDTalks on how to study smarter and not harder. We found that elaborative rehearsal, retrieval practice, and a good night's sleep improve performance significantly. Interviews conducted with University of Oregon faculty in the Tutoring and Academic Engagement Center (TAEC) and Teaching Engagement Program (TEP) confirmed these findings. They also informed us that common strategies such as maintenance rehearsal and highlighting just don't work. Students compromise their well-being in a time-consuming effort to succeed academically. If they are knowledgeable about the study habits that aren't as efficient and know which ones to implement, students will have an opportunity to make space for well-being activities.

**Nashawi, Lynn**

University of Oregon

Research Mentor(s): Troy Houser

Poster

### **Predicting Explore-Exploit Behavior from Personality Traits**

The explore/exploit trade-off is the idea that individuals learn and decide in two different ways. Exploitation involves continuing with what one already knows in order to achieve a known result, whereas exploration is where one tries new things that they are unsure about in order to potentially gain new information. Exploration can also be further divided into two subsections: random and directed exploration. Recent research has demonstrated that different individuals use different strategies, but whether different personality traits have an effect on the strategy that they are more likely to choose is relatively unexplored. In the current study, we asked participants to collect as many points as they could by selecting among four options, some of which offered a steady stream of points while others were less predictable. Participants also completed a short form of the big five

personality questionnaire. We hypothesized that neuroticism would correlate negatively with directed exploration, that openness will correlate positively with both measures of exploration and that impulsivity correlates positively with random exploration. The present research indicates support for the first hypothesis. This research can be used in various fields such as education, business and psychiatry, as it can demonstrate various types of learning and decision-making styles in different settings.

**Nash-Laboe, Blake**

**University of Oregon**

**Research Mentor(s): Josef Dufek, Josh Mendez**

**Poster**

### **Light Interactions with Sulfur Dioxide and Different Substances at a Small Scale**

**Co-Author(s): Josef Dufek, Josh Mendez**

During major volcanic eruptions, the release of differing amounts of Sulfur Dioxide (SO<sub>2</sub>) is possible. Based on the magnitude of the eruption, these can be forced into the stratospheric level of the atmosphere by the process of Stratospheric Aerosol Injection. These injections can have effects on Earth's Climate System for prolonged periods of time. Interactions between SO<sub>2</sub> and light can help lead us to how these injections could affect Earth's climate. We will use interactions of different wavelengths of radiation with various objects such as plants, SO<sub>2</sub> gas, coffee beans, and flowers in order to better understand this process. Using the images we gathered, we will apply them to an image processing software in order to determine where different levels of reflection and absorption of various wavelengths have occurred. The process of reflection of radiation at the stratospheric level could indicate a lower amount of radiation making it through to the Earth's surface. Overall, stratospheric injections of aerosol could promote a cooling trend on a longer-term global scale depending on the severity of the hypothetical stratospheric injection of SO<sub>2</sub>. More data in different conditions or with other emitted gasses would be needed at larger scales in order to conclude that a specific hypothetical eruption with a specific emitted gas content would lower Earth's average temperature over any amount of time.

**Nauden, Keyshawn**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

### **The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful in regard to the modern world. This project will show the importance of reevaluating notable pieces from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Nearman, Paige**

University of Oregon

Research Mentor(s): Josh Snodgrass

Poster

### **Assessing Accessibility Features in Digital Anthropology Publications**

Current research demonstrates that there is a growing need for the implementation of anthropological concepts and theory into both academic and public spheres to address a variety of societal and structural issues (Rylko-Bauer et al., 2006). One barrier to this implementation is the lack of accessibility to research in the field of anthropology, especially regarding digital publications (Lauri & Sandvik, 2021). The goal of this study is to find ways to make anthropological research more accessible to a variety of individuals through a comprehensive assessment of standard accessibility features. Using the most recent version of the *Web Content Accessibility Guidelines* and other online accessibility research, this research project assessed samples of articles from different anthropology academic journals through a comprehensive rubric. The rubric includes factors such as language availability, cost to access, and other accessibility features. The resulting rubric grades illustrate areas of accessibility that may need to be improved in order for publications to reach a wider audience.

**Nguyen, Ethan**

University of Oregon

Research Mentor(s): Jen Michel

Poster

### **Analysis of Z01b Isoforms in Electrical Synapse Formation**

Co-Author(s): Adam Miller, Jen Michel

Electrical synapses are neuronal gap junction (GJ) channels associated with a macromolecular complex called the electrical synapse density (ESD) that dynamically regulates electrical transmission. Using the Mauthner cell of zebrafish as a model, we previously found that the intracellular scaffolding protein Z01b is a member of the ESD, localizing postsynaptically where it is required for channel localization, electrical communication, and proper escape behavior. Here, we hypothesize that the complexity of the ESD may be further diversified by the genomic structure of the Z01b gene locus. The Z01b gene is alternatively initiated at three transcriptional start sites resulting in isoforms with unique N-termini that we call Z01b-Alpha, -Beta, and -Gamma. Using genetic and immunological methods that included the use of the program Fiji in order to quantitate the amount of fluorescence signal at a synapse, we analyzed electrical synapse formation in the Mauthner cells of Z01b-isoform specific double mutant zebrafish. These efforts resulted in the discovery that Z01b-Beta is required and sufficient for electrical synapse formation. We are interested in further exploring how the other Z01b isoforms may differentially contribute to ESD complexes at electrical synapses and propose that proteomic diversity of the ESD critically impacts the structure, function, and plasticity of electrical transmission.

**Nguyen, Hanna**

University of Oregon

Research Mentor(s): Alicia DeLouize, Josh Snodgrass

Poster

### **Healthcare investment, underdiagnosis, and perceptions of healthcare across SES groups in Tunisia**

Co-Author(s): Alicia DeLouize, Josh Snodgrass

Socioeconomic status has a variable relationship with healthcare outcomes and satisfaction, yet the reasons for this are unclear. The present study considers the relationship between out-of-pocket cost of care, health outcomes, and satisfaction between SES groups. We used the 2016 Tunisian

Health Examination Survey (N = 10,158, age 15-101) to investigate the relationships among wealth quintiles based on total household income, financial investments in healthcare, and the resulting health outcomes of each group. Lower wealth quintile groups were hypothesized to have higher rates of diabetes underdiagnosis and worse self-reported outcomes and satisfaction of health visits than higher wealth quintiles. Results indicated that rates of diabetes underdiagnosis were similar among wealth quintiles ( $b = 0.02$ ,  $p = .11$ ). However, higher wealth quintiles reported better outcomes ( $b = 0.05$ ,  $p < .001$ ) and higher satisfaction with their last visit ( $b = 0.09$ ,  $p < .001$ ). Each wealth quintile reported spending an average of \$2.40 USD more than the quintile below them on their last visit ( $p = .008$ ), with the lowest quintile spending 88% and the highest quintile spending 6% of household income on average ( $p < .001$ ). Despite low variation in diabetes underdiagnosis, self-reported healthcare outcomes and satisfaction were worse for lower income groups. This study highlights the potential causes of SES inequality in healthcare systems, with low-income groups reporting a higher burden of costs.

**Nguyen, Nicolas**

University of Oregon

Research Mentor(s): Marina Guenza

Poster

## **Designing a Back-Mapping Procedure for Reconstructing Atomistic Structures From Coarse-Grained Sites**

Co-Author(s): Jake Searcy, Marina Guenza, Alex Guerrero

This research project focuses on developing a statistically accurate back mapping procedure for coarse-grained (CG) modeling of polymeric systems. In a coarse-grained model, polymer chains are simplified into chains of blobs, where each CG unit represents a short monomeric chain. Coarse-graining allows for faster computer simulations, less energy consumption, and longer simulation time. When a polymer is modeled atomistically, structural quantities such as bond length, bond angles, dihedral angles, distribution of center-of-mass, and end-to-end distances are described by well-defined distributions. However, when the system is coarse-grained, information at the atomistic level is lost because multiple atoms are modeled as one CG unit. With this in mind, we will build a back mapping procedure using machine learning (ML). The back mapping procedure will target atomistic bond length, bond angle, dihedral angles, center-of-mass, and end-to-end distributions. The back mapping approach will provide a general and convenient ML code to back-map any coarse-

grained polymeric system back to its atomistic model. The code will also be applicable to any polymer liquid. Currently, the ML code has generated statistically accurate chains for the intramolecular structures. However, the intermolecular statistics have not been generated correctly, and is currently the focus of the project.

**Noah, Angela**

**University of Oregon**

**Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson**

**Virtual**

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Nunis, Austin**

University of Oregon

Research Mentor(s): Kathryn Lynch, Mirabai Collins

Oral Session

## **Trailblazing Accessibility: Auditing Regional Hiking Trails for More Equitable Outdoor Recreation**

In the United States, over 25% of the public is disabled and might experience inaccessibility in outdoor recreation. Specifically, the lack of information regarding accessibility features, amenities, trail conditions, and sensory experiences prevents many disabled people from having positive experiences outside. The Trails Team from the University of Oregon's Environmental Leadership Program (ELP) collaborated with our community partners, Travel Lane County (TLC) and Willamette Valley Visitors Association (WVVA), to gather and disperse trail information to the public so that users can determine whether a trail is accessible for them. The team initially performed a literature review to learn about disability and establish relevant factors regarding trail accessibility. The team then assessed ten trails in Lane, Linn, and Benton Counties and surveyed trail characteristics such as slope, cross-slope, tread surface, and trail width, in addition to documenting amenities and obstacles. The team created a protocol detailing best practices for future use, a spreadsheet of data collected at each site, brief trail profiles summarizing qualitative and quantitative data, trail photographs, and a team website. We provided our community partners with this information to disperse to the public so that community members can determine whether or not a trail is accessible to them based on their personal access needs before visiting.

**Nusbaum, Will**

University of Oregon

Research Mentor(s): Danny Pimentel

Poster

## **STEM Accessorization: Visualizing Careers in Augmented Reality**

Co-Author(s): Danny Pimentel, Shane Burrell

The specific aim of this study was to explore how embodiment in augmented reality can influence self-perceptions and perceptions of science as a whole. Despite research showing that augmented reality influences how someone thinks, feels, and behaves, embodiment has largely been studied in the context of virtual reality, leaving little insight into how AR-based embodiment may be used

to increase engagement in education. Beyond understanding the psychological impact of this embodiment, our project aimed to have applied impacts as well, including inspiring young audiences to consider, and eventually pursue, science careers. In order to do so, we developed a Snapchat filter using face tracking and object placement in the engine Lens Studio. This AR-based science application allowed users to see themselves in the roles of specific scientific professionals and learn more about each career. Ultimately, the goal of this project was to gauge differences in key outcomes from pre- and post-intervention, namely: interest in science careers, views of self-as scientist, and attitudes towards science. We additionally assessed the degree of embodiment and cognitive absorption. This data was all collected online via Amazon Mechanical Turk, through two questionnaires. After analysis, our findings indicated that identification with scientists increased significantly after exposure to the augmented reality experience, but unfortunately other variables did not.

**Oberoi, Amar**

**University of Oregon**

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

**Poster**

### **Comparing Methods of Dealing with Aging Populations in China and Scandinavia**

As nations across the globe continue to develop, and opportunities beyond traditional gender roles continue to develop for women aging populations will become a problem more and more countries need to deal with. Two regions currently working to resolve these problems are China and the nations in Scandinavia. China is unique in that its one-child policy is now having a major impact on the population whereas in Scandinavia the pressure to work is the main cause of the birth rate decline. Social welfare programs of various types are now being implemented from stipends to free or affordable IVF. This report seeks to explore the methods countries now use to increase their birth rate while also expanding rights for all; as well as evaluating the effectiveness of these policies.

**O'Brien, Laurel**

University of Oregon

Research Mentor(s): Alisa Freedman, Trond Jacobsen

Oral Session

### **A Place to Be: Ibasho and Spaces of Community Comfort in the TV Show *Midnight Diner***

This presentation will discuss the concept of ibasho, “a place to be,” as it appears in the beloved TV and Netflix show *Midnight Diner*. In my research, I examine stories of the many patrons of one small diner in an alleyway in Tokyo, who come together over nostalgic foods and share the difficulties they each face. I argue that spaces like the *Midnight Diner* exemplify ibasho as places of close community support, providing warmth, acceptance, inclusion, growth, and healing to troubled souls in a fast-paced and complicated world. This ibasho modeled in *Midnight Diner* bears relevance to us now as a guide for connection in the world we find ourselves in today. In this presentation, I will highlight the case of ibasho in *Midnight Diner*, showing the value it has to offer us as we look for ways to reconnect and find one another in the wake of the isolation of a global pandemic.

**O'Connor, Claire**

University of Oregon

Research Mentor(s): Megan Lipsett, Elliot Berman

Poster

### **Investigating the Role of Social Connection in Psychological Distress and Diabetes Self-Management**

Diabetes is one of the most widespread chronic epidemics in the United States and requires extensive self-management. Psychological distress is known to negatively impact a wide array of health behaviors, and may be detrimental to health behaviors in the context of diabetes prevention and management. Social connection has been shown to have a protective effect on the influence of psychological well-being on health behaviors. This cross-sectional study examined responses to a self-report questionnaire that investigated the role of psychological distress and social connection in determining self-management outcomes in a group of people with either Type 2 Diabetes or who met criteria for prediabetes (N = 136). Additionally, we explored whether social connection would moderate the relationship between psychological distress and diabetes self management. Analysis showed that psychological distress is significantly negatively associated with diabetes self-management.

While psychological distress was significantly associated with perceived social connection, we did not find evidence to support the hypothesis that social connection might attenuate the relationship between psychological distress and diabetes self-management. These findings imply that psychological distress may contribute to poor social connectedness and the hindered ability to both prevent and self-manage Type II diabetes.

**O'Grady, Griffin**

**University of Oregon**

**Research Mentor(s): Mai-Lin Cheng**

**Poster**

### **Letters from the Post Master: How decoding the past can aid future academia.**

I am beginning this project for the course "Book Love" with Professor Cheng. Our assignment is to help curate an exhibit on book love and commonplace books. My approach to this project is to transcribe George Allen Dyson's copy book, where he copied down every letter he sent in a unique style of shorthand, in order to gain a fuller understanding of his everyday life. The shorthand consists of a list of symbols that each represent a word he used frequently in his letters. The shorthand legend was found on a loose piece of paper tucked into the copybook, and is seemingly incomplete. I hope to compare his writings with more contemporary texts, like *What We See When We Read* by Peter Mendelsund, in order to highlight the differences, and more importantly, the similarities between life and culture then versus now. I also plan to use some poetry on the subject of reading to further my point. My goal is to argue against the notion that the past is a vastly different place, and that our lives now are completely different to theirs by highlighting the more mundane similarities. As a secondary conclusion, I also hope to highlight the importance of archival work due to the fragile nature of history as seen in the unfinished legend for the shorthand, and how easily it could have been fully lost. I believe this is important to research as the field of archival work is often undervalued and underestimated, and highlighting its importance is always worth doing

**O’Konski, Cedar**

University of Oregon

Research Mentor(s): Melissa Baese-Berk, Valentino Vasquez

Oral Session

### **Intelligibility of American Sign Language Dialogue in Popular Media**

In the last decade, the number of movies and TV shows that feature American Sign Language (ASL) has increased significantly. While there have been many opinion pieces and reviews about the quality of onscreen ASL representation, there is currently almost no research on how quantifiably intelligible the signed dialogue actually is. For my undergraduate thesis, I wanted to take a step into this virtually unexplored field of research. I created an online survey for ASL signers, where I showed participants ASL dialogue clips from 9 different movies and TV shows. I asked them to rate how well they could understand the signing based on two specific factors: the actor’s ASL proficiency, and the way the dialogue was filmed. I then took a deeper dive into the media that survey participants rated as the most and least intelligible, looking at how the filming, casting, script, and directing could have influenced their intelligibility scores. I used my findings to identify specific ways that actors and directors can portray ASL in a more respectful and informed way onscreen, and to consider the impacts of unintelligible ASL film dialogue on both the hearing and Deaf communities.

**Olavarrieta, Andres**

University of Oregon

Research Mentor(s): Sophia Doerr

Poster

### **Molecular dissection of signal adaptation modules using light-induced signaling inputs**

Co-Author(s): Sophia Doerr, Emma Drew, Scott Hansen

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).

**Olivares, Sophia**

**University of Oregon**

**Research Mentor(s): Feather Crawford, Armando Morales**

**Oral Session**

### **Las Lágrimas de Nosotros: Causes and Consequences of the Salvadoran Civil War**

Throughout the 1980's, El Salvador experienced war crimes, violence, and massacres during the Salvadoran Civil War. This project addresses lingering questions of emotional trauma and in the aftermath as well as questions regarding causes and consequences of the violence. How did the Salvadoran violence of the 1980's shape the political, economic, and lived experiences within El Salvador? Moreover, why does the violence persist and to whose benefit? The ongoing violence has limited research into the lived experiences of people in El Salvador since the 1980s. This project will help explore connections between the United States, violence in El Salvador, and solidarity between Salvadorans and Americans with a variety of primary and secondary sources, including "El Mozote" by Mark Danner, the UN "Truth Commission for El Salvador," personal narratives, poetry, photographs, and recorded testimonials. Initial findings implicate: the Reagan Administration, political corruption, and the Salvadoran elite, while also demonstrating solidarity, community, and resilience of Salvadoran people. Further significance is found in the connections between Salvadoran refugees and the UO MEChA chapter as well as personal family experiences. A primary motivation for this research has been to understand and mend the intergenerational wounds that were left behind in my own family.

**Olson, Julia**

University of Oregon

Research Mentor(s): Paul Dassonville

Poster

## **Temporal Dynamics of the Rod and Frame and Simultaneous Tilt Illusions**

Co-Author(s): Paul Dassonville

The ability to judge an object's orientation in space relies on cues from multiple sensory modalities, particularly vestibular cues and contextual cues in the visual scene. The Rod and Frame Illusion (RFI) and Simultaneous Tilt Illusion (STI) have been used to examine how these cues effect orientation perception. The RFI is thought to be driven by a visuovestibular effect where the contextual cue of a large tilted frame contradicts vestibular cues of gravity, causing perceived vertical to be biased towards the frame's tilt and, correspondingly, the orientation of an enclosed line to be perceived as being tilted in the opposite direction. In contrast, the STI is thought to be driven by an orientation contrast effect where the mutual inhibition of neuronal populations encoding the orientations of a surround grating and an enclosed line leads to the perception that the line's orientation is tilted in a direction opposite the grating. If it is correct that two separate neural mechanisms are responsible for these illusions, we hypothesize that the illusions should differ in their temporal characteristics. In the present study, we examine the time course of the onset of each illusion by having participants judge the orientation of a line flashed briefly (5-ms duration) before or after the onset of a large tilted frame or a smaller tilted grating. The results of our study will help us understand the mechanisms involved in the brain's ability to judge an object's orientation.

**Osman, Elyse**

University of Oregon

Research Mentor(s): Wendy Feng, Katie Lynch

Oral Session

## **Connecting Youth to the Land and Environment: Climate Science Climate Justice**

The greatest threat to our planet is the belief that someone else will save it. In taking action, the Climate Science Climate Justice team of the Environmental Leadership Program demonstrates that environmental education is vital in providing the next generation with skills to address and adapt to the impacts of climate change. Through culturally aware and diverse pedagogy, our team connects middle school students to hands-on outdoor experiences at H.J. Andrews, an experimental old-

growth forest located deep in the Cascade mountains. Students are introduced to climate science and evidence of climate change through four investigations: microclimates, tree ID, phenology, and climate justice. Developed by the Environmental Leadership team, these interdisciplinary lessons cover a range of topics, including plant identification, impacts of the changing climate on plants and animals, qualities and significance of an old-growth forest ecosystem, development of observational skills, and the intersection of climate change and social justice. Our project exposes students to scientific methods and concepts, developing critical thinking skills, and encouraging them to develop a deeper connection to their surrounding environment while engaging in ideas for how they can participate in creating solutions. By empowering young people to be scientists, the climate team paves the way for future environmental stewardship and takes action against climate change one student at a time.

**Owen, Mia**

**University of Oregon**

**Research Mentor(s): Prof. Lisa Munger**

**Poster**

### **Characterizing Study Spots Based on Their Sound Qualities**

The University of Oregon campus is a diverse environment, bustling with a wide range of sounds. Understanding the relationship between soundscapes and studying habits can provide valuable insights into how sound impacts our cognition in different settings. For example, white noise has been demonstrated to aid with logic and analytical thinking, whereas natural sounds have a greater benefit for creative and collaborative thinking.

This project aims to study 12 different soundscapes on the UO campus. Our two hypotheses are as follows: Hypothesis 1: Indoors at Knight Campus, one will study logical topics best because of the low-level white noise present. Hypothesis 2: Outside at Tykeson, one will study creative topics best because of the ambient noise present.

To conduct this research we will record 21 minutes each week from different locations using a simple phone adaptor and recorder. We will then use RavenLite software to examine frequency and volume. Qualitative research will be taken on-site to note the type of crowd, contributing noise factors, possible error sources, etc.

The results of this study will provide valuable insights into how the soundscape can influence the academic performance of students. The results may also have practical implications for campus

planning, design, and management, as well as for new approaches to education. The findings of this research will pave the way for further interdisciplinary studies in the field of sound and place.

**Padawer, Raine**

**University of Oregon**

**Research Mentor(s): Professor Kathryn Lynch**

**Oral Session**

### **A Shared Sky: Celebrating the Cultural Connections of Migratory Birds**

Their stunning plumage and catchy melodies make migratory birds difficult to miss. For elementary students at River Road/El Camino del Río Elementary School, learning about migratory birds helps expand their ecological knowledge while developing an ethic of care for the environment. Studying migratory birds also provides intercultural connections which broaden students' understanding of the world and cultivates empathy. This presentation highlights the impact that Aves Compartidas educators from the Environmental Leadership Program have on local students. Our interdisciplinary curriculum builds relationships between students in the Willamette and Laja watersheds in Oregon, USA, and Guanajuato, MX through the birds both regions share. Our Spanish and English instruction promotes intercultural connections and environmental stewardship through observation, critical thinking, and a series of five student-centered and action-based lessons, culminating in a field trip to Mt. Pisgah Arboretum. Students learn about the challenges birds face during migration and develop tools to make positive changes. Instilling a sense of capability to be a changemaker helps students move from an awareness of issues to helping to resolve them. Upon program completion, students can recognize migratory birds of both watersheds, communicate about their characteristics in Spanish and English, and use their leadership skills to enact change in their own communities that help migratory birds thrive.

**Paris, Lawren**

**University of Oregon**

**Research Mentor(s): Jim Prell**

**Poster**

### **Investigating Vibrational Heat Capacities of Gas-Phase Biomolecular Ions for Modeling Ion Activation**

As the field of native mass spectrometry grows, there is increasing interest in quantitatively determining ion dissociation and unfolding thermochemistry and kinetics using commonly available

mass spectrometers. An important prerequisite for this objective is to study the relationship between ion activation, internal energy, and temperature. 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 curves per vibrational degree of freedom from 0 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. Class-average curves from this study will be used in our group's IonSPA software, designed to predict ion heating and cooling in Collision Induced Dissociation/Unfolding experiments.

**Parish, Kennedy**

**University of Oregon**

**Research Mentor(s): Tze-Yin Teo**

**Oral Session**

### **The River between Paradise and The Vanishing Half: Exploring transformation within Black utopianism**

My research compares *The Vanishing Half* by Brit Bennett and *Paradise* by Toni Morrison. Both novels focus on exclusionary colorist towns, a set of twins with fluctuating memories, and spatial metaphors surrounding water to transform marginal identities. Through comparing these novels, I am placing them both in the Black utopian field of literature for their use of racial enstragment and the creation of spaces which allow radical tranformation for characters' to become their greatest self. Overall, these stories create poetic meditations and dialogues on how time, locations, and relationships shape us. Furthemore, the exploration of personhood, race, gender, becoming, belonging, memories, communitiy, and paradise are unquely understood through literature's special ways of storytelling. Novels can present time and lore through nonlinear and mythical story telling-subjectivity can be visceral, felt, and reconfigured in writing. Ultimately, my project explores the struggle and power of Black identity, relationships, and georgepgy to transform ascribed identity and memories toward greater versions of themselves. Through placing these novels in the Black utopian genre, they both demonstrate how a sense of paradise and affirming selfhood are reliant on a never ending process of self reconstruction and fluidity. Both novels intimately question the memories, trauma, and stories we use to define ourselves while striving to find a sense of self in the haunting margins of the U.S.A.

**Parke, Mystery**

University of Oregon

Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson

Virtual

**The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Patel, Macy**

University of Oregon

Research Mentor(s): Jeremy Collings, Jeff Diez

Poster

**Impact of Rhizobia Presence and Nitrogen Abundance on Competition Between Legumes and Non-Legumes**

Legume and rhizobium mutualisms have been largely overlooked in traditional coexistence literature. Rhizobia are nitrogen-fixing soil bacteria that form symbioses with leguminous hosts through the formation of nodules on the plant's roots. This resource-based mutualism likely influences competition for soil nutrients between legumes and plants that lack rhizobia. Still, fewer studies have explored how dependent conferred competitive advantages from rhizobia are on ambient

nitrogen abundance. Here we employ coexistence theory to assess how rhizobia and nitrogen fertilization influence niche and fitness differences and alter competitive outcomes. In addition to independently destabilizing competition between leguminous and non-leguminous plant species, we expect that nitrogen and rhizobia will synergistically increase fitness inequalities, thereby decreasing the probability of plant coexistence. To test the nitrogen-dependent effects of rhizobia on plant coexistence, we conducted a competition greenhouse experiment, replicated across rhizobial inoculation and nitrogen fertilization treatments. We will use this data to parameterize models for competing populations and to assess coexistence probability. These results may provide insight into context-dependent mutualisms and their downstream consequences for plant coexistence. Further, this study may shed light on how eutrophication, a ubiquitous threat to native plant communities, may alter linked plant and microbial communities.

**Peabody, Sarah**

University of Oregon

Research Mentor(s): Benjamin Duewell, Scott Hansen

Poster

### **Characterizing the Kinetics of Localization and Activation of PI3K: Paralogs a and b in Neutrophils**

At the forefront of understanding polarization and cell signaling of immune cells is the study of their mechanisms of activation and localization. The rapid synthesis and localization of the plasma membrane lipid PIP<sub>3</sub> is hypothesized to be controlled by a feedforward mechanism involving a variety of proteins and enzymes. One critical signaling molecule involved in this pathway is the protein kinase PI3K, which is responsible for the conversion of PIP<sub>2</sub> lipids into PIP<sub>3</sub> lipids. The proposed models in the field suggest that the activity of PI3K paralogs a and b is controlled by a number of small molecules including GbGy, pY peptides, and the GTPases Rac1 and HRas. In order to confirm and better understand the roles of these small molecules in the activity of their PI3K paralog, this project will study the mechanisms of localization and activation of PI3K paralogs a and b in-vitro using supported lipid bilayers and TIRF microscopy. We will use a combination of bulk activity assays, single particle tracking, and binding localization studies to show the importance of each small molecule individually but also synergistically. By understanding its structure and mechanism of activation, these PI3K paralogs can provide a framework for a general signaling scaffold that integrates cell signals that begin in different cell surface receptors to stimulate cell migration and regulate additional key pathways in the physiologically healthy human body as well as in bodies with cancer.

**Peery, Gabriel**

University of Oregon

Research Mentor(s): Thanh Nguyen

Poster

### **Vision Transformers Under Data Poisoning Attacks**

Owing to state-of-the-art performance and parallelizability, the Vision Transformer architecture is growing in prevalence for security-critical computer vision tasks. Designers may collect training images from public sources, but such data may be sabotaged; otherwise natural images may have subtle patterns added to them, crafted to cause a specific image to be incorrectly classified after training. Poisoning attack methods have been developed and tested on ResNets, but Vision Transformers' vulnerability has not been investigated. I develop a new poisoning attack method that augments Witches' Brew with heuristics for choosing which images to poison. I use it to attack DeiT, a Vision Transformer, while it is fine-tuned for benchmarks like classifying CIFAR-10. I also evaluate how DeiT's image tokenization introduces risk in the form of efficient attacks where sample modification is constrained to a limited count of patches. Progressively tightening constraints in extensive experiments, I compare the strength of attacks by observing which remain successful under the most challenging limitations. Accordingly, I find that the choice of objective greatly influences strength. Constraints on patch count deteriorate success rate more than those on image count. Attention rollout selection helps compensate, but image selection by gradient magnitude increases strength more. I find that Mixup is an effective defense, so I recommend it in security-critical applications.

**Pennel, Zach**

University of Oregon

Research Mentor(s): Michael McGeehan, Keat Ghee Ong

Poster

### **Development of light weight, low powered, optical based compressive force sensor**

In an advancing age of biomedical technology there is an increasing need for accurately measuring compressive force. Current sensor designs are based on capacitive sensing, an often bulky method that is also subject to electromagnetic interference. Our lab has developed an optical based sensor that uses a LED paired with a photoresistor which operates by the LED shining visible white light through an adjoint clear spacer on top a nonlinear elastomeric medium which is then received by

the photoresistor, giving a voltage reading received via a connected microcontroller. When under compressive force, the clear spacer will compress the elastomer which in turn reveals more surface area of the LED resulting in an increase in received lux. This change in reading paired with already known mechanical properties of the elastomer can be calculated to find the resultant compressive force. Experiments were done in a controlled dark environment with the sensor connected to an Arduino microcontroller that received the photoresistors voltage. Using a mechanical tester, we found that the change in voltage fit a 3rd power polynomial which allows our sensor to be capable of measuring a broad range of forces. Later research aims to translate this concept to a more compact form factor as well as becoming a completely wireless sensor.

**Phelan, Paul**

**University of Oregon**

**Research Mentor(s): Peg Boulay, Dhruv Modi**

**Oral Session**

### **Monitoring Fuel and Vegetation Characteristics of Thurston Hills Natural Area**

**Co-Author(s): Kate Aldridge, Thomas Brugnara, Alyssa Cano, Nico Gouveia, Grace Johnson**

Through using our protocol, we aim to provide data on fuel loads in Thurston Hills Natural Area (THNA) that can be used to inform future management. THNA is located at the wildland urban interface (WUI)- an area between unoccupied land and human development, meaning it is a critical site for fuel load assessment and reduction. This is important because it will help preserve historic oak savanna habitat, which is critical to plants, animal and avian species diversity in the Willamette Valley. Oak savanna provides both suitable habitat for wildlife and reduces the risk of wildfire for nearby inhabitants. Since fire does not spread as fast or burn as intensely as it does in conifer forest, protected oak savanna habitat in THNA will act as a buffer for the nearby community in the event of a wildfire. THNA also has outdoor recreational opportunities for inhabitants of Lane County. THNA offers a unique model of mixed land use, providing outdoor recreation and preserving oak savanna habitat. In order to support THNA in continuing its wildlife preservation and outdoor recreation use, we will assess fuel loading, species diversity, and canopy cover at the site.

**Pines, Jonathan**

University of Oregon

Research Mentor(s): Mike Pluth, Kaylin Forsnatch

Poster

### **Development of a H<sub>2</sub>S Sensitive Bacterial Probe**

Co-Author(s): Mike Pluth, Kaylin Forsnatch

Hydrogen sulfide (H<sub>2</sub>S) is a small molecule produced by enzymes. H<sub>2</sub>S is also an essential gasotransmitter that plays key roles in biological systems. Development of methods to monitor H<sub>2</sub>S are critical for understanding H<sub>2</sub>S functionality. Fluorescent probes are a leading method of detection and quantification of H<sub>2</sub>S in intact biological samples. Current research shows that bacterial H<sub>2</sub>S may contribute to antibiotic resistance. The quantification of bacterial H<sub>2</sub>S could lead to useful therapeutics. However, prior investigations into H<sub>2</sub>S detection in bacterial cells have used less efficient measurement processes. The goal of this project is to develop fluorescent probes for H<sub>2</sub>S that are selective for H<sub>2</sub>S generated in bacterial cell environments. My approach is to use a well-known fluorophore commonly used in mammalian cells, and to append a specific sugar, that will result in efficient and selective uptake of the probe into bacteria.

**Polvorosa, Mar**

University of Oregon

Research Mentor(s): Steven Beda

Oral Session

### **Indigenous Mexican Food Sovereignty and Celebration**

Food has the power to either support or oppose the well-being of humans, within Indigenous Mexican heritage there is a strong connection spiritually and physically to one's relationship with food. Complex and simple recipes using locally produced ingredients to create a balanced, nutrient-rich meal that sustainably takes care of one's mental and physical self are a part of this culture. Through colonization, many of these cultural foodway practices were forcibly erased and access to unhealthy and processed foods grew. The process of colonization directly led to emotional and physical health declines in Indigenous Mexican communities through the forced assimilation of foodway practices. Communities resist colonization by celebrating, sharing, and educating about the importance of traditional foodways. By researching cookbooks, articles, and stories, shopping at tiendas, and practicing recipes one is able to see how the shift from colonization has affected Mexican cooking

and health statistics. The Americanization of local, organic, and less processed foods have made them less accessible and more expensive to practice one's culture. It's crucial to celebrate how Mexican people are reclaiming aspects of heritage, identity, and health through activism about the importance of traditional foodway practices, and the lessons foodways can teach people about one's mental and physical state of wellness.

**Prazak, Renate**

**University of Oregon**

**Research Mentor(s): Chantelle Russell, Mariko Lin**

**Oral Session**

### **Facilitating Peer-Led Events to Enhance College Student Conversation Surrounding Mental Health**

Mental health disorders are quite common among college students worldwide, including at the University of Oregon. The following statistic supports that, in 2022, it was found that college students across the nation struggle with mental health; that is 35% of students were diagnosed with anxiety and 27% with depression (College Student Mental Health Statistics). If the conversation around mental health improves on campus, then students will feel more comfortable decreasing the stigma around seeking help for their well-being. We have interviewed University of Oregon faculty and staff, in addition to accessing articles and personal experiences regarding mental health. These all account for primary and secondary sources in our project. Mariko Lin, from the University of Oregon's Counseling Center, specifically addressed that, relating to positive mental health, 25% of students at UO in 2021 felt like they had a positive mental health, compared to 38% nationally (The Healthy Minds Network). In response to this, two potential methods for breaking the stigma around mental health include a mandatory peer-led presentation similar to Get Explicit and a weekly seminar held by graduate students for undergraduates. Ultimately, through more peer-led events, such as the ones listed above, the conversation surrounding mental health on campus will increase as students learn how to have a positive relationship with their health and struggles.

**Privalova, Leeza**

**University of Oregon**

**Research Mentor(s): Mai-Lin Cheng**

**Poster**

### **Personalization and Femininity in 19th Century Letter Writing**

By studying *Northanger Abbey* by Jane Austen, *Romance of the Forest* by Ann Radcliff and the Aitken Family papers in order to find out the power of writing and femininity because I want people to understand the value of historical interpersonal communication. Both writing and receiving a handwritten letter is exciting and allows for a lot of emotional expression. In our current time, letter writing is not very common, however in the 18th and 19th centuries it was the only method of communication outside of an in person conversation. A reader can understand a wealth about the author, their occupation, personality and thoughts on a subject from handwriting, words used and general themes in a letter. By analyzing fictional and real letters written by women in the 18th and 19th centuries I hope to find more on the presentation of self through letters and what sort of information ladies of that time found worth sharing. By highlighting people, places, concepts and things written about in the letters noting any repetitions of things, I hope to create a basis for what kind of things women would discuss in their letters. Handwriting analysis might also be beneficial for understanding what kind of similarities might present in women's writing in this era. I am partnering the gathered findings and information with a small journal of the letters I looked at, handwritten and presented in a way similar to how a receiver of these letters might see the personality of the sender.

**Punches, Abigail**

**University of Oregon**

**Research Mentor(s): Hannah Licht**

**Creative Work**

### **Performing My Selected Kidd Anthology Short Story “The Night of Everything and Nothing”**

When contemplating which one of the short stories I have produced during my time in UO's Kidd Program I should present at the Undergraduate Symposium, I was drawn to the piece *The Night of Everything and Nothing*. This piece came to me after reading Pat Barker's novel *The Silence of the Girls*. The book is told largely from the perspective of Briseis, Achilles captive Trojan war prize and concubine, who is stolen from him by Agamemnon, the greedy king who has gathered the forces that

now assail the great walls of Troy. Barker's occasional forays into the perspective of Achilles caught my attention. To Barker (and me) Achilles is more than his rage. I was intrigued by Barker's attention to the complex relationships between Achilles and those he loves, and to Achilles' interiority. His reflections on love, death, fate, and war form the backbone of my own spin on the source material Barker and I both draw from: *The Trojan Epic Cycle*. I hope that this piece, which I consider to be the strongest distillation of my written aesthetic, encourages you to contemplate anew one of the oldest and greatest of stories.

**Pyle, Magnus**

**University of Oregon**

**Research Mentor(s): Chantelle Russel**

**Oral Session**

### **Increase Community for First Year Students; The Value and the Methods**

Academic Residential Communities (ARCs) are a proven way to increase a sense of belonging, build relationships and improve one's well-being. As members of Thrive; an ARC here at UO, we have noticed these effects first hand and how positive an impact joining an ARC has been. However, during conversations with students on campus who are not involved in ARCs, we frequently encounter shared themes of loneliness and disconnection. Some students not in ARCs don't even know their next door neighbor. This has prompted us to find and promote strategies to enhance the community experience and well being of students who are not a part of ARC's. The University of Oregon website states that "About 25 percent of incoming freshmen join one of the 15 ARCs at the UO," this means three out of every four students are left to navigate an entirely new environment on their own. We talked with faculty and students along with using research articles to figure out methods for improving a feeling of community. Through research we found that students can increase their sense of belonging and happiness by starting conversations and getting involved in campus activities. This is particularly important for those not in ARCs because we all have a psychological need for belonging and all students should know how they can cultivate community while in college.

**Quist, Paige**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **Commonplace Books: Why They Matter & What They Reveal**

Writing allows our ever-changing world to get captured, manipulated, and explored through various lenses and often gets kept for private reflection or formatted for public consumption. As Ann Blair discusses, commonplace books were collections of notes “valued as treasuries or storehouses in which to accumulate information even if they did not serve as an immediate purpose.” Although commonplace books have decreased in popularity, their expansive purpose deserves to be explored and advocated for to understand if they should get forgotten or if they still hold value. For instance, how can commonplace books be a guide to our literary and reading endeavors? What do their contents reveal to us? How do factors in our lives influence our consumption of and interactions with literature that consequently impact our writing? Since literature provides insight into oneself and information regarding the people, place, and time from when created, paying attention to notes’ contents and note-taking practices exposes how our imaginations and realities collide with authorial worlds. By using literature about the practice of commonplacing, reading, and writing, I investigate my commonplace book alongside E.M. Forster’s to underscore the relevance of commonplacing’s role. Therefore, I am studying commonplace books to uncover the importance of individuals’ interactions with literature because I want my audience to understand the power writing has to influence, engage, and inspire.

**Ramirez, Joseph**

University of Oregon

Research Mentor(s): Matthias Vogel

Poster

### **The Silenced Minority: Uyghurs In China**

On every continent, symptoms of and responses to shifts in global weather have evolved exponentially in recent history. This project investigates the effects of climate change on Guatemala and Central America. The problem we are presented with comes with a plethora of ramifications in different aspects of life. Each government must understand these repercussions and counteract them at a national level. Some countries are setting an excellent example, but overall, the world is

not treating this problem with the gravity for which it calls. My research includes studies on the pervasive political, meteorological, and socioeconomic disarray as of late. I will make comparisons to Central American neighbors and to countries that have done well in handling this issue. We will inspect the effects of global warming on variables like political dynamics, rising water levels/temperature, socio-economic insecurity, minority injustice, as well as economic volatility. Guatemala has some neighborly models to look to, however there are countries like Denmark and Sweden that set a great example in this respect. While we can conclude that the current status quo in the Central American scheme is sub-par, the fight is not over. This kind of research is useful in order to call a broader audience to attention about the struggles worldwide. Climate change is wrecking many countries, especially those at a disadvantage. It starts with the individual nation, but only together can we fight it.

**Ramos, Tyler**

**University of Oregon**

**Mentor(s): Chundi Xu, the lab of Professor Chris Q. Doe, Institute of Neuroscience**

**Poster**

### **Integration of developmental mechanisms generates neuronal diversity in the *Drosophila* lamina**

The extraordinary ability to perceive and respond to the world depends on the diverse neuron types in our brain. How is each neuron type specified? In *C. elegans*, each neuron type expresses a unique combination of proteins called homeodomain transcription factors (HDTF), which control gene expression for neuron type structure and function. In addition, evolutionarily conserved Notch signaling further diversifies neuron types by controlling binary neuronal fate: two neighboring neurons, one with Notch signaling and one without, adopt two distinct neuronal fates. It is unknown if a relationship exists between HDTFs and Notch signaling. We previously showed HDTF Brain-specific homeobox (Bsh) specifies lamina neurons L4 and L5 in the fruit fly, *Drosophila melanogaster*. How can a single HDTF specify two distinct neuron types? Our hypothesis is that asymmetric Notch signaling exists between newborn L4 and L5 neurons, which integrates with Bsh to differentially specify these two neuron types. Indeed, we found that Notch is activated in newborn L4 neurons but not L5. Further, using loss and gain of Notch function, we found that in the absence of Notch, Bsh only specifies L5 neuron type. In contrast, in the presence of Notch, Bsh only specifies L4 neuron type. Therefore, HDTF Bsh and Notch signaling function together to specify two distinct neuron types. The integration of HDTF and Notch signaling for generating neuronal diversity may be a conserved mechanism across organisms.

**Rangel-Lynch, Megan**

University of Oregon

Research Mentor(s): Sarah Wald

Poster

### **Community Engagement in National Forest Management Planning: An Analysis of Revised Forest Plans**

Mainstream environmental movements have been entrenched in settler colonialist ideologies, with white, wealthy individuals considered the only legitimate environmental stakeholders. Currently, there is a need for land management to continue in a way that respects tribal sovereignty and engages communities of color, whose claims to public lands have been marginalized or erased. The research presented examines how the forest service (FS) has sought to engage stakeholders during forest plan revision processes and explores the extent the FS employed tactics engaging historically underrepresented communities and tribal nations. This is the result of a community-engaged process focused on qualitative analysis of publicly-available documents from Forest Plan revisions. It was determined the FS was effective in making available a variety of opportunities for those typically engaged in land management, but there is room to improve in ensuring tactics meaningfully involve a diverse set of stakeholders. As the FS works to provide a greater array of tactics, they must continue to employ a range, as some tactics are not accessible to all populations and certain tactics are more effective in engaging underrepresented groups. Limited tactics were employed beyond the legal requirement to consult Tribes, meaning there is the ability to ensure more meaningful inclusion of Tribes within existing engagement tactics, alongside the need to consider shifting control to be based in comanagement.

**Reed, Aaralyn**

University of Oregon

Research Mentor(s): Theresa May, Marta Clifford

Creative Work

### **Embodied Indigenous Research: *Pocahontas and the Blue Spots***

For the undergraduate research symposium, I, along with three co-presenters, am performing a staged reading of the play, *Princess Pocahontas and the Blue Spots* by the Indigenous dramatist, Monique Mojica. The materials that we will be using are the script, the performance space, and fabric and instruments. Our methods involve devised movement, research, and connection with my fellow

actors to strengthen the message of the play.

The subject matter is *Princess Pocahontas and the Blue Spots* and the struggles faced by Native women through colonialism. Throughout the play, there are 13 transformations that a combination of our four actors will play. These transformations both seriously and satirically explore the truths of the Native woman's experience and focus on topics including the loss of identity, stereotypes, and exploitation. Given the subject matter, we approached the script with intention, knowing our actions represent the experiences of Native women who have been silenced for far too long. As women-identifying artists, POC, and allies, our connection to this piece is deeply personal and the weight of this piece is important to us. Therefore, through our exploration and research of devised movement and our connection with each other, we aim to create a performance that not only honors these women but also creates a space for understanding. With *Princess Pocahontas and the Blue Spots*, we hope to inspire others to join us in this fight for justice and equality.

**Repp, Tripp**

**University of Oregon**

**Research Mentor(s): Chantelle Russel**

**Oral Session**

### **Increase Community for First Year Students; The Value and the Methods**

Academic Residential Communities (ARCs) are a proven way to increase a sense of belonging, build relationships and improve one's well-being. As members of Thrive; an ARC here at UO, we have noticed these effects first hand and how positive an impact joining an ARC has been. However, during conversations with students on campus who are not involved in ARCs, we frequently encounter shared themes of loneliness and disconnection. Some students not in ARCs don't even know their next door neighbor. This has prompted us to find and promote strategies to enhance the community experience and well being of students who are not a part of ARC's. The University of Oregon website states that "About 25 percent of incoming freshmen join one of the 15 ARCs at the UO," this means three out of every four students are left to navigate an entirely new environment on their own. We talked with faculty and students along with using research articles to figure out methods for improving a feeling of community. Through research we found that students can increase their sense of belonging and happiness by starting conversations and getting involved in campus activities. This is particularly important for those not in ARCs because we all have a psychological need for belonging and all students should know how they can cultivate community while in college.

**Resnick, Carmen**

University of Oregon

Research Mentor(s): Calin Plesa, Samuel Hinton

Oral Session | Poster

## **Mapping the Sequence-Function Landscape for Antibiotic Resistance in the DHFR Family**

Co-Author(s): Samuel Hinton, Calin Plesa

Dihydrofolate reductase (DHFR) is an essential enzyme in folic acid synthesis and has been the subject of intense study in recent decades, with attention primarily on DHFR proteins from a narrow group of organisms and mutants. In this study we focus on the ability of a library of DHFR homologs and mutants to both rescue metabolic function and tolerate treatment against the antibiotic trimethoprim, which will allow us to understand how antibiotic resistance emerges given many evolutionarily divergent starting points. Changes in the mutational landscape of DHFR allows for varying survival rates in the presence of antibiotic inhibitors. We carry out a broad mutational scan using a library of DHFR homologs and synthesized using DropSynth gene synthesis. Variant fitness is determined in a multiplex survival assay in an *E. coli*  $\Delta$ FolA $\Delta$ ThyA knockout strain which allows conditional selection dependent on external supplementation.

We have collected quantitative fitness data on 996 homologs and 22,483 mutants of the DHFR gene based on activity both in the presence and absence of inhibitors, in order to reveal sequence-function relationships and understand how correlations between the fitness landscapes vary as a function of evolutionary distance between homologs. This data can be applied towards the development of narrow-spectrum and targeted antibiotics and mitigation of resistance through understanding the sequence-function relationships which drive antibiotic resistance.

**Rethwill, Luke**

Umpqua Community College

Research Mentor(s): Sean Breslin

Poster

## **Reliance of Oscillation on Catalyst and Reagent Concentrations in the Belousov-Zhabotinsky Reaction**

Our study aimed to investigate the condition dependence of chemical oscillations in the Belousov-Zhabotinsky (BZ) reaction by manipulating the catalyst and concentration of reagents. The primary

objective was to explore how varying the catalyst and reagent concentrations can modulate the chemical oscillations in the BZ reaction. The methods used involved manipulation of catalyst and reagent concentrations and observing the resulting oscillatory behavior of the system. The study aimed to reveal insights into the mechanisms behind these condition-driven oscillations and to demonstrate that the behavior of the BZ reaction can be controlled and manipulated by varying its conditions. The findings could have implications for the development of new chemical systems that exhibit oscillatory behavior and may open up new opportunities for exploring the dynamics of non-equilibrium or oscillatory chemical systems. Overall, the study highlights the potential for manipulating chemical reactions to control their behavior and underscores the need for further research in this area.

**Reynolds, Kate**

**University of Oregon**

**Research Mentor(s): Leslie McLees**

**Poster**

### **Green Colonialism within West Bank Za'atar Regulation Narratives**

In 1977, the Israeli Ministry of Agriculture declared wild za'atar a protected plant in Israel, strictly regulating its harvesting. The criminalization of za'atar harvesting has continued to be enforced in Israel and within occupied territories of the West Bank by the Israeli Nature and Parks Association (INPA). The enforcement has disproportionately affected Palestinians, leading to debates about the policy's motivations and efficacy. The goal of this research is to understand the main themes of this debate through a lens of political ecology by isolating and analyzing narratives from the Israeli government and INPA, and from Palestinian foragers and scholars regarding the za'atar regulation and its continued enforcement. I perform a thematic analysis of the regulation, letters, articles, webpages, and a film from the two different narrative perspectives. The concept of green colonialism, which refers to the use of environmental conservation and protection to mask or serve colonial ends, is applied to these themes (Sasa, G. 2022). The INPA emphasizes za'atar conservation as its sole motivation, while the Palestinian narrative emphasizes the context of conflict and seemingly accuses the Israeli government of green colonialism. Joint Israeli-Palestinian efforts to address conservation in the West Bank are highlighted, and the importance of analyzing environmental conservation regulations to ensure efficacy and consideration of stakeholders is emphasized.

**Richardson, Isaac**

University of Oregon

Research Mentor(s): Celena Simpson

Poster

### **Has being at the UO changed me?**

My poster showcases my art, all captured using a simple phone camera. I didn't have any fancy equipment or training, but what mattered most was that I was able to capture moments where I felt happy and content. Photography wasn't something I pursued seriously, but I did my best to capture moments that brought me joy. When I moved to Oregon, where it rains frequently, I found myself spending more time indoors. But I realized that I wanted to explore and be more social. That's when I began taking my camera with me on my adventures, forcing myself to be more outgoing and explore the world around me. For me, the message behind my art is about the importance of embracing change. We often get comfortable in our routines and the familiar, but it's essential to challenge ourselves and step out of our comfort zones. I found that by pushing myself to be more social and explore new places, I was able to grow as a person and discover new things that brought me joy.

While I may not consider myself a professional photographer, my passion for capturing moments of joy and beauty is what drives me. I hope my art inspires others to embrace change, explore the world around them, and find joy in the simple moments of life.

**Richbourg, Alissa**

University of Oregon

Research Mentor(s): Molly Keogh

Poster

### **Impacts of Long-Term Turbidity Trends on Eelgrass Decline in the Coos Estuary**

Eelgrass plays an essential role in marine ecosystems by providing shelter for juvenile organisms, acting as spawning and foraging grounds, and reducing erosion through sediment stabilization. Eelgrass abundance in South Slough, an arm of the Coos Estuary, declined rapidly from 2015-2017, likely due to local warming from a marine heatwave and El Niño events. Increased turbidity during these years may have accelerated the process, as high sediment loads block sunlight needed for photosynthesis. We used data from long-term monitoring stations to examine turbidity, precipitation, river discharge, and water temperature trends at three locations in South Slough to better understand the eelgrass collapse. Annual average turbidity over a 10-year period (2012-2021) was

used to calculate the percent of time that the turbidity was above a stressful threshold of 20 NTU. We found that Winchester Arm, the site furthest up the estuary, spent an increased percent of time above the stress threshold after 2016 (20%) than it did pre-collapse (8%). Sites closer to the estuary mouth experienced less stressful turbidity conditions, with percentages slightly lower after 2016 (2%) than they were pre-collapse (8%). Our results also indicated that turbidity levels at Winchester Arm have remained elevated since 2014, which may suggest that this is a permanent change. These findings may be applied to eelgrass recovery efforts to determine locations for eelgrass restoration in lower-stress environments.

**Robinson, Cash**

University of Oregon

Research Mentor(s): Kait Leggett, Lowell Bowditch

Creative Work

**On Stillness**

Jack Kerouac wrote in his novel *Dharma Bums*, “One day I will find the right words, and they will be simple.” I agree. I’ve become increasingly aware of the feeling of quiet stillness as it pops up in my day-to-day, and I’ve become even more aware of my inability to express that stillness on the page. In my poetry, I am searching for the right words to describe this stillness. I often address locations where I have found these moments of peace by treating these locations as the inspiration for the words and thoughts that come after. These locations range from the Texas Hill country with its Oak and Limestone to the Cascades, and their chossy peaks or the innumerable rest stops I’ve known in between. For the time, I feel drawn to write, and while that is the case, I try to show the reader times in my own life when I have found stillness that they might find in their own.

**Rosales Suarez, Azusena**

University of Oregon

Research Mentor(s): Devin Grammon

Oral Session | Poster

**An Analysis of the Impact of English-to-Spanish Signage Translations in Downtown Eugene, Oregon.**

The translations on signage in downtown Eugene, Oregon are reasonably good but could benefit from more accuracy and consistency. It is essential to understand that translations are not just about

word-for-word substitution, but thorough understanding of the text, the target audience, and the context where the message is displayed. Eugene has a substantial number of community members that are Spanish speakers, yet the signage representation is mostly in English and those that have translations do not embody accuracy. Through this oral presentation we will provide an analysis of data collected in 2022 of the linguistic landscape of downtown Eugene. Where it was possible to learn about the signage in the public space and what translations are currently being used in order to complete a preliminary analysis of the ethnolinguistic vitality of Spanish. Based on this analysis, a set of bilingual signs were selected for further evaluation. These signs were presented to Spanish-speaking individuals through one-on-one interviews. During these interviews, we learned about their opinion on the translations, their level of understanding, and their preference for the use of Spanish or English. This research will help promote cultural diversity and linguistic inclusiveness in downtown Eugene, creating a more welcoming and inclusive environment for Spanish-speaking residents and visitors alike.

**Rose, Alexa**

**University of Oregon**

**Research Mentor(s): Matthias Vogel, Monika Fischer**

**Poster**

### **A Population Divided is a Country Divided: The Volatile Ethnic and Socioeconomic Situation in Cyprus**

Until recently, Cyprus has been a nation under occupation by a foreign power. Independence from the Ottoman Empire in 1960 led to establishing Cyprus as a federated state, with the ethnically Turkish portion becoming a unique region. Turkey's subsequent invasion of the island following a military coup laid the foundation for what would become the Turkish Republic of Cyprus. The role of ethnic and socioeconomic conflicts in the international community's refusal to recognize the Turkish Republic of Cyprus as a sovereign nation is a pressing issue. This study aims to analyze the ethnic and social differences of Greek and Turkish Cypriots, investigating the effect these factors may have on the separation of the nation. Incorporating evidence from case studies, peace and diplomatic negotiations, census data, and ethnic narratives, this study demonstrates that diverging socio-political identities remain instrumental in reinforcing opposition towards reunification efforts. Possible reunification or continued separation scenarios require a deeper understanding of the conflict, and potential solutions can be achieved. Although it is unlikely the United Nations would recognize Turkish Cypriots as a separate entity from its Greek counterpart, it is to be believed that

looking into all options and situations would have Cyprus's best interest considering its history and socioeconomic standings within its people.

**Rose, Amanda**

Visiting McNair Scholar | Southern Oregon University

Research Mentor(s): E. Jamie Trammell, Ph.D.

Works in Progress: Lightning Rounds (must be in-person)

**A Systematic Review on Collaborative Ecosystem Restoration in the U.S.  
by Tribal and non-Tribal Partners**

A systematic review of published literature on collaborative ecosystem restoration by Tribal and non-Tribal partners, with the intention of developing indicators to inform a policy paper on best practices.

**Rosenthal, Walker**

University of Oregon

Research Mentor(s): Kylie Williams

Oral Session | Poster

**Beneficial Effects of Mechanical Stimulus Through Ambulatory Loading in Rodent  
Femoral Sub-Critical**

Severe bone fractures devastate patients and clinicians due to poor functional recovery following surgical intervention. Current post-operative rehabilitation protocols are often conservative with long periods of non-loading. Our lab has previously studied the effects of ambulatory mechanical loading on a critically-sized segmental bone defect stabilized by either stiff or compliant internal plates 1,2. These studies found beneficial bone healing effects with mechanical stimulus 1,2. To further discern the effects of rehabilitation on bone healing a sub-critical defect without biological therapies was introduced in a pre-clinical rodent model. Resistance rehabilitation was enabled by housing animals with a running wheel system capable of applying resistance. To better understand the local mechanical environment, wireless, implantable strain sensors were integrated into the internal fixation plate, allowing for real-time strain measurements. Subjects that underwent resistance rehabilitation experienced a 44% increase in average local strains compared to subjects without resistance rehabilitation. Micro-CT scans revealed improved bridging rates and increased bone volume compared to sedentary counterparts (22.00 mm<sup>3</sup> ± 4.257 resistance rehab vs 8.001 mm<sup>3</sup> ± 2.266 sedentary). The resistance group demonstrated mechanical properties that matched their

intact femurs which highlights the beneficial effect of early resistance running after a sub-critical segmental bone defect.

**Rozendal, Tanner**

University of Oregon

Research Mentor(s): Professor Dr. Ulrick Casimir

Oral Session

### **Conflict Prevention: Recognizing the continuum between honor-based and institutionalized systems**

Previous anthropological research separated honor and non-honor cultures according to their unique social norms. While honor-based cultures not only accept but demand revenge, non-honor cultures rely on institutionalized systems to maintain order, thereby rejecting acts of revenge as primitive behavior. However, this binary interpretation, typical of ethnocentric Western cultures, leaves a society prone to violence and civil defiance. In actuality, each system subtly influences the other, creating an important cultural continuum often overlooked by legislators. To investigate this phenomenon, I employed a cultural perspective to analyze revenge in Thomas Kyd's 1587 play *The Spanish Tragedy*. Using the Elizabethan era as a model, Kyd separates the social norms of honor and non-honor cultures, suggesting both institutionalized systems and personal revenge, in isolation, fail to preserve tranquility. Therefore, respecting cultural diversity and recognizing this cultural continuum is advised to prevent conflict, maintain civil compliance, and encourage social cohesion in Western society. Building upon these findings, future research should pinpoint legislation that recognizes the values of both honor-based and institutionalized systems to define justice.

**Rubesh, Danna**

University of Oregon

Research Mentor(s): Matthias Vogel, Monika Fischer

Poster

### **International Systems of Discrimination through Incarceration**

This project aims to investigate the patterns that lie within the systems of incarceration worldwide, arguing that they are inherently discriminatory and have historically been used to target racial and ethnic minorities. The demographic statistics of the population of three separate countries, the United States, Canada, and Norway, will each be individually analyzed and compared to the

demographics of the prison population of each country in order to determine any patterns of discrepancies or biases present within the system of incarceration internationally. Through our analysis, we have found that, in each country, racial and ethnic minorities are disproportionately represented in prisons, exposing the failures of international governments to uphold the civil rights and liberties of all of their citizens, perpetuating a system that targets and ostracizes already marginalized communities. Although the extent of dehumanization and discriminatory practices within penitentiaries varies in each country, the disproportionate representation of racial and ethnic minorities constitutes a violation of their right to freedom from discrimination. Therefore, we conclude that the system of incarceration itself is inherently flawed and perpetuates discriminatory practices across international borders.

**Rumack, Amanda**

**University of Oregon**

**Research Mentor(s): Chantelle Russell, Mariko Lin**

**Oral Session**

### **Facilitating Peer-Led Events to Enhance College Student Conversation Surrounding Mental Health**

Mental health disorders are quite common among college students worldwide, including at the University of Oregon. The following statistic supports that, in 2022, it was found that college students across the nation struggle with mental health; that is 35% of students were diagnosed with anxiety and 27% with depression (College Student Mental Health Statistics). If the conversation around mental health improves on campus, then students will feel more comfortable decreasing the stigma around seeking help for their well-being. We have interviewed University of Oregon faculty and staff, in addition to accessing articles and personal experiences regarding mental health. These all account for primary and secondary sources in our project. Mariko Lin, from the University of Oregon's Counseling Center, specifically addressed that, relating to positive mental health, 25% of students at UO in 2021 felt like they had a positive mental health, compared to 38% nationally (The Healthy Minds Network). In response to this, two potential methods for breaking the stigma around mental health include a mandatory peer-led presentation similar to Get Explicit and a weekly seminar held by graduate students for undergraduates. Ultimately, through more peer-led events, such as the ones listed above, the conversation surrounding mental health on campus will increase as students learn how to have a positive relationship with their health and struggles.

**Salgado, Kayley**

University of Oregon

Research Mentor(s): Dr. Caitlyn Fausey

Oral Session

## **Interactive Communication and Development of Autistic and Neurotypical Children in Preschools**

Social interaction in the natural environment during the preschool years is essential to the development of various speech, behavioral, and social skills. It is often the case that autistic children and neurotypical children are enrolled in the same preschool classes with little to no additional interventionist supports. Current research on child development in relation to social interactions in naturalistic preschool contexts will be synthesized in this work-in-progress literature review. Social interactions, language experiences, and inclusiveness in the classroom as these topics relate to child cognitive development will be addressed. Relevant interventions and supports will also briefly be discussed. This research attempts to further elucidate the experience of children with autism spectrum disorder in mainstream preschool classes.

**Salners, Riley**

University of Oregon

Research Mentor(s): Monika Fischer, Matthias Vogel

Poster

## **Pakistan's plan to revitalize their country through reforestation**

We are going to look into the Pakistani Ministry of Climate Changes' nationwide reforestation program called the '10 billion tree tsunami.' The initiative is a government funded environmental restoration project, which aims at planting 10 billion trees by 2023 to combat the environmental effects of climate change and global warming in the arid plains at the base of the Himalayas. Our theory is that the rising temperature of the Earth is drastically affecting the climate, especially in developing third world countries such as Pakistan. We hypothesize that the reforestation program will aid in the revitalization of the forests all over Pakistan. Its execution has many purposes including helping strengthen the mountains with the strong roots of trees as well as using the trees for stabilizing the land and helping prevent landslides. We can conclude that this project will be beneficial for Pakistan's future because it has created green spaces in a once dusty landscape. This example of government funded nationwide reforestation can be seen as environmentally beneficial

to both the urban and rural communities of Pakistan. This community based model of reforestation allows for countries around the globe to follow in these footsteps, improving their overall environmental impact.

**Sam, Nikki**

University of Oregon

Research Mentor(s): Peg Boulay

Poster

### **Grizzly Bear Recovery in the Greater Yellowstone Ecosystem**

The grizzly bear (*Ursus arctos horribilis*) is an apex predator in the Greater Yellowstone Ecosystem (GYE) whose role assists with the regulation of over-grazing from ungulate populations while also benefiting vegetation through seed dispersal. Grizzly bears face numerous issues that negatively affect their species. Most of these are anthropogenically caused including habitat loss and hunting. In the GYE, grizzly bear populations have suffered massive population loss following park management changes in 1967 that resulted in increased conflicts with humans. Grizzly populations have diminished down to about 50% of their historic numbers, however following the efforts of its Recovery Plan implemented and revised by the Department of Fish and Wildlife, the exacerbated population of grizzly bears is slowly reestablishing itself in the Greater Yellowstone area. The reintroduction of grizzly bears in the GYE remains controversial due to misconceptions and opinions relating to the safety of locals near Yellowstone National Park and surrounding human communities. As an integral and historic species to the region, grizzly bears remain prominent.

**Sanchez-Reddick, Carmen**

University of Oregon

Research Mentor(s): Kelly Sutherland, Mark Blaine

Poster

### **Sharing Zooplankton Through Multi-Media Communications: The Product of An Interdisciplinary Science**

A multi-media communications campaign was developed as a product of an interdisciplinary science communication internship at the University of Oregon. The goal of the internship was to translate marine research and the experiences of researchers at sea in an engaging way to new audiences. This campaign included narrative storytelling about life at sea and the interesting organisms

encountered, photography of time-sensitive analyses and on-deck operations, and an identification guide meant to introduce zooplankton to future research assistants and interns. One key takeaway is the importance of connecting journalists and scientists much earlier in the scientific process. Allocating time for a science communication student to learn about and capture the research in real time aided in the creation of more engaging and accurate media and was to the benefit of audiences and researchers alike.

**Sanchez-Reddick, Carmen**

University of Oregon

Research Mentor(s): Deb Morrison, Dan Morrison

Creative Work

### **The Path of the Salmon: The story of a community protecting salmon habitat and of salmon supporting a community**

In Cordova Alaska, salmon are the lifeblood of the community. Culturally, nearly half of all households are represented in the commercial fishing industry meaning that nearly everyone has a personal connection to salmon. And economically, the yearly influxes of commercial fishers, tourists, scientists, and the seasonally employed provide a necessary financial boost. For these reasons, and for the desire to protect wildlife, the US Forest Service is dedicated to maintaining salmon spawning habitat in the area. To explore these relationships, the salmon who need the forest service and the community who needs the salmon, two artistic pieces were created. First, video recorded interviews with US Forest Service employees detail their efforts to maintain access to spawning sites using culvert. Second, a paper mache sculpture of a salmon made of materials collected in Cordova, including maps, event flyers, and business cards, symbolizes how the salmon are the underpinnings of the town.

**Sary, Noah**

University of Oregon

Research Mentor(s): Peg Boulay, Dhruv Modi

Oral Session

### **Monitoring Fuel and Vegetation Characteristics of Thurston Hills Natural Area**

Through using our protocol, we aim to provide data on fuel loads in Thurston Hills Natural Area (THNA) that can be used to inform future management. THNA is located at the wildland urban interface

(WUI)- an area between unoccupied land and human development, meaning it is a critical site for fuel load assessment and reduction. This is important because it will help preserve historic oak savanna habitat, which is critical to plants, animal and avian species diversity in the Willamette Valley. Oak savanna provides both suitable habitat for wildlife and reduces the risk of wildfire for nearby inhabitants. Since fire does not spread as fast or burn as intensely as it does in conifer forest, protected oak savanna habitat in THNA will act as a buffer for the nearby community in the event of a wildfire. THNA also has outdoor recreational opportunities for inhabitants of Lane County. THNA offers a unique model of mixed land use, providing outdoor recreation and preserving oak savanna habitat. In order to support THNA in continuing its wildlife preservation and outdoor recreation use, we will assess fuel loading, species diversity, and canopy cover at the site.

**Scheer, Raegan**

**University of Oregon**

**Research Mentor: Alexander Dracobly**

**Poster**

### **The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry— A History of The First World War**

“The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War” is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Scherer, Emily**

University of Oregon

Research Mentor(s): Hilary Rose Dawson, Lucas Silva

Oral Session

### **Watching dirt breathe: Enhanced silicate weathering results in rapid soil carbon gain**

Co-Author(s): Hilary Rose Dawson, Emily Huckstead, Lucas Silva

As climate change further degrades environmental well-being, we must continue searching for solutions to the global problem. Enhanced silicate weathering (ESW) is a strategy that uses rock weathering processes to convert atmospheric CO<sub>2</sub> into soil carbon. In ESW, finely ground silicate rocks are mixed with soil, initiating reactions between CO<sub>2</sub>, minerals, and water that form inorganic carbon more stable than the carbon in living tissues. However, a fertilizing effect may raise soil respiration rates, releasing CO<sub>2</sub> into the air. Our research tests how soil carbon stocks and fluxes respond to ESW in the presence of greenhouse-potted plants. We hypothesized that ESW would increase soil carbon and pH while decreasing carbon efflux as CO<sub>2</sub> reacts with the silicates. To test this theory, we potted five plant species in soils mixed with none, low, or high concentrations of basalt dust. We measured respiration over 16 weeks using a CO<sub>2</sub> flux chamber. At the end of the experiment, we analyzed the carbon and pH in each pot to compare with baseline samples. Soils in the high basalt treatment gained 131% more carbon than those without basalt. The high treatment also had significantly lower respiration than the none and low treatments. Significant pH increases in high basalt soils indicate that the new carbon is inorganic. The results of this study provide a basis for future research to test ESW in the field before agricultural and restoration projects adopt it as a natural climate solution.

**Scherer, Emily**

University of Oregon

Research Mentor(s): Hilary Rose Dawson, Lucas Silva

Poster

### **Watching dirt breathe: Enhanced silicate weathering results in rapid soil carbon gain**

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**Schering, Maisey**

**University of Oregon**

**Research Mentor(s): Daniel Grimes, Katie Fisher**

**Oral Session**

### **The genetics of left-right patterning: a two-part approach to two-sidedness**

**Co-Author(s): Katie Fisher, Daniel Grimes**

The breaking of left-right (L-R) symmetry in early development is a key determinant of organ placement in animals. In zebrafish, this process is initiated in Kupffer's vesicle (KV). Within KV an asymmetric fluid flow is produced. This asymmetric flow is sensed, leading to asymmetric repression of the mRNA, *dand5*, triggering the asymmetrical development of emerging organs, such as the heart. Failure of this pathway results in developmental diseases such as congenital heart disease, and abnormal L-R positioning of the organs. Understanding the mechanisms by which fluid flow signals control asymmetry is essential for understanding how to treat these diseases. How flow is sensed in KV is not currently understood. The goal of this project was to identify and characterize novel genes related to left-right patterning. To investigate this, we performed a CRISPR/Cas9 screen across 90 novel candidate genes with a possible role in L-R asymmetry regulation based on their expression in KV. This screen yielded several promising candidates, which were raised into homozygous lines, ultimately yielding unexpected results. A final gene was brought to light through collaboration with

a human genetics lab which found instances of dextrocardia (right-sided hearts) within a human population. Characterization of this gene in zebrafish has yielded similar L-R patterning issues. Altogether, my work has discovered new genes required for L-R asymmetry with implications for understanding human disease.

**Schmitt, Kyla**

**University of Oregon**

**Research Mentor(s): Peg Boulay**

**Poster**

### **Population Characteristics of *Pacifastacus Leniusculus* (Dana 1852) in Tryon Creek**

*Pacifastacus leniusculus* (Dana 1852) is a freshwater astacid native to the Columbia River basin and widely introduced throughout Europe. Though *P. leniusculus* populations have been well-studied abroad, where their presence is of critical concern, far fewer publications have examined these crayfish within their native range, where they play keystone roles in freshwater ecosystems but risk out-competition by exotic crayfish. The goal of this study was to characterize the morphology and behavior of *P. leniusculus* populations in a midsize Oregon stream—Tryon Creek—and the surrounding habitat conditions via surveying in June–September 2022. The surveys confirmed that Tryon Creek remained pre-exotic-invasion and had an average *P. leniusculus* density of 0.08 m<sup>-2</sup>. The two-year *P. leniusculus* survivorship approximation was 46%, though the rate of injury was not low: there was approximately one injured appendage documented per every two crayfish. Branchiobdellidan infestation was geographically widespread and more common than not in crayfish larger than 68 cm TL; coloration was also positively associated with *P. leniusculus* size/maturity ( $p < 0.01$ ). Through behavioral surveying/analysis, crayfish were observed struggling to navigate culverts, and juveniles tended to reside gregariously ( $p < 0.01$ ).

**Schow, Mika**

University of Oregon

Research Mentor(s): Joe Lowndes, Anna Carroll

Oral Session

### **The Politics of Matcha: Tracing the transculturation of tangible Japanese heritage in the US**

Matcha has become America's trendiest beverage, taking over coffee shops around the country. Yet, it started its life as a spiritual beverage consumed by Buddhist monks in ancient China and Japan. The theory of transculturation describes the process of cultural domination, merging, and loss in post-colonial settings. As a Japanese "tangible heritage" abroad, matcha in the US from 2005-current is a case that transculturation can be applied to using a deductive research approach. Process tracing this American transformation of matcha reveals its use as a political-economic tool and cultural vehicle contributing to complex power dynamics between US-Japan relations and Japanese Americans. Separate from interactions between these states are Japanese Americans who do not gain from Japanese matcha exportation nor the American commodification of their tangible heritage. These findings address Japanese misrepresentation in the American imaginary and its damaging implications for Japanese American identity, bridging the gap between literature on US-Japan economy and Japanese American Studies.

**Schreck, Aidan**

University of Oregon

Research Mentor(s): Ulrick Casimir

Oral Session

### **Understanding the Cultural Context of Honor-Based Revenge**

Honor is a powerful motive for retribution across a multitude of cultures, but the way people conduct honor-based revenge depends on the specific culture in which they reside. I have synthesized two works of analysis, one by John Thrasher and Toby Handfield on the motivations for honor violence and another by Tamler Sommers discussing how attitudes toward honor-based revenge differ by culture. In so doing, I aim to illustrate how society shapes every act of honor violence. This form of violence deters and punishes offenses against one's honor. Additionally, in the intensity of the act, it sends a forceful message to the community. What signals do acts of honor violence send, and who are the intended recipients? How do the motivations for honor-based revenge differ when committed against

a relative versus a stranger? How does honor violence occur in societies that emphasize personal revenge for an insult versus those that condemn it? If signaling is a key motivation for honor violence, what form does signaling take when revenge is committed in private? I use John Steinbeck's short story *The Murder* as a literary example of the cultural influence on honor-based vengeance. My analysis facilitates a more comprehensive understanding of revenge and honor in societies around the world. Considering the cultural specificity of revenge also sheds light on honor violence in narrative by elucidating characters' motivations.

**Schreiner, Caitlyn**

**University of Oregon**

**Research Mentor(s): Aaron Gullickson**

**Poster**

### **Mental Health Effects of Sports Participation Among Transgender Youth**

It is well known that transgender youth are at increased risk for poor mental health. In this paper, I use data from the 2017 and 2019 Youth Risk Behavior Surveillance System (YRBSS) survey to examine if team sports participation can serve as a buffer against poor mental health among transgender youth. Specifically, I ask, how does team sports participation impact depression and suicidality in transgender youth compared to cisgender youth? In line with Hendricks and Testa's gender minority stress framework, findings show that trans and gender unsure youth have significantly higher rates of depression and suicidality than their cisgender peers. Participation in team sports was associated with significantly decreased odds of depression for all gender groups, though less so for trans youth. However, team sports participation was associated with significantly increased odds of attempting suicide for trans and gender unsure youth, but had no significant association for cisgender youth. Based on Durkheim's societal integration model, this could be due to team sports not providing the same social connection and integration for transgender youth as they do for cisgender youth, but more research should be done exploring the experiences of transgender athletes to truly understand what is happening. The results from this study begin to showcase the need for increased inclusiveness for transgender youth in sports, without barriers and people arguing over their right to exist.

**Seah, Theo**

University of Oregon

Research Mentor(s): Kylie Williams

Oral Session | Poster

## **Beneficial Effects of Mechanical Stimulus Through Ambulatory Loading in Rodent Femoral Sub-Critical**

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

Severe bone fractures devastate patients and clinicians due to poor functional recovery following surgical intervention. Current post-operative rehabilitation protocols are often conservative with long periods of non-loading. Our lab has previously studied the effects of ambulatory mechanical loading on a critically-sized segmental bone defect stabilized by either stiff or compliant internal plates 1,2. These studies found beneficial bone healing effects with mechanical stimulus 1,2. To further discern the effects of rehabilitation on bone healing a sub-critical defect without biological therapies was introduced in a pre-clinical rodent model. Resistance rehabilitation was enabled by housing animals with a running wheel system capable of applying resistance. To better understand the local mechanical environment, wireless, implantable strain sensors were integrated into the internal fixation plate, allowing for real-time strain measurements. Subjects that underwent resistance rehabilitation experienced a 44% increase in average local strains compared to subjects without resistance rehabilitation. Micro-CT scans revealed improved bridging rates and increased bone volume compared to sedentary counterparts (22.00 mm<sup>3</sup> ± 4.257 resistance rehab vs 8.001 mm<sup>3</sup> ± 2.266 sedentary). The resistance group demonstrated mechanical properties that matched their intact femurs which highlights the beneficial effect of early resistance running after a sub-critical segmental bone defect.

**Segesta, Sophia**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

## **A reading from *Nails***

This excerpt is from my short stories about young adults Ash and Avery, who are thrust into a world eager to exploit them, and wind up dependent on each other for survival but unable to make each other happy. Ash's mom molested her, so she threw herself into hookups with older strangers as self-

imposed exposure therapy to desensitize herself to sex and assert her power the one way she could without getting emotionally attached. Her friend Avery spent years supervising her every fling, hoping he could protect her against violent strangers. And against his will, Avery's infatuation with Ash grew alongside his resentment. The night Ash intentionally hooked up with the spitting image of her own mother, their tensions boiled over. Avery refused to condone this specific fling, Ash refuses to consider the deeper meanings behind her choice and demands to know why Avery stuck with her, and he reveals he-like everyone else in Ash's life-wants to fuck her. Ash's last drop of self-preservation evaporates, shattered by the realization that her body's all she's worth. So she leaves Avery, and knocks on the door of the hotel room of the woman who looks like her mom.

My usual pretty prose is absent. The words are blunt, stripped bare-the horror is in plain sight. Like the woman, the prose states its intentions upfront, offering little reflection as Ash forces herself into her body to dissociate from her brain.

**Seits, Olivia**

**University of Oregon**

**Research Mentor(s): Dr. Sarah D. Wald, Madison Fowler-Niblock**

**Poster**

### **Environmental Injustice in a Fantasy World: Colonial Hegemony in *Avatar: The Last Airbender***

*Avatar: The Last Airbender* is a fantasy animation that revolutionized cartoons for its beautifully crafted storytelling of adult themes, including genocide, colonialism, and war. The Asian-influenced Nickelodeon television show encompasses a story of the divide between four nations who wield the ability to control their nation's given element of nature. ATLA emphasizes the need for a balanced world between humans and nature by discussing environmental injustice's role in colonialism's hierarchical structure as a tool to exude dominant rulings upon other life. I make this argument through a reading of the series, enhanced by Xine Yao's scholarship of the cartoon and Noël Sturgeon's analysis of environmentalism in popular culture. Sturgeon and Yao's work intertwines with ATLA's message of rebuilding balance within nature to accentuate the environmental injustices that manifest upon the rise of colonialistic influences, thus creating divides between people bound by powerful management.

**Senatori, Isabella**

University of Oregon

Research Mentor(s): Steven Turrill

Creative Work

***Fine Art and Cat Diapers***

My piece of short fiction, *Fine Art and Cat Diapers*, tells the story of an everyday-man named Brian who walks the line of hope and humiliation. The story begins in a desperate place at Brian's apartment where we learn that his ex-wife has served him divorce papers and a lawsuit, and left Brian with an elderly cat named Quimby who can't control his bladder. Brian's character is angry, depressed, self-conscious, broke, and a little misogynistic. In other words, Brian is a flawed person trying to figure things out. While at work, he meets a woman who offers him a side-job that could turn his luck around, but this sets in motion a series of events that challenge and ultimately dash Brian's newfound hope. *Fine Art and Cat Diapers* is a win-lose-lose-win-lose kind of story that explores the horrible and hilarious for a very human character.

**Serrano, Madi**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

**The Commonplace Book of Isabella Thorpe: An Artistic Investigation Into Commonplacing**

Isabella Thorpe in Jane Austen's *Northanger Abbey* is a misunderstood and complicated character that is begging to be explored separately from her counterpart, Catherine Morland. In this project for Professor Cheng's Book Love course at the University of Oregon, I will be diving deeper into the characterization of Isabella in Austen's novel and creating a commonplace book for her based off of the course readings such as *The Ballad of Black Tom* by Victor LaValle and special collection scrapbooks in the UO Knight Library. The pictures and quotes that I include for her will be part of my character analysis and help me to explain the actions and hidden attributes of Isabella that are overshadowed by Catherine's character development. Overall my character analysis and imagined commonplace book for Isabella, will help me describe commonplacing and how this practice is a lens into the character of a person.

**Severson, Bailie**

University of Oregon

Research Mentor(s): Wendy Feng, Katie Lynch

Oral Session

### **Connecting Youth to the Land and Environment: Climate Science Climate Justice**

The greatest threat to our planet is the belief that someone else will save it. In taking action, the Climate Science Climate Justice team of the Environmental Leadership Program demonstrates that environmental education is vital in providing the next generation with skills to address and adapt to the impacts of climate change. Through culturally aware and diverse pedagogy, our team connects middle school students to hands-on outdoor experiences at H.J. Andrews, an experimental old-growth forest located deep in the Cascade mountains. Students are introduced to climate science and evidence of climate change through four investigations: microclimates, tree ID, phenology, and climate justice. Developed by the Environmental Leadership team, these interdisciplinary lessons cover a range of topics, including plant identification, impacts of the changing climate on plants and animals, qualities and significance of an old-growth forest ecosystem, development of observational skills, and the intersection of climate change and social justice. Our project exposes students to scientific methods and concepts, developing critical thinking skills, and encouraging them to develop a deeper connection to their surrounding environment while engaging in ideas for how they can participate in creating solutions. By empowering young people to be scientists, the climate team paves the way for future environmental stewardship and takes action against climate change one student at a time.

**Sharpe-Velazquez, Carmen**

University of Oregon

Research Mentor(s): Dominik Fahrner, David Sutherland

Poster

### **Determining the influence of warm ocean waters on terminus ablation at Helheim Glacier, SE Greenland**

Co-Author(s): Dominik Fahrner

The Greenland Ice Sheet is currently losing approximately 270 billion tons of ice mass per year, making it the world's largest source of sea-level rise from melting ice. Previous studies have shown that Greenland's marine terminating glaciers, which have been retreating since the mid-1990s, are

sensitive to warming ocean temperatures. Determining a relationship between ocean temperatures and glacier dynamics is therefore crucial to improve current sea level rise projections. This study aims to establish a relationship between warm ocean waters and ice dynamics at Helheim glacier, a marine terminating glacier in SE Greenland which experiences frequent large calving events. In-fjord ocean temperatures, compiled from various open-source Conductivity-Temperature-Depth data sets, were depth averaged and limited by sill depth. The data was then compared with terminus ablation data taken from remote sensing observations to investigate the relationship between ice dynamics and ocean forcing. The results suggest that over the past decade higher ocean temperatures in the fjord coincide with increased terminus ablation. Linear regression results further support this finding, but also highlight the complex relationship between terminus dynamics and ocean forcing. These findings provide the basis for further examination of the relationship between terminus ablation and warm ocean waters at Greenlandic tidewater glaciers.

**Shea, Leyi**

University of Oregon

Research Mentor(s): Patience Collier

Creative Work

### **Indigenous Sovereignty and *čabid*: Centering Revitalization and Relationality**

While working on this project, I have really felt myself grow alongside it. I had many ideas in mind on how to represent this topic, but was ultimately inspired by my own roots. My grandmother is an amazing basket maker. I know from her that our histories, stories, and relations are often woven into these entities, and this is why I chose to present my own cedar basket to showcase this topic. As Indigenous peoples, we are storytellers, with so many ways to do so. It was very important to me to tell this story in this way because Indigenous methodologies do have the same impact and validity of more Western approaches that are so heavily pushed in academia. Within my cedar basket I tell of the innate and reciprocal relationship our peoples have with Camas, how despite the attempts to tear this relation away, it has only grown stronger and deeper.

I also have an oral reading of the story that is visually held in the basket, because I also wanted to honor the many ways our stories are told. I use poetry in the form of a recipe inspired from *Feeding the People Feeding the Spirit*, by Elise Krohn and Valerie Segrest. I wanted to honor their dedication to food sovereignty and traditions in healing our communities. I think centering work and programs that create and build these revitalization efforts in our communities is vital. I was also heavily inspired by the Native Truths: Our Voices, Our Stories exhibition at the Field Museum in Chicago.

**Sheahan, Sara**

University of Oregon

Research Mentor(s): Claire Herbert

Poster

### **Victim Reparation: the missing link between restorative justice and lower crime rates**

As the incarcerated population continues to grow, it is important that we do what we can to decrease crime rates. This paper looks at different restorative justice courts and seeks to determine their efficacy. It answers the question “What does a restorative justice system look like in practice and which aspects of restorative justice are most effective in reducing crime rates?” To do this, I categorized these courts by how they employ restorative justice practices and compared the property crime rates in the counties they serve to similar counties without a court. I found no significant correlation between crime rates in counties that do have courts and those that do not. I also found that the courts have not implemented all three pillars of restorative justice equally.

**Sheffer, Claire**

University of Oregon

Research Mentor(s): Megan Moerdyk-Schauwecker, Bryan Rebar

Poster

### **Susceptibility of Genetically Diverse *C. elegans* Strains to Amyloid-Beta (1-42) Toxicity**

**Co-Author(s): Megan Moerdyk-Schauwecker, Christine Sedore, Patrick Phillips**

Abundant protein aggregation is a characteristic of aging as well as a diagnostic feature of several aging related diseases such as Alzheimer’s disease (AD) and other dementias. The levels at which protein aggregation occurs and leads to the onset of disease-related symptoms varies significantly between individuals due to genetic and environmental factors. By utilizing *Caenorhabditis elegans*, a model organism for aging-related research, we were able to study how genetic variation impacts both toxic protein aggregation and drug efficacy. This study measured susceptibility to amyloid-beta (1-42) (Aβ1-42), a peptide associated with plaque formation in AD, within a genetically diverse population of *C. elegans* strains. We crossed GMC101, a *C. elegans* transgenic strain expressing the human Aβ1-42 peptide under heat stress conditions, into 12 *C. elegans* strains, resulting in a population that mimics the genetic diversity seen in the human population. Significant differences in Aβ1-42 toxicity

were observed amongst transgenic strains following heat induced paralysis, demonstrating that genetic background influences susceptibility to toxic effects of protein aggregation. Thioflavin T, an anti-protein aggregate drug, had an effect on A $\beta$ 1-42 toxicity within strains. Further phenotyping will provide additional data regarding strain susceptibility. Similarly, molecular genetic research can identify genes modulating A $\beta$ 1-42 toxicity, paving the way for potential medicinal treatments.

**Sherman, Ian**

**University of Oregon**

**Research Mentor(s): James Imamura, Scott Fisher**

**Poster**

### **Measuring the Age and Distance of the Open Star Cluster NGC 753**

The purpose of this study is to estimate the age and distance of an open cluster - New General Catalogue (NGC) 752 - by constructing color-magnitude diagrams in Sloan g, r, and i from data collected at Pine Mountain Observatory (PMO) through the Robbins 0.35m telescope. Stellar properties from the data were measured using Aperture Photometry Tool (APT) and were calibrated through the SIMBAD astronomical database. Isochrone fitting, parameterized from additional literature, was performed in r versus g-r and i versus r-i yielding a [1300] lightyear distance, while approximations of the main-sequence turnoff estimate an age of [2.8] Gyrs. Observation of hypothesized white dwarf stars and blue stragglers within the cluster are inconclusive. This work was a collaboration between students from the University of Oregon and Kobe University in Japan. 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**

**Research Mentor(s): Scott Fisher, James Imamura**

**Poster**

### **Transit Trekking with Photometry: Capturing HD198733b's Transit and Light Curve**

Exoplanets, first discovered in 1992, are planets orbiting other stars. One way to detect an exoplanet is by observing transits, which occur when the planet passes between their star and our line of sight. Our group hypothesized that observing a transit would help us quantitatively understand the

performance and sensitivity of Pine Mountain Observatory's new telescope system. We decided to observe the hot Jupiter exoplanet HD 189733b due to its proximity to Earth and its well documented transit history. A transit can be detected by precisely measuring the brightness of the star-planet system over time. We gathered three hours of images of the target and two reference stars during a known transit event, which has a duration of approximately two hours. We then performed relative photometry on roughly 260 individual images to generate two light curves. To test for a significant difference in the transit and non-transit data, we conducted a T-test. Our T-value confirmed that the data sets were statistically different. With this, we can conclude that our system was able to detect a transit event with a 3% change in brightness of the star-planet system.

**Shewaye, Sarah**

**University of Oregon**

**Research Mentor(s): Monica Fischer, Matthias Vogel**

**Poster**

### **Cultural Genocide Against Uyghurs; An Ethnic Minority Group in China**

The Uyghurs are an ethnic minority, Muslim-majority group of about 12 million people in the Xinjiang region of China. China has violated the human rights of the Uyghur people by restricting religion, re-educating, and even subjecting them to torture, forced labor, and imprisonment. This project will address the issues with the United Nations Security Council and what can be done to put pressure on China and how the US and other Western countries must implement the Uyghur Forced Labor Prevention Act. Overall, the UN Security Council must change the permanent members of the security council to allow for more initiative to be taken towards human rights violations. Currently, there are five permanent member countries in the UN Security Council, which includes the United States, China, Russia, France, and the United Kingdom. Those countries possess veto rights, which makes it hard to pass laws and sanctions that would harm any of the countries. The United Nations Security Council should be reformed and empowered to address issues such as the Uyghurs' human rights crisis and Russia's invasion of Ukraine.

**Shinagawa, Nathan**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Oral Session

### **The Relevance of Smokey the Bear**

In English 335 Inventing Arguments, we have analyzed different types of arguments that have been presented to the general public, and have been used throughout different expertise. Our presentation will take a well known argument and will critically analyze it, dissect it, and evaluate how it stands in today's world. The argument that we've chosen to analyze would be the famous debate of if Smokey the Bear is still relevant, and if they are, how can they apply to children and adults and be represented in the broader field of social media.

**Siegel, Spencer**

University of Oregon

Research Mentor(s): Gabriela Lindberg

Poster

### **Optimization of Oxygen Gradients in 3D-Printed Bone Marrow Models**

Co-Author(s): Vinni Toms, Gabriela Lindberg

Hematopoietic stem cells (HSCs), which reside in the bone marrow, hold incredible potential for modern medicine, due to their ability to differentiate into all the major blood cell types. Traditional 2D studies have highlighted that oxygen gradients in the bone marrow play a critical role in controlling the development of HSCs but, many 3D models tend to overlook these effects. This project aims to modulate spatial oxygen levels within 3D-printed gelatin-based constructs to mimic the bone marrow niche.

Allylated gelatin (GelAGE) was synthesized using previously optimized methods. H-NMR was utilized to quantify allyl-groups. Photocuring was achieved using a thiolated crosslinker and photo-initiator and the resultant gels' physical properties were measured via mass loss and swelling experiments. Oxygen concentration was determined using oxygen detecting films. Extrusion-based 3D-printing was used to spatially pattern GelAGE.

GelAGE functionalization was quantified to 0.71mmol/g of GelAGE and hydrogels displayed an efficient sol fraction and tailorable swelling properties.

Oxygen gradients was found within large fabricated GelAGE hydrogels. Additional structures were also successfully fabricated using 3D-Printing, providing a platform to more precisely control material

barriers and oxygen diffusivity within a 3D-Model.

Future plans involve optimizing 3D-printed architectures to mimic bone marrow niche oxygen levels, as well as including cells to study cellular O<sub>2</sub> consumption.

**Sincuir, Kat**

**University of Oregon**

**Research Mentor(s): Theresa May, Marta Clifford**

**Creative Work**

### **Embodied Indigenous Research: *Pocahontas and the Blue Spots***

For the undergraduate research symposium, I, along with three co-presenters, am performing a staged reading of the play, *Princess Pocahontas and the Blue Spots* by the Indigenous dramatist, Monique Mojica. The materials that we will be using are the script, the performance space, and fabric and instruments. Our methods involve devised movement, research, and connection with my fellow actors to strengthen the message of the play.

The subject matter is *Princess Pocahontas and the Blue Spots* and the struggles faced by Native women through colonialism. Throughout the play, there are 13 transformations that a combination of our four actors will play. These transformations both seriously and satirically explore the truths of the Native woman's experience and focus on topics including the loss of identity, stereotypes, and exploitation. Given the subject matter, we approached the script with intention, knowing our actions represent the experiences of Native women who have been silenced for far too long. As women-identifying artists, POC, and allies, our connection to this piece is deeply personal and the weight of this piece is important to us. Therefore, through our exploration and research of devised movement and our connection with each other, we aim to create a performance that not only honors these women but also creates a space for understanding. With *Princess Pocahontas and the Blue Spots*, we hope to inspire others to join us in this fight for justice and equality.

**Sincuir Alvarez, Kat**

**University of Oregon**

**Research Mentor(s): Gabriela Martinez, Lynn Stephen**

**Creative Work**

### **Y el amor triunfó**

Y el amor triunfó (And love triumphed) is a film that shares a perspective on immigration that is oftentimes not explored in the film industry. The film follows my family, the Sincuir Alvarez name,

as my parents choose to immigrate to the United States and build a home. Themes of resilience, hope, and love are the backbone of our story. This 12-minute short film is a reclaiming of identity and self-representation as we share our life narratives through a series of anecdotes. The short film was created in the Latin Roots class, a course that lasted 20 weeks, preparing students and providing them with the tools to create their films.

As a filmmaker, I plan to bring light to the realities of the Latinx human experience to the film industry as our stories are so often told from the perspective of those who do not understand what it means to live in the Latinx body in the United States. Stereotypes that are reinforced by the Hollywood film industry ultimately lead citizens to believe falsehoods over our Latinx lives. I believe that films like *Y el amor triunfó*, are forms of expression that openly share life narratives that refute the labels placed upon our bodies, these are important films that highlight our truths. The film is meant to inspire audiences to believe in the power of love and the strength of family ties.

**Sincuir Alvarez, Kat**

**University of Oregon**

**Research Mentor(s): Priscilla Ovalle**

**Oral Session**

### **Diversifying the Latinx Immigrant Narrative in the Hollywood Film Industry**

Representation of Latinx immigrants in the Hollywood film industry has a racist history that belittles, fetishizes, and shrinks the diverse and complex experiences of Latinx immigrants in the United States. As a result, the limited representation of Latinx immigrant characters on screen has forced harmful labels and skewed preconceptions over real Latinx bodies. Stereotypes based on a romanticized version of suffering and struggle are the formula that outlines the Latinx immigrant character trope. From screenplay drafts to the big screen, this narrative fuels a firestorm of hatred, ignorance, and misunderstanding towards the complexities of Latinx immigrant lives.

This research and creative project aims to inform and educate the reader about the historical harmful patterns found in Hollywood films that damage the Latinx body in the United States. I propose a new perspective by using ethnographic research of local Latinx immigrant lives to rebuke said harmful labels through their actual occupational and immigration tales. These stories inform and inspire the creation of my fictional screenplay; ultimately, claiming that further considerations of the representation of immigrant Latinx characters on screen should be informed before being produced to diversify the narrative of Latinx immigrant representation in film.

**Singh, Harman**

University of Oregon

Research Mentor(s): Dr. James Brau, Dr. Chris Potter

Poster

## **Highly Granular Calorimetry and Reconstructing Jets with Electromagnetic Energy at Linear Colliders**

The Standard Model (SM) is the theory at the heart of modern particle physics which explains and classifies all elementary particles and the interactions of three out of the four fundamental forces. The SM has experienced vast experimental success including the 2012 discovery at the Large Hadron Collider of the Higgs boson. However, this theory is glaringly incomplete since it fails to resolve modern unsolved problems such as the existence of dark matter. In addition, the SM has made specific predictions about the Higgs boson's properties which have remained unproven. An accurate Higgs factory capable of probing higher energies and physics beyond the SM is needed to push physics forward. The proposed International Linear Collider (ILC) is a highly precise new generation particle collider capable of answering the current problems facing modern physics. This research focuses on optimizing the Electromagnetic Calorimeter (ECal) which is a component of the Silicon Detector (SiD) which is a proposed detector for the ILC. In particular, I focus on providing quantifiable evidence for upgrading the ECal from a 13 sq. mm analog pixel design to a higher granularity digital model of monolithic active pixel sensors (MAPS) with a pixel size of  $25\mu\text{m} \times 100\mu\text{m}$ . This research project will evaluate the accuracy of reconstructing jets and their internal structure with the analog pixel model and consider when and by how much a higher granularity MAPS model will improve the reconstruction.

**Smith, Maili**

University of Oregon

Research Mentor(s): Kirstin Sterner

Poster

## **Sex differences in epigenetic signatures of aging in the brain and liver of a long-lived primate**

Although aging impacts everyone, individuals vary in pace and severity of age-related decline. Many long-lived primates, including humans, exhibit marked variation in aging patterns between males and females. We know that environment can influence the aging process, but it remains unknown

how the environment shapes aging at the molecular level. To better understand sex differences in the aging epigenome in the hippocampus and liver, two tissues responsive to age-related change, we characterized differential DNA methylation due to age in unmatched banked hippocampus (N=94; females=58) and liver (N=88; females=57 samples from rhesus macaques using reduced representation bisulfite sequencing (RRBS). Both datasets included males and females aged 3 to 35 years (corresponding human ages ~9 to 105 years) with representation for each sex across all major age categories. We then divided each dataset by sex and used PQLseq to identify sites that showed significant change with age in each of the resulting four datasets. Our preliminary findings suggest the majority of these sites are indeed sex-specific; only 17% of age-associated sites are shared between sexes in the hippocampus and 21% of age-associated sites are shared in the liver. Ultimately, characterizing sex differences in how the epigenome changes with age across tissues will help identify how environmental factors interact with molecular mechanisms to shape variation in the rate of aging in long-lived primates.

**Snow, Peni**

Lane Community College

Research Mentor(s): Susanne Brander, Sara Hutton

Poster

## **The Effects of Pyrethroids on Acetylcholinesterase Inhibition on Inland Silversides**

Co-Author(s): Peni Snow, Sara Hutton

As chemicals used in the agricultural industry (and others) find themselves into our freshwater highways; streams, creeks, rivers, and estuaries, it is vital that we look at the points where these waterways meet their outlets, the ocean. More specifically the estuaries that are the meeting point of these two. In 2020 the Brander Labs at the Hatfield Marine Science Center (HMSC), an extension of Oregon State University, on Oregon's central coast, began research into how neurotoxicity in fishes, namely the model fish *Menidia beryllina*, may be a product of pyrethroid insecticide presence in estuarine water. To look into this subject, we have run a series of biochemical assays on tissue gathered from model fish exposure, in lab, to a number of pyrethroids commonly used in agriculture today. A deeper look into how water salinity impacts the function of pyrethroid toxicity in fish is a focal point of the study; fish have been exposed to these chemicals at different salinities, in a multigenerational study. Tissue samples have been analyzed, and data has been compiled, for further

detail on these potential impacts. The study into understanding pyrethroid impacts on model fishes will help with future euryhaline fish conservation efforts. It will not only help to better understand biochemical function in euryhaline fishes and toxicity on a physiological level, but also potentially help to better understand the safety of pyrethroids in estuarine environments.

**Soliz, Esperanza**

University of Oregon

Research Mentor(s): Feather Crawford

Oral Session

### **Working Toward Health Equity with the Oregon Medical Group.**

As humans continue to grow, we have begun to correct our past mistakes. That being said, we still need to work on inclusivity and equity in specific environments. One of the most prominent examples of inequity in our modern society is the United States healthcare system. For starters, multiple studies have shown that the maternal mortality rate is significantly higher in women of color compared to white mothers. My research through DucksRISE seeks to answer how Oregon Medical Group (OMG) can achieve Health Equity. I began my research by conducting a literature review of books that demonstrate the history of inequity within our country. Then, I looked at other organizations - for example, the United Health Group - that claimed to have reached health equity and used them as the model for OMG. In addition, I looked at how something as small as a black medical diagram can make a huge difference. While my research is ongoing, I have come up with solutions on how OMG can reach health equity. For example, through the use of empathy exercises, medical providers can put themselves in their patient's shoes and see how their wording or actions can have a massive impact on a patient's health experience.

**Soliz, Teresa**

University of Oregon

Research Mentor(s): Christopher Foster

Oral Session

### **Fascist Times, Freer Futures: Lessons from Anticolonial and Black Radical Traditions**

Through a quantitative content analysis, the following research questions emphasize the importance of creating visibility for the ever-growing anti-Black and anti-immigrant racism. How have historical

and contemporary thinkers, writers, and activists within Black radical traditions approached fascism? Have they connected fascism to imperialism? How have historical and contemporary thinkers, writers, and activists within anti-colonial traditions approached fascism? Have they connected fascism to imperialism? I engage with their scholars and activists by collecting references to keywords and the rate of their appearances, such as “fascism.” By method of qualitative analysis, I interpret the author’s intent and meaning and, finally, work towards “translating” these lessons into tools aimed at solving the contemporary problems outlined above. The results thus far have illustrated that racially resentful attitudes contribute to a resurgence of authoritarian ethnonationalism in the U.S. and elsewhere. I hope my research-based practice demonstrates the importance of Indigenous, Race, and Ethnic Studies and Black Studies as we use these fields to guide and teach others an in-depth understanding of the significance of Black radical and anti-colonial frameworks.

**Somarriba, Amber**

**University of Oregon**

**Research Mentor(s): Ulrich Mayr, Taren Rohovit**

**Poster**

### **Trading Time for Value: The Role of Temporal Costs in Action Decisions**

The subjective experiences of individuals oftentimes revolves around the concept of time. To better understand our relationship with time, we need to consider the internal and external factors that influence how we choose to spend it. Our perception of time allows us to make plans for the future, and effective execution of these plans relies on considering the temporal duration of past and future events in relation to rewarding outcomes.

Many factors can influence our perception of time, including our recollection of previous experiences. Memory plays a substantial role in predicting how long a task will take, as biases from past memories can heavily influence our predictions. The relationship between duration and magnitude of bias, as proposed by Vierordt’s law, suggests that shorter durations tend to be overestimated while longer durations tend to be underestimated.

This paper aims to develop a novel paradigm to study the direct association between our perception of time and the trades we make for monetary gains. The proposition that incentives can make time-value judgments more rational, implying that our imprecise perceptions of time can gain acuity with reward, will be extensively explored.

**Soto Cuesta, Maria**

University of Oregon

Research Mentor(s): James Prell

Poster

## **Revealing changes in protein structure using mass spectrometry and gas-phase dissociation**

Co-Author(s): Samantha Shepherd

Mass spectrometry (MS) is an essential tool for investigating protein structural variation under different conditions for understanding the structure-function relationship at the core of biochemistry. MS is often used to measure mass, charge state, and size of native-like proteins. Gas-phase collision-induced dissociation (CID) provides structural information based on fragment ions produced, however, subtle structural differences can still be challenging to determine. In this study, we use CID to show how solution storage conditions and mass spectrometry parameters impact the ratios of fragments produced in CID of native-like myoglobin ions.

Myoglobin in ammonium acetate buffer was transferred to the gas phase using native nano-electrospray ionization. To see how CID-MS can monitor subtle structural changes, we varied two sets of conditions: the presence of collisional “pre-cooling”, and the time for which the protein was initially stored in solution at 4 °C. CID led to loss of charged and/or neutral heme. Without CID, there was no mass difference between fresh and stored samples, and only charged heme loss was observed. Under pre-cooling conditions for the stored myoglobin, loss of neutral heme occurred at relatively low CID energies, indicating a subtly different structure for these ions as compared to those exhibiting heme<sup>1+</sup> loss. These experiments highlight the utility of cooling CID-MS to reveal small differences in folded protein structure.

**Soto-Cruz, Fernando**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

## **Author's Authority and Influence on Reader**

Documentation of everyday life, such as personal diaries, planners, and ledgers, can serve as literature that tells stories. As the works of J.G Ballard and Peter Mendelsund show us; reading is an interaction between the reader and the author, and stories can be made with the omission of

information. The focus of this project will be analyzing the relationship between the author and the reader in primary sources. Specifically, it will examine the diary of Elizabeth Scott Parker and a ledger from James Scott using the works of the previously mentioned Ballard and Mendelsund, but also the works of Michel Foucault and Ann M. Blair. These two different types of documentation will help us explore how the reader can choose how much authority the author has, and how that influence's the reader's experience with the material.

**Staben, Alex**

**University of Oregon**

**Research Mentor(s): Professor Kathryn Lynch**

**Oral Session**

### **A Shared Sky: Celebrating the Cultural Connections of Migratory Birds**

Their stunning plumage and catchy melodies make migratory birds difficult to miss. For elementary students at River Road/El Camino del Río Elementary School, learning about migratory birds helps expand their ecological knowledge while developing an ethic of care for the environment. Studying migratory birds also provides intercultural connections which broaden students' understanding of the world and cultivates empathy. This presentation highlights the impact that Aves Compartidas educators from the Environmental Leadership Program have on local students. Our interdisciplinary curriculum builds relationships between students in the Willamette and Laja watersheds in Oregon, USA, and Guanajuato, MX through the birds both regions share. Our Spanish and English instruction promotes intercultural connections and environmental stewardship through observation, critical thinking, and a series of five student-centered and action-based lessons, culminating in a field trip to Mt. Pisgah Arboretum. Students learn about the challenges birds face during migration and develop tools to make positive changes. Instilling a sense of capability to be a changemaker helps students move from an awareness of issues to helping to resolve them. Upon program completion, students can recognize migratory birds of both watersheds, communicate about their characteristics in Spanish and English, and use their leadership skills to enact change in their own communities that help migratory birds thrive.

**Stacklie-Vogt, Ilse**

**University of Oregon**

**Research Mentor(s): David Meek, Catalina de Onís**

Poster

**Challenging Conventional Conceptions of Food Sovereignty:  
A Case Study of Huerto de la Familia**

My undergraduate honors thesis, titled Challenging Conventional Conceptions of Food Sovereignty, investigates the ways in which the local Eugene nonprofit Huerto de la Familia (HDLF) relates to the global food sovereignty movement. Through mixed methods research including participatory action research (PAR), oral interviews, literature review, and survey data, I unearth the ways in which this small urban organization founded by and for Latino immigrants is constitutive of the food sovereignty movement.

This work is particularly relevant in a time when the majority of the world's population lives in cities, and dislocated communities from Central and South America are living lives in the U.S. very different from the farms that might have belonged to their family.

La Via Campesina (LVC), is the global organization that coined the term "food sovereignty, and is an overtly political group primarily based in rural peasant communities and operating on the global level through events such as forums at the United Nations. This research suggests that HDLF is in many ways constitutive of the food sovereignty movement despite being located in an urban area and not branding itself as particularly political. These findings suggest that the term "food sovereignty" can be interpreted beyond its explicit definition by LVC when one considers alternative conceptions of politics, autonomy, and space based on the changing migration patterns of today's world.

**Stein, Olivia**

**University of Oregon**

**Research Mentor(s): Eleanor Wakefield**

Poster

**"Ducks for Change:" Disney's Project Green PSA**

Our research poster will examine Disney's Friends for Change campaign for environmental awareness. The project seeks to examine the difference of environmental awareness in 2009 versus 2023 as evident from the PSA. We will create a trip-fold poster that displays a before and after of the revised campaign for a more modern context. We are anticipating the campaign to be relatable in a modern context. We are hoping the campaign will have a stronger argument than its 2009 version. This is important because ad campaigns need to appeal to a younger audience in order to make an impact.

**Stewart, Gabby**

University of Oregon

Research Mentor(s): Rachel Weissler, Postdoctoral Scholar

Virtual

### **Photo Research Poster**

My art is a research photo poster that explores how my experience as a Black student in the Umoja Scholars class has assisted in my cultural and racial identity formation. To create this piece, I used digital materials, including a phone, and photo paper. I took a selfie that captured the feeling of exclusion I might experience on campus as a Black student, as well as a photo of my dorm and the Black Scholars Lounge sign to provide context for my experience. I also included images of the Scholars ARC building, where this class is held, and an event hosted by a Black speaker to show the ways in which the Umoja class has supported my identity formation. The subject matter of the poster revolves around my personal experience as a black student and the impact that the Umoja scholars class had on my cultural and racial identity formation. Through my use of images and text, I hope to convey the message that programs like Umoja Scholars are great for supporting the identity formation of Black students. My influences for this piece include my own experiences as a Black student, as well as research on the importance of cultural and racial identity formation in academic success. Overall, my concept for this piece is to share my story and advocate for the importance of supporting the cultural and racial identities of Black students in higher education.

**Still, Menzie**

University of Oregon

Research Mentor(s): Dr. Eleanor Wakefield

Oral Session

### **The Politics of Advertising**

In this presentation, we intend to look at a famous speech, advertisement, or PSA from previous years and see if it still makes sense today. We're planning to break it down and figure out what it's really conveying and how it affected society back then. We are then going to critique the piece and identify where it could use some improvement and how we can make it more applicable to people today. We will use examples from current events that have been occurring in the world lately such as protests and movements to show how we can update the speech and make it more meaningful in regard to the modern world. This project will show the importance of reevaluating notable pieces

from the past and figuring out what we can learn from them, as well as, aspects we can implement into new and current works.

**Stover, Sarah**

University of Oregon

Research Mentor(s): Hannah

Creative Work

### **Josephine: A Short Story**

This short story is about a little girl named Josephine who lives on a farm amongst animals she adores. She suffers adverse experiences at the hands of an abuser. I was inspired to write this story after visiting Iowa and finding myself in awe of those who live in isolation on farmland, wondering about the children who have no one to check on them. I wanted to highlight an issue that is very important to me and to the world: child abuse. Creating a discussion around this horrible reality through literary work calls for people to take action, advocate for those who need it, and hopefully end the abuse of children.

**Stremel, Sam**

University of Oregon

Research Mentor: Alexander Dracobly

Poster

### **The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry A History of The First World War**

“The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War” is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Stuve, Ryan**

University of Oregon

Research Mentor(s): Stephanie Majewski, Tim Mathew

Poster

### **Simulating outputs from the Large Hadron Collider for improved trigger algorithm testing**

As the High-Luminosity Large Hadron Collider undergoes upgrades to increase luminosity by tenfold, the amount of particle collisions produced within it will quickly overwhelm the processing speeds of the ATLAS detector. The proposed solution to this pileup of data is an upgrade to the speed of the trigger system. This system currently takes rudimentary information from the detector and judges whether or not the collisions inside are interesting enough to save. If this information passes the trigger, all of the data from that event is stored in memory. Otherwise, the information is discarded and the detector moves on to the next event. This trigger algorithm needs to become efficient enough to support the increased rate of collisions by recognizing significant events quickly without requiring a large amount of information. Various algorithms are being proposed at the moment and require realistic data to test with, data that has been formatted identically to the readout produced by the detector. This presentation will begin with a description of how the aforementioned readout is structured, followed by the process for reshaping data from larger files into this rudimentary output. Furthermore, it will explore some of the ways that data can be analyzed in this new format.

**Swanson, Zoë**

University of Oregon

Research Mentor(s): Angela Long

Poster

### **Mental Health Access Discrepancies between Cisgender, Transgender and Gender Non-Conforming Students**

Real or perceived discrimination in healthcare settings impacts transgender and gender nonconforming people's desire and ability to access appropriate care (Safer JD et al). The University of Oregon (UO) University Health Services (UHS) administered the 2022 American College Health Assessment's National College Health Assessment III (ACHA-NCHA), an assessment of lifestyle habits and behaviors across a myriad of student demographics. The survey comprised 338 UO respondents, including cisgender men and women, transgender, and gender non-conforming students. While these

data reflect a small number of 338 respondents, national reference data includes 69,131 individuals attending 129 colleges and universities. A qualitative review of UO and national reference data suggests transgender and gender non-conforming students utilize psychological or mental health services at higher percentages than their cisgender counterparts (UO 65% vs. 44%, National 64% vs. 34%). Analysis shows transgender and gender non-conforming UO students use campus-based mental health and medical services on campus at lower percentages than their national reference group counterparts (21% vs. 42%). The Health Equity Action Project of the Student Health Advisory Committee recommends that UHS implement changes to close these gaps, ensuring that everyone—regardless of gender identity—is informed about UO medical and mental health services and is able to receive accessible, equitable healthcare on campus.

**Swiericzuk, Nathan**

**University of Oregon**

**Research Mentor(s): David Allcock**

**Poster**

### **Enhancing Frequency Stability for Quantum Computing**

The monochromatic light produced by lasers finds many applications in the sciences, including highly precise applications such as the addressing of single atomic transitions of qubits for trapped ion quantum computing. These precision applications demand a highly stable laser for consistent and reproducible results. Here we explore two approaches to enhancing laser performance: passive stabilizing measures such as precise temperature and climate control, and active stabilization where the laser frequency is continually corrected to remain fixed with respect to a reference frequency, in our case a tellurium dimer vapor cell. The data collected in response to climate control measures indicates that the impact of temperature far outweighs that of either humidity or pressure with regard to laser stability, and even with extremely-precise temperature control, we observe passive frequency drift hundreds of times greater than what we can achieve through active frequency control. The lasers I investigated are of a type not widely used in research where such high precision is demanded, so a better understanding of the environmental dependencies is beneficial for these applications.

**Swift, Lauren**

University of Oregon

Research Mentor(s): Sarah Wald

Oral Session

### **The Contradictory Progressiveness of *The Revenant***

*The Revenant*, the 2015 film starring Leonardo DiCaprio depicts Hugh Glass' journey through the wilderness of North/South Dakota in 1823 returning to civilization after being wrongfully abandoned by members of his fur-trapping team while in extremely critical condition following a bear attack. In this presentation I argue that the release of *The Revenant* failed to challenge mainstream societal perceptions of nature by playing off of preconceived notions about racial, gendered, and economic relationships to the natural world, externalizing the realities depicted in the film through distancing the setting from our world's present conditions, and tying complementary political ideologies and agendas to the glorified celebrity culture surrounding the film. I make this argument by using examples from the film and media surrounding the film, and academic sources that expand upon and give a foundation for the ideas of the thesis. Hollywood productions and celebrity culture are unreliable advocates of the environmental movement for their lack of credibility and their susceptibility to public scrutiny. Even if the media produced for *The Revenant* intended to be a source of environmentalist support, its carelessness with certain character tropes and use of modern political connections to the film have harmful effects on the environmental movement. This presentation will delve into the facets of promoting environmental content in the media and what would be more successful in the future.

**Tavernier, Austyn**

University of Oregon

Research Mentor(s): Jeremy Collings, Jeff Diez

Poster

### **The Effects of Mycorrhizae on Plant-Plant Interactions During Droughts**

Climate change is predicted to alter interannual precipitation patterns. However, we do not know how these shifts are going to affect competitive interactions between plant species. Further, indirect interactions between plant species through shifts in arbuscular mycorrhizal fungi (AMF) abundance are known to contribute to plant community structure, but we still lack a comprehensive understanding of how drought-dependent mycorrhizal interactions influence plant communities.

We hypothesized that AMF decrease the intensity of competition between plant species, enabling coexistence if a drought is present. We performed a greenhouse experiment with a two-by-two factorial design in which we manipulated AMF presence and soil moisture. We will collect fecundity values of each plant across competition gradients to build population models to calculate growth rates when rare (GRWR), niche differences, and fitness inequalities to predict competitive outcomes. The knowledge gained from this study will increase our understanding of plant community dynamics during droughts and how AMF influences competitive outcomes during these events, which becomes ever more relevant as drought frequency and severity increase over time due to global climate change.

**Taylor, Rosa**

University of Oregon

Research Mentor(s): J Josh Snodgrass

Poster

### **An analysis of the impact of parity on long term health outcomes for Tunisian mothers**

Co-Author(s): J. Josh Snodgrass, Alicia DeLouize

**Objectives:** Women who undergo complications during pregnancy have a higher susceptibility to chronic diseases later in life, however there has been little research done on whether the number of children a woman has birthed has an impact on long term health outcomes. The objective of this study was to test whether there is a relationship between the number of children a woman has given birth to, and chronic health outcomes through energetic biomarkers.

**Methods:** Data were drawn from the WHO's Tunisian Health Examination Survey, a nationally representative survey with 10,158 participants. For the purposes of this study, we used data from 1887 female participants aged 25-44. Participants reported their age and number of children, and data on energy dependent biomarkers (Blood glucose, HBA1c, HDL, LDL, cholesterol, and triglycerides) was collected from each participant via Point of Care Testing (POCT).

**Results:** There was a statistically significant negative correlation shown between blood pressure (both diastolic and systolic) and parity, as well as between pulse rate and parity when controlling for age ( $p$  values  $\leq .05$ ). As parity increased, blood pressure rates and pulse rates both decreased.

**Discussion:** These results do not align with the prediction that energetic biomarkers would increase with the number of children a woman has given birth to. A possible explanation of these results could lie in the increased energy expenditure required in child rearing.

**Tenenbaum, Max**

University of Oregon

Research Mentor(s): Dr. Felix Deku

Poster

## **Polydimethylsiloxane Casting: The Preferred Method for Encapsulating Neural Interface Devices**

Thin-film intracortical microelectrode arrays enable neural recording and stimulation, but their long-term reliability is a recurring challenge. This study aimed to determine optimal materials and methods for encapsulating neural interface devices. We evaluated bio-epoxy and polydimethylsiloxane materials, and overpour and casting encapsulation methods, testing insulation efficacy in phosphate-buffered saline. Connectivity between electrode contacts within the packaging was quantified via repeating chronoamperometry. Results showed that devices cast in polydimethylsiloxane after oxygen plasma pretreatment had better insulation and ultra-low connectivity ( $<50$  pA) between electrode contacts when compared to bio-epoxy methods. The final protocol withstood high thermal and electrical stress tests, exceeding typical operating conditions. Understanding materials and packaging failure is vital for developing reliable microelectrode arrays. Casting devices in polydimethylsiloxane after oxygen plasma pretreatment successfully encapsulates flexible substrate devices while maintaining electrical insulation. Long-lasting encapsulation enables further developments in neural interfaces, such as higher-resolution neural signals, enhanced intracortical implant functionality, and better device adaptability. Our packaging approach paves the way for new technological advancements currently limited by medical device encapsulation methods.

**Teufel, Annika**

University of Oregon

Research Mentor(s): Dr. Aris Hall, Dr. Celena Simpson

Poster

## **Being a Person of Color in a Predominantly White Sport**

My goal was to show representation of minorities in sports that are predominantly white. Gymnastics unfortunately is one of those sports and since I used to compete it competitively, I decided to fly home to go support my teammates who still compete. I also took pictures of my athletes that I coach as they help me understand my position as a leader better. Due to the fact that they are still minors, I had to select images where their faces were not included. By majoring in Psychology and minoring

in Ethnic Studies I will be able to combine both learning paths into my future career and develop a deeper understanding on how race affects success in predominantly white sports. The subjects I chose were primarily women of color that I used to compete with when I was in high-school. We were pretty much the only people of color on a team of dozens of athletes or so.

The materials that I used for this research photo project were my phone, as well as some photo editing software on my laptop and phone as well. I primarily used Google Photos to edit and crop the pictures into a way that fits my photo essay. In addition I also utilized an app called Inshot to clear up and continue editing my pictures. I decided to use these materials as it was the most convenient for me at the time

**Thomas, Jake**

**University of Oregon**

**Research Mentor(s): Adam Glass**

**Poster**

### **Color Tunability of Benzofulvene Dimers**

Benzofulvenes and their derivatives have many implications as synthetic precursors and molecular materials, as well as in medicinal applications. The conjugation of benzofulvenes reveals many interesting properties that raise the possibility of color tunability. Through our synthesis we have also been able to create benzofulvene dimers in moderate yield which show interesting spectral properties in both the UV and visible range which indicates that these dimers may be very useful in studying electronic and optical effects within a large network of structures. We are specifically looking to explore push/pull dynamics related to different substituents on the dimers in regards to electron flow and movement. 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 dimer benzofulvene synthesis, optimize yield, and manipulate the dimers with substituents in order to gain a better understanding of their properties and implications in scientific scenarios.

**Thompson, Sally**

University of Oregon

Research Mentor(s): Mark Carey

Oral Session

### **The Impacts and Opportunities of Glacier Tourism in Southeast Alaska**

Each year, over a million people travel on cruise ships to experience the glaciers, wildlife, and natural beauty of Southeast Alaska. The economy of the region is highly dependent on glacier tourism – a tourism niche which may not exist in the future as glaciers disappear due to climate change. Despite a long history of glacier tourism in Southeast Alaska, the effects of the growing industry in the region remain understudied. These effects are seen most notably in Glacier Bay National Park, one of the main attractions of the region. Glacier Bay, or Sit' Eeti Gheeyi, is the ancestral homeland of the Huna Tlingit people and an important area for subsistence harvest and cultural connection. I reviewed literature on glacier tourism's impacts globally, local impacts in Southeast Alaska, and the history of tourism in the region was conducted to further understanding of glacier tourism in Southeast Alaska. Glacier tourism has dispossessed the Huna Tlingit people of their ancestral homeland but is now an avenue for economic growth and cultural revitalization for the region. This research aims to further the conversations surrounding these necessary questions: What will glacier tourism look like in the face of climate change? Could cultural tourism serve as an alternative to glacier tourism? Is the current model of tourism in Southeast Alaska sustainable?

**Thurston, Colin**

University of Oregon

Research Mentor(s): Chris Chapman, Christopher Minson

Poster

### **Effect of Oral Protein Loading on Renal Electrolyte Handling during Prolonged Mild Hypohydration**

**Co-Author(s): Sadie Holt, Cameron O'Connell, Shaun Brazelton, William Howells, Hannah Medved**

The purpose of this study was to determine whether oral protein loading during prolonged mild hypohydration alters renal electrolyte handling. In a block-randomized crossover design, 22 healthy adults [11 males, 11 females; age:  $21 \pm 3$  y] completed 24 h fluid deprivation (HYPO) and 24 h normal fluid consumption (EUHY). Body fluid loss was estimated by the percent change in body mass over the 24-h protocol ( $\Delta$ BM). Participants then underwent baseline (BL) measurements and ingested a

whey protein shake. Renal sodium and potassium handling were assessed by the fractional excretion of sodium (FENa) and potassium (FEK) at BL and 150 min post-protein (POST) consumption.  $\Delta$ BM was greater in HYPO vs. EUHY [-2.5% (-2.9, -2.1) vs. 0.0% (-0.4, 0.4),  $P < 0.01$ ]. FENa and FEK were lower in HYPO vs. EUHY at BL [FENa: 0.1% (0.1, 0.1) vs. 0.3% (0.2, 0.4); FEK: 0.9% (0.7, 1.1) vs. 4.5% (3.2, 5.7),  $P \leq 0.01$ ] and were higher compared to BL at POST [FENa: HYPO: 0.8% (1.0, 0.7); EUHY: 0.9% (1.1, 0.7); FEK: HYPO: 5.5% (4.7, 6.3); EUHY: 7.6% (6.0, 9.1),  $P < 0.01$ ]. For FENa, there were no differences at POST ( $P = 0.26$ ) and an interaction of time  $\times$  hydration was not detected ( $P = 0.27$ ). Conversely, for FEK, HYPO was lower than EUHY at POST ( $P < 0.01$ ) and there was an interaction of time  $\times$  hydration ( $P < 0.01$ ). These findings indicate that the response of FENa, but not FEK, was altered with oral protein loading during prolonged mild hypohydration. Supported by NIH R01HL144128 and F32HL164021.

**Tomich, Madison**

**University of Oregon**

**Research Mentor(s): Chantelle Russell**

**Oral Session**

### **Effective Study Skills Can Improve Overall Well-Being**

Implementing more effective study habits can increase time for well-being activities, such as journaling, resting, and connecting with others. Our goal is to expose University of Oregon students to a variety of researched-backed study habits so they can gain autonomy over their time. In a search for more effective tactics, we referred to academic literature, analyzed studies on factors that set college thrivers and divers apart, and watched TEDTalks on how to study smarter and not harder. We found that elaborative rehearsal, retrieval practice, and a good night's sleep improve performance significantly. Interviews conducted with University of Oregon faculty in the Tutoring and Academic Engagement Center (TAEC) and Teaching Engagement Program (TEP) confirmed these findings. They also informed us that common strategies such as maintenance rehearsal and highlighting just don't work. Students compromise their well-being in a time-consuming effort to succeed academically. If they are knowledgeable about the study habits that aren't as efficient and know which ones to implement, students will have an opportunity to make space for well-being activities.

**Tonsberg, Ally**

University of Oregon

Research Mentor(s): Shannon Boettcher, Liam Twight

Poster

### **Oxygen Evolution Catalysis by a Perovskite Nickel Oxide**

H<sub>2</sub> generated from water electrolysis is a promising candidate for replacing fossil fuels as an environmentally benign energy carrier. However, the anodic oxygen evolution reaction (OER) bottlenecks widespread implementation of this technology owing to its kinetically sluggish process. Perovskite oxides have emerged as promising electrocatalysts for OER due to their chemical stability and high activity. Several hypotheses have been proposed to account for the differences in activity, relying heavily on bulk chemical features. Previous work has gathered evidence that lanthanum nickelate (LaNiO<sub>3</sub>) restructures to an amorphous NiO<sub>x</sub>H<sub>y</sub> species during OER and its catalytic activity increases in the presence of trace Fe. In this study, the effect of substitution at the La-site using a strontium dopant was implemented to investigate trends in oxygen vacancy generation and surface reconstruction. Comparisons of intrinsic OER activity of spin coated La<sub>1-x</sub>Sr<sub>x</sub>NiO<sub>3</sub> films' pre-catalytic redox features were made, along with ex-situ surface analytical techniques. Ni<sup>2+/3+</sup> redox chemistry characteristic of amorphous nickel (oxy)hydroxides was observed during cyclic voltammetry indicating cycling induces reconstruction of the catalyst's surface. Increased OER activity was observed after addition of 35 ppb Fe species during cycling and increased as a function of increasing strontium dopant. This work aims to provide a design handle for understanding the activity of perovskite oxides more broadly.

**Tosi, Sara**

University of Oregon

Research Mentor(s): James Schombert

Poster

### **Gerrymandering the Universe: The Baryonic Size-Mass Relationship for SPARC Galaxies**

Co-Author(s): Francis Duey, James Schombert

We explore the mass-size relation for the SPARC galaxy dataset, a kinematically selected sample of rotating galaxies with excellent Spitzer photometry. A dichotomy in the baryon mass-isophotal radius plane is found with late-type galaxies outlining a distinct sequence from bulge-dominated

early-type galaxies. Although both sequences contain strictly rotating disks, the presence of a bulge has an inverse effect on the size of the disk as the stellar mass of the bulge becomes an increasing component of the total baryon mass. Comparison between baryon radii and dark matter halo fits to the kinematics finds surprising new connection between dark matter and baryons with respect to scale length. We also compare the mass-size relation of early-type galaxies at zero redshift with the GLASS-JWST sample at a redshift of 6 and deduce a factor of ten increase in galaxy effective radius since that epoch, a direct indication of mass-size evolution.

**Tovar, Oscar**

**Central Oregon Community College**

**Research Mentor(s): Matthew Novak**

**Poster**

### **Comparison of Creative and Analytical Individuals on the Stroop Effect**

The Stroop Effect refers to the delay in reaction time between congruent and incongruent stimuli. This study was done to understand if there was a difference to the delay between individuals who identified as either creative or analytical. Thirty-six participants were recruited for a Stroop test, in which they were individually tested and timed to figure out the length of their delay from the Stroop Effect. Results show that both groups had a significant delay when told switch command. However, creative people had a noticeably larger disruption in time and were slowed down more than participants who identified as analytical. The results go against previous research done on creative individuals against the Stroop Effect, specifically, Edl, S, et al's "Creativity and the Stroop interference effect."

**Trahern, Ellie**

**Visiting McNair Scholar | Southern Oregon University**

**Research Mentor(s): Alma Rosa Alvarez**

**Works in Progress: Lightning Rounds (must be in-person)**

### **Native Hawaiian Identity and Expression Through Poetry**

Native Hawaiian civilization and identities were complex and unique by the time Captain Cook arrived in 1778. After Cook's arrival and the subsequent influence of colonial powers, Native Hawaiian identities significantly changed. After the arrival of missionaries, Native Hawaiian works also began to be translated into written form. Over the several decades since then, different Native Hawaiian

poets have discussed identity through poetry. These poems reveal the complicated identities that emerged for Native Hawaiian people post-colonization. Factors such as a tourism-based economy, the forced migration from the Hawaiian Islands of many Native peoples, military occupation, and state restrictions on Native Hawaiian practices have changed the ways in which Native Hawaiian people viewed themselves. My work will show how the poetry produced by Native Hawaiian artists reflects such changes and their various responses to such. My work will be significant to those who wish to have an insight into how Native Hawaiian people used poetry to express their identities in a place that is complicated by continued occupation and struggles to express sovereignty.

**Tran, Mindy**

**University of Oregon**

**Research Mentor(s): Calin Plesa**

**Poster**

### **Optimally choose barcode targets for CRISPR/Cas9 to enrich DropSynth perfect gene assemblies**

**Co-Author(s): Natanya Villegas, Yukiko Gaudreault, James Stapleton, Calin Plesa**

Gene synthesis methods are used throughout the biotech industry and research and development institutions to conduct research on topics like drug discovery, disease detection, and gene therapy to name a few. With DropSynth, a novel gene synthesis tool, we can make large, highly variable DNA libraries at a low cost. To target and enrich perfect assemblies, we used computational means to optimally choose barcode targets for CRISPR/dCas9. In each of the sequences in the gene library, there is an attached barcode that is highly variable and is used to identify each unique read. With data manipulation solutions, we can determine which reads match our target proteins and categorize the reads of proper and improper translations. We then determined the spacer regions of each read and filtered out barcodes whose sequence was also found in the spacers of the improper translations. Through a modular computational pipeline coded in R and Python, we created a pipeline that took in DNA sequences and target proteins, and then made a second library with reads more likely to correspond to perfect assemblies.

**Travers, Jenna**

University of Oregon

Research Mentor(s): Johnny Ryan

Oral Session

## **Utilizing Remote Sensing to Predict Glacier Lake Outburst Floods in High Mountain Asia**

Understanding glaciers, snow, and ice in High Mountain Asia (HMA) poses a particular problem common across the field of cryosphere research—access. Despite containing the largest volume of glacier ice outside the Earth's poles, much of the ice in HMA is inaccessible to communities trying to study and understand the impacts of ice and climate change on their lives. One particular area of interest in the cryosphere and remote sensing is Glacier Lake Outburst Floods (GLOFs), which pose a significant threat to communities living downstream of glaciers. This study used satellite data and QGIS to analyze if an effective early warning system could be created based on remote sensing in order to help communities downstream of HMA glacier lakes predict GLOF timing and severity. While more data points are still needed, the preliminary results of this research show that lake area growth measured with remote sensing tools can be used to predict the relative magnitude of the flooding when it occurs. This analysis, which can be done from anywhere in the world, could be vitally important for preparing downstream communities for large-scale GLOFs up to a month before they occur.

**Travers, Jenna**

University of Oregon

Research Mentor(s): Richard Emler, Maya Watts

Poster

## **The Root of the Problem: Understanding Local Determinants of Ecological Structure on Mangrove Roots**

Species diversity and abundance is vital for ecosystem function and health both on land and in the marine environment. Mangrove forests and roots provide vital habitat to thousands of fish, crustacean, mollusk, and sessile species, but climate change is leading to species diversity loss in many tropical mangrove communities. We wanted to understand how climate change and anthropogenic changes may impact species diversity and distribution on mangrove roots in the Caribbean. To do this, we examined how different factors such as wave action, turbidity, depth, and root length impacted the species diversity and distribution on mangrove roots in Bocas del

Toro, Panama. We found that while species richness and diversity were similar between sites with different exposure, the species identity and distribution had high variation. With climate change and increasing storms, understanding community distribution as a function of different variables is important to predicting which species will prevail.

**Tsao, Clio**

**University of Oregon**

**Research Mentor(s): Mai-Lin Cheng**

**Poster**

### **Reading Commonplaces: Form as Function**

This project is for a Winter 2023 course with Professor Mai-Lin Cheng. Our assignment was to act as a co-curator for an exhibit on “book love; or, reading commonplaces.” Commonplacing is the practice of compiling knowledge (usually from readings) by copying passages into a “commonplace book”. In this project, we identified and researched an item in the UO Special Collections, situating it in the context of course readings.

I chose to approach the project by studying the form and function of commonplacing. Through examination of commonplaces from different sources and my own, I seek to explore the role of commonplacing as the reader interacts with their readings. I want my audience to take away from this project a greater understanding of what commonplacing is, as well as its relevance and applicability in our current time. Materials included will connect course readings including works by Peter Mendelsund, Roland Barthes, and Ann M. Blair. These readings discuss the experience of reading, the presence of the “author” in writing, and the history and function of note taking. This project is centered around the connecting ideas of how commonplacing acts as a way to process and make sense of the world around us through reading, and how the form of commonplacing serves as its function. This project offers a perspective through which the audience can consider their own relationship with reading and the way in which we all make sense of our reading.

**Uba, Dumebi**

Visiting McNair Scholar

Research Mentor(s): Sandip Patel, Mercedes Quintana-Serrano

Poster

## **Examining If Gender and Tobacco Use Affects NSCLC Patients Response to Immunotherapy**

Co-Author(s): Sandip Patel, Chandra Inglis, Kim Lisa

Non-small cell lung cancer (NSCLC) has a low survival rate, mainly due to tumor environment and delayed detection. Smoking negatively affects the overall health of individuals, however it is less clear the role that gender-related differences in smoking plays in how women and men respond to immunotherapy. Nonsmokers do not respond as well to immunotherapy due to outlying variables such as the lack of immunogenic neoantigens. Further examination of the relationship between smoking exposure in pack-years and immunotherapeutic response characteristics will help identify potential gender-based factors in response to cancer immunotherapy in NSCLC. Specifically, we want to investigate whether gender-based smoking exposure in pack-years results in differential responses to immunotherapy. We reviewed the UCSD EMR through Epic Slicer Dicer for patients with metastatic NSCLC who received anti-PD-1 or anti-PD-L1 directed therapy from 1/1/2010 to 7/1/2022 in whom smoking history and gender data was available. Further research is needed to explore the impact of additional comorbidities on treatment response among smokers. Conducting extensive research on immunotherapeutic response is crucial for enhancing patient treatment outcomes.

**Usher, Evelyn**

University of Oregon

Research Mentor(s): Rebecca Dorsey, Kevin Gardner

Poster

## **Stratigraphic Analysis of the Upper Miocene Boleo Formation, Baja California Sur, Mexico**

The late Miocene Boleo Formation is the oldest unit of the Santa Rosalia Basin (SRB) in Baja California, Mexico. The SRB formed on the SW margin of the Gulf of California during early development of the transtensional plate boundary, but the structural origins of the basin remain poorly understood. We integrated study of surface stratal architecture and subsurface well data to test hypotheses for structural controls on basin formation. The Boleo Fm contains interbedded alluvial conglomerate,

sandstone, and thin shale units rich in Cu and Mn ore (mantos) with marine calcareous nannofossils. Drone imagery, measured sections, and previous geologic maps reveal stratal wedge geometries that display systematic thickening toward the north, NE, and ESE, away from the uplifted footwall of the Juanita fault. Cross sections reveal fault control on thickness variations in lower units of the Boleo Fm, a flat topographic high in the southern part of the basin, and stratal onlap geometries. These data record domal uplift and tilting in the footwall of the Juanita fault during deposition of the Boleo Fm. We also observe a SW-to-NE change from conglomerate to sandstone in the lower Boleo Fm; variable paleotopography including a wave cut platform; and stratal cyclicity of coarsening-up deltaic deposits. These results support a model for latest Miocene fault-controlled tilting during growth of a large monocline that tilted the crust down to the NE toward the opening paleo-Gulf of California.

**Vandehey, Larissa**

**University of Oregon**

**Research Mentor(s): Carmen Watkins**

**Poster**

### **Invasion, Density & Native Plant Species in CA Grasslands: The Importance of Nitrogen-Fixing Plants**

**Co-Author(s): Carmen Watkins**

California grasslands have a history of invasions by annual grasses that have reduced native plant populations. Invasive grasses grow well with high soil nutrients and frequently benefit from atmospheric nitrogen deposition. Soil nutrients are also increased by the presence of nitrogen-fixing plant species (ones that produce extra nitrogen in the soil), or legumes. Soil nutrients are also important to understanding invasion dynamics. The purpose of this project was to see if legumes influence the seed production of invasive grassland species. The purpose was also to see if legumes facilitate invasive grasses and if that facilitation depended on the legume's density. The main hypothesis was that facilitation would be greatest when the legume is at an intermediate density and after this, the increasing density may reduce facilitation. To investigate these hypotheses, data were used from a field experiment in Northern California that grew an invasive grass in different backgrounds. The project found that the invasive species' seed production increased when grown with legumes. This research is important to understanding how species interactions shape invasion dynamics and whether the presence of legumes could facilitate invasive species and further reduce native species populations.

**Velarde, Alyssa**

University of Oregon

Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson

Virtual

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Vigne, Charles**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Poster

### **"Ducks for Change:" Disney's Project Green PSA**

Our research poster will examine Disney's Friends for Change campaign for environmental awareness. The project seeks to examine the difference of environmental awareness in 2009 versus 2023 as evident from the PSA. We will create a trip-fold poster that displays a before and after of the revised campaign for a more modern context. We are anticipating the campaign to be relatable in a modern context. We are hoping the campaign will have a stronger argument than its 2009 version. This is important because ad campaigns need to appeal to a younger audience in order to make an impact.

**Villano, Lindsay**

University of Oregon

Research Mentor(s): Jeff Diez, Jeremy Collings

Oral Session

### **Early Trade-offs of Root Traits on a Mycorrhizal Collaboration Gradient**

Aboveground plant traits exist on a spectrum defined by trade-offs between conservative and acquisitive resource uptake. However, belowground traits do not fit this axis because the uptake of soil nutrients can be outsourced to mycorrhizal mutualists. Thus, adding another axis in the root economic space that represents collaboration increases our understanding of fundamental variation in root traits. Mature roots exhibit trade-offs between investing in longer fine root structures that travel farther, or thicker roots that can better support mycorrhizae. Here, I explore whether young roots display trade-offs in collaboration intensity and if so, how long after germination species will begin to reflect niches on this axis. I grew 5 native forb species for 25 days and sampled plants at 8 time points after germination. Upon sampling, I recorded fine root length and diameter by analyzing root structure and quantified arbuscular mycorrhizal (AM) fungal colonization. I expect to find a negative correlation between fine root length and the amount of AM associations, and a positive correlation between AM associations and root diameter. I expect this relationship to increase with plant age because they are likely to experience increased competition for resources as they grow in the field. The results of this study will provide further insight on root trait variation and may benefit our understanding of species interactions in the rhizosphere that contribute to community coexistence.

**Walton, Kaiden**

University of Oregon

Research Mentor(s): Dr. Sarah Wald, Madison Fowler-Niblock

Poster

### **Massachusetts Man-Eaters: How Shark Week's *Monsters of the Cape* negatively impacts shark research**

Shark Week has been an annual tradition on the Discovery channel for 35 years, and has done its best to capture all aspects of sharks, good and bad. However, Shark Week has a history of focusing primarily on the bad, with many fear mongering messages hidden inside their specials. *Monsters of the Cape* is no exception; a 2022 Shark Week special showcasing the effect of the return of great whites

on the humans of Cape Cod. Despite the show's crew working towards coexistence, *Monsters of the Cape* is another example of misinformative and negative Shark Week content, with its use of language, video footage, and audio effects. By watching *Monsters of the Cape* and applying fields of thought regarding the effect of media imaging on the brain, there are more instances of negative imagery of sharks than positive. This is very important in regards to shark conservation and shark research: both fields are dependent on public opinion and rely on funding from governments and conservation groups. If the public is afraid of sharks, these fields are likely to not receive much funding, which could send certain species of sharks to extinction. Sharks are a crucial part to many ecosystems, and their absence could lead to drastic shifts in sustainability of those ecosystems. For a lot of people, Shark Week is the most interaction they get with sharks, and therefore it is of utmost importance that Shark Week producers be mindful of the images they are creating with their annual programming.

**Wang, Eric**

University of Oregon

Research Mentor(s): Dominik Graetz, Ulrich Mayr

Poster

### **Task-Relevant Spatial Attention and Distractibility in Cognitive Aging: An Eye-Tracking Approach**

Co-Author(s): Dominik Graetz, Ulrich Mayr

Previous studies from our research group have demonstrated that one of the consequences of cognitive aging is a strong reliance on information stored in the environment (external), even when sufficient memory information (internal) is available. We have also demonstrated that this tendency may to some degree reflect a rational adaptation to aging, and it still indicates that older adults are more prone to distraction than younger adults. However, the degree to which this increased distractibility is spatially specific to the locations of task-relevant information or whether unspecific to even task-irrelevant external stimuli is currently unclear. The present investigation aimed to replicate these previous findings and further compare the spatial allocation of attention between younger and older adults. To achieve this goal, we developed a new eye-tracking paradigm that required participants to inspect task-relevant cues in only one specific location while suppressing distracting information from other locations to maximize monetary compensation. Our results indicate that older adults exhibit an elevated information-checking rate compared to younger adults, indicative of their heightened overall sensitivity to external stimuli.

**Ward, Zoe**

University of Oregon

Research Mentor(s): Courtney Mathers, Peg Boulay

Oral Session

### **Carbon Sequestration in Soils to Allocate Solutions for Atmospheric Carbon**

There is more carbon contained in the soil than the atmosphere and vegetation combined. Understanding the mechanisms that control the accumulation and stability of carbon in soil, we can mitigate our planet's changing climate. By using a variety of existing soil and forest management techniques, this study will produce valuable data regarding which plant species and management techniques are most effective at storing atmospheric carbon in the soil. This is the first large-scale, long-term data collection study performed to measure carbon sequestration rates among Oregon native tree and shrub species. In 2022, the Soil Plant and Atmosphere Lab (SPA) and EWEB's Carbon Forestry Lab planted eighteen different native Oregon tree and shrub species at the Highbanks site. The trees and shrub species were planted in various treatments which include hardwood-only, conifer-only, mixed tree and shrub, and shrubs-only plantings. We will monitor the soil's health using methods such as soil sampling, pH measurement, aggregate stability measurement, carbon respiration and water quality measurement. This will allow us to answer our monitoring question regarding which types of plant species and planting treatments are most effective at storing carbon. The implications of this study have the potential to influence the way forests are restored and managed in Eugene and potentially beyond, within the goal of increasing carbon sequestration in soil in order to create sustainable climate solutions.

**Warner Carey, Micah**

University of Oregon

Research Mentor(s): Alicia M. DeLouize, J. Josh Snodgrass

Poster

### **Metabolic syndrome, depression, and community structure in Tunisia**

Co-Author(s): Adriana Wisniewski, Alicia M. DeLouize, Tian Walker, J. Josh Snodgrass

Studies have shown a bi-directional relationship between metabolic syndrome (METs) and depression with the physiological mechanism linking the two remaining unknown. It is possible that there is not a physiological link between these two, but they stem from shared environments. We test this using multi-level modeling with city/district level as the random intercept in Tunisia (N = 2,343). We

hypothesized that the model controlling for community level clustering would be a better model than the model without considering community when predicting. We found that there was no relationship between depression and METs in this population ( $b = .19, p = .13$ ). When predicting both depression and METs, the model with the community as a random intercept provided a significantly better fit of the data when compared the model with no random intercept ( $\chi^2 = 76.39$  to  $156.78, p$  values  $\leq .001$ ), with 12% of the variance in depression and 4% of the variance in METs being due to community. This study uses a bio-cultural approach to explore this relationship between METs, depression, and community structures in Tunisian society, creating a statistically-relevant connection between shared environments and METs and depression prevalence.

**Wayne, Alara**

**University of Oregon**

**Research Mentor(s): Christopher Chapman**

**Poster**

### **Prolonged Mild Hypohydration Differentially Alters Handgrip Strength Between Sexes**

**Co-Author(s): Christopher Minson, John Halliwill, Sadie Holt, Shaun Brazelton, Cameron O'Connell**

There are currently no studies on whether prolonged mild hypohydration in a temperate environment reduces upper body strength in females. We tested the hypothesis that maximum voluntary isometric handgrip (HG) strength is reduced in females following prolonged mild hypohydration and examined whether this response varies between sexes. In a block-randomized crossover design, 22 healthy adults [11 females (F), 11 males (M); 21 (3) years] completed 24 hours of fluid deprivation (HYPO) or normal fluid intake (EUHY). Body fluid loss was estimated via percent change in body mass ( $\Delta$ BM) over 24 hours. Subjects attempted 3 maximum voluntary isometric contractions on a hand dynamometer with 1 minute rest between sets.  $\Delta$ BM was not different between sexes ( $P=0.5393$ ) during HYPO [F:  $-2.2\%$  ( $-2.9, -1.6$ ); M:  $-2.8\%$  ( $-3.4, -2.3$ )] or EUHY [F:  $-0.1\%$  ( $-0.8, 0.5$ ); M:  $0.1\%$  ( $-0.3, 0.6$ )]. Maximum HG strength was reduced in HYPO vs. EUHY in males [48 kg (43, 54) vs. 51 kg (45, 57),  $P=0.0468$ ] but not females [27 kg (24, 30) vs. 28 kg (25, 32),  $P=0.3166$ ]. With HYPO, there was greater loss in HG strength between the first to third attempts in females vs. males during HYPO [ $-2.7$  kg ( $-5.2, -0.2$ ) vs.  $0.8$  kg ( $-1.6, 3.3$ ),  $P=0.0762$ ]. Prolonged hypohydration due to fluid deprivation reduces max HG strength in males but not females. These data suggest that females cannot reproduce initial HG strength on following attempts when mildly hypohydrated. Supported by NIH R01HL144128 and F32HL164021.

**Wehn, Lena**

University of Oregon

Research Mentor(s): Christopher H. Hendon

Poster

### **Origin's Impact on Redox Activity of Brewed Coffee with Varying Roast Profiles**

Co-Author(s): Robin Bumbaugh, Christopher Hendon

The study of chemicals found in coffee seeks to identify any significant chemical variations, or lack thereof, that can be traced in coffees from different global regions. The objective of this research is to determine the impact a coffee's origin has on the chemical behavior of roasted and brewed coffee. We know coffee from different places tastes different, but seek to determine if it is supported by significant measurable chemical distinctions. It also serves to contextualize the ongoing electrochemical research on coffee being conducted at the University of Oregon, sponsored by Nuova Simonelli and the Specialty Coffee Association. I am studying the way coffee sourced from major producing countries behaves when roasted and brewed in a systematic manner. Major producing countries include Brazil, Colombia, Peru, Rwanda, Kenya, Mexico, Costa Rica, Vietnam, and Indonesia. My research covers a spectrum of these coffee producing regions to effectively track chemical and behavioral similarities and differences. Chemical variation found in brewed coffee from these regions are observed through electrochemical techniques such as cyclic voltammetry. This technique allows for the isolation of groups of organic molecules that are redox active within the brewed coffee samples. The research is ongoing and particular attention is given to the roast profiles to ensure systematic roasting across origins and processing methods.

**Weinandt, Sydney**

University of Oregon

Research Mentor(s): Craig Young

Oral Session

### **Change in rate of swimming contraction of *Polyorchis penicillatus* as a response to wavelengths of light**

Cnidarians have one of the most primitive nervous systems, yet multiple behavioral patterns. Studies have shown that hydromedusa *Polyorchis penicillatus* has a shadow response that is followed by increased contractions of the bell directly following changing photic levels from light to dark. Different wavelengths of light have not been studied in relation to behavioral photoresponses

for *P. penicillatus*. This experiment tested 5 wavelengths of light in relation to rate of swimming contraction and behavioral patterns, including blue, red, orange, and green light, with white light and darkness as controls. Consistently, exposure to blue, red, and white light stimuli resulted in high proportions of the two non-feeding behaviors. Green and orange light stimuli showed high proportions of the two feeding behaviors. Results are consistent with the idea that *P. penicillatus* is able to sense the wavelength through the water column, and therefore engage in feeding behavior around high food concentration waters.

**Weinrobe, Josh**

**University of Oregon**

**Research Mentor(s): Lisa Munger**

**Oral Session | Poster**

### **Indoor Anthropogenic Noise Trends at the University of Oregon**

Although there is extensive research about the effects of anthropogenic noise, the research regarding anthropogenic noise indoors and in relation to weather patterns is sparse. We will investigate how indoor anthropogenic noise varies in 3 different locations at UO, depending on the weather. We will plug the Dayton Audio iMM-6 calibrated microphone into our smartphones to capture sound levels on campus and record for 10-minute intervals, two days a week in different locations (Knight Library floor 1, EMU O-desk, and the Lillis building floor 1). We will record the weather conditions during each 10-minute interval to track fluctuating patterns and use Raven Lite to read the recordings by looking at the spectrogram created to identify the frequency components of the sounds. We will measure the sound pressure levels and frequency spectrum. We will see patterns in the human noise levels over time and will compare them to the weather conditions and locations. Our independent variables are the location on campus and weather conditions, while our dependent variable is the sound levels. We predict that indoor anthropogenic noise will decrease on sunnier days since students will spend more time outside in the sun. On rainier days, the noise will increase since students likely stay inside. Oregon's weather is inconsistent, so our analysis of UO students adapting to the changing climate will help further research comparing the effects of anthropogenic noise and weather conditions.

**Weisenbloom, Max**

University of Oregon

Research Mentor(s): Justin Fowler, Elisandra Garcia

Virtual

### **Barriers to Creating and Accessing Affordable Housing in Portland, Oregon**

Portland, similarly to the rest of the country, is experiencing a housing crisis. Rising rents, low housing stocks and the lingering effects of the COVID-19 pandemic have combined to produce record numbers of people experiencing housing insecurity, eviction, and homelessness. While new funding has recently been approved in response to this crisis, how that money is spent and used will determine its success. Through conversations with architects, service providers, and people experiencing housing insecurity and homelessness, this study aims to ground existing housing data in people's real world experiences.

Housing insecurity is experienced differently by everyone. Because of the deep intersections houselessness has with disability, mental health, addiction and other factors, it is impossible to define a single path either out of or into housing. However, the struggles of Portland's current housing situation can be broadly characterized into three groups: An inability to create new affordable housing at scale, a failure to prevent people who are housed from losing their home, and finally an apathy to rapidly rehouse and support those who have. These are some of the ways Portlanders have fallen through the cracks.

**Wendrow, Elle**

University of Oregon

Research Mentor(s): Hannah Licht

Creative Work

### ***Masterpiece***

*Masterpiece* is a short story created from my fascination with the sub-genre psychological horror. One of my biggest influences is Edgar Allen Poe and his tendency to have written narrators who actively tried to justify the insane actions they were committing as they told their stories. I was introduced to his work, *The Tell-Tale Heart*, in middle school, and from then on, I drank up all the exposure to horror that I could within school. I wanted to create something that the reader understood to be fictional and therefore safe, but felt real on some level. That interest led me to choose a combination of first and second person point of view, which allowed for the reader to consume the thoughts of the narrator, while at the same time, feeling as helpless as the victim.

**Westensee, Gabe**

University of Oregon

Research Mentor(s): Frances White

Poster

## **Sex-based Power in Controlling Preferred Resources: Bonobo Control of a Termite Mound**

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

Bonobos (*Pan paniscus*) are a species of ape that are most closely related to humans, alongside chimpanzees, making them an ideal subject for studying the evolution of human behavior. Unlike chimpanzees however, unrelated female bonobos form close bonds with each other, resulting in coalitionary power over males and a mixed sex hierarchy. This results in patterns of behavior evident of female dominance. One way we can investigate sex-based dominance behavior is through identifying the sex that displays control over preferred resources. We plan to investigate sex-based control of a preferred resource through analysis of videos of a fission-fusion group of bonobos at the Columbus Zoo, centered around an artificial termite mound, which was baited with preferred foods. We predict that males are less likely to approach the termite mound when females are present, with this effect increasing with the number of females present. We also predict that females are equally likely to approach the termite mound whether or not males are present. Furthermore, we predict males are more likely to leave the termite mound than to stay when a female approaches, while females are equally likely to leave or stay when a male approaches the termite mound. Results from this study will inform our understanding of sex-based dominance in high stake situations, which is a lens that can be applied when attempting to understand human evolution.

**Whitehill, Julie**

University of Oregon

Research Mentor: Alexander Dracobly

Poster

## **The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry—A History of The First World War**

“The Hell Where Youth and Laughter Go: Politics, Trenches, and Industry- A History of The First World War” is a collective research project done by the students of Hist. 428 World War One. This project is inspired by the work *The Beauty and The Sorrow* by Peter Englund. This is an intimate history of the

First World War in which the war will be investigated with an emphasis on what it was like over what it was. To do this the contributors have selected real people who have left behind diaries, letters, or memoirs of their lived-in experience of the First World War. In showing what the war was like the project is a bottom-up telling of the war, concerned with the history of the common folk. The project follows ordinary people in a chronological timeline during the war and will express what they thought of the events. The aim of this collective project is to express the fundamental impact of war on human life, and investigates how aspects of absurdity, monotony, tragedy, and beauty work together to characterize the experiences of the First World War.

**Wickham, Alison**

**University of Oregon**

**Research Mentor(s): Monica Fischer, Matthias Vogel**

**Poster**

### **Cultural Genocide Against Uyghurs; An Ethnic Minority Group in China**

The Uyghurs are an ethnic minority, Muslim-majority group of about 12 million people in the Xinjiang region of China. China has violated the human rights of the Uyghur people by restricting religion, re-educating, and even subjecting them to torture, forced labor, and imprisonment. This project will address the issues with the United Nations Security Council and what can be done to put pressure on China and how the US and other Western countries must implement the Uyghur Forced Labor Prevention Act. Overall, the UN Security Council must change the permanent members of the security council to allow for more initiative to be taken towards human rights violations. Currently, there are five permanent member countries in the UN Security Council, which includes the United States, China, Russia, France, and the United Kingdom. Those countries possess veto rights, which makes it hard to pass laws and sanctions that would harm any of the countries. The United Nations Security Council should be reformed and empowered to address issues such as the Uyghurs' human rights crisis and Russia's invasion of Ukraine.

**Wilkinson, Olivia**

University of Oregon

Research Mentor(s): Steven Beda

Poster

### **How Festivals Influenced the Musical Landscape of the 1960s**

The 1960s is known as a time of significant social, political, and artistic change. Perhaps most fondly remembered is the music of the decade, as it fundamentally changed popular music as it exists today. Lesser known is how music festivals through the decade contributed to musical changes over time during the decade. This thesis examines three critical turning points: the Newport Folk Festival of 1965, the Monterey International Pop Festival in 1967, and the Woodstock Festival in 1969. The common thread: youth culture. Festivals as turning points offer a glimpse into the values of those who attended them, as well as a way to track music trends as artists were often featured for the first time at festivals.

Using a combination of sources, including music, archival footage, periodicals, popular publications, photos, artwork, and scholarly works, this research takes a multimedia approach, focusing most heavily on examination of the music and festivals. Though the research concerns youth of a time long past, music still acts as a conduit through which young people project aspects of their lives. It is vital to examine culture from a multimedia perspective, as young people engage with culture through a wide variety of mediums. Young people, as examined through these three festivals and concurrent music trends, drove cultural change, whether older generations wanted them to or not.

**Williams, Julia**

University of Oregon

Research Mentor(s): Jesse Sawyer

Creative Work

### **Poetry Portfolio by Julia Williams**

Since the start of my participation in the Walter and Nancy Kidd Creative Writing Workshops in the Fall of 2022, I have gained critical knowledge for the execution of my ideas in poetry. Through thorough analysis of exemplary poetry, I have refined my personal taste for creative work as well as gained tools for my own composition. Taking inspiration from my work in psychology, my creative writing work aims to tackle complex themes of mental health, belonging, and becoming myself. For the Kidd workshop “Line of Inquiry” project, I have focused on confessional poetry and how it

combats shame surrounding mental illness, sexuality, and womanhood. After studying the techniques used to resist shame, I have learned to unapologetically express my lived experiences in a way I couldn't before the Kidd Workshop. I hope to continue to improve my craft using the sharing and workshopping process with other members of the creative writing community.

**Williams, Katey**

University of Oregon

Research Mentor(s): Bryce Newell, Whitney Phillips

Creative Work

### **Materialist Analysis of Conservative Media, and the Legality in Profiting from Right-Wing Extremism**

This written analysis argues that these three media personalities use political leverage for revenue, but risk of deliberate lies and defamatory statements can curb earnings gained from political speech. One of the key strategies that connects to the current use and production of right-wing media is the institutionalization of sensationalist news formulas. The Nation dubs the details of this strategy as the Four "S's": "scare headlines, sex, scandal, and sensation." These strategies can be seen in three Conservative media personalities: Alex Jones, Candace Owens of the Daily Wire, and Richard B. Spencer, the white nationalist leader who coined the term "alt-right." The risk of defamation lawsuits may regulate the profitability of extremist rhetoric and conspiracies— the hefty punitive damages awarded to plaintiffs in *Lafferty et al v. Alex Jones et al* serve as proof. Alt-right speech became easy to produce under Web 2.0, and under "safe harbor laws," alt-right speech was less regulated. European hate speech limitations— if applied to US speech laws— can curb revenue generated by Conservative personalities.

**Williams, McKenna**

University of Oregon

Research Mentor(s): Frances White

Poster

### **The Role of Feeding Priority in Bonobo (*Pan paniscus*) Dominance Hierarchies**

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

While the dominance hierarchies among chimpanzees (*Pan troglodytes*) have been widely documented, the same cannot be said for bonobos (*Pan paniscus*), our other closest relatives. Though

less aggressive than chimpanzees, bonobos still abide by a social dominance hierarchy cemented through agonistic and submissive behaviors. Various methodologies have been employed to create dominance hierarchies from behavioral data, though they traditionally employ analysis of aggressive-submissive interactions. However, the context of these interactions is not widely specified. I created a dominance hierarchy from aggressive-submissive interactions in the context of competition for high-value food. I analyzed videos from a fission-fusion group of bonobos at the Columbus Zoo for displacements surrounding an artificial termite mound loaded with high-priority food. Using this specific methodology, I investigated whether the context of food competition is useful in creating accurate dominance hierarchies. The results of this research help us better understand bonobo social systems through the lens of resource competition and highlight our ability to use non-invasive methodologies in primate research.

**Wilson, Katherine (K'iya)**

**University of Oregon**

**Research Mentor(s): Professor Mitchell Block, Katherine (K'iya) Wilson**

**Virtual**

### **The Lost Story of the University of Oregon Mother's Day Pow-wow**

This project began with a plan to mentor young Indigenous youth in filmmaking, and as a way to engage students in cultural research by interviewing Elders and filming archives. What began as a simple plan to film this Oregon Heritage Event of the annual UO Mother's Day Pow-wow had a major plot twist when it was discovered that the history of the exact year and the circumstances of how it all began were seemingly lost. While NASU leadership continued to meet various Pow-wow deadlines; their film mentor, UO Native Grad (2021) K'iya Wilson offered to contact her 60's UO cohorts who were there at the time, to try to find the answer. What she found was stunning footage and an amazing history, including the founding year that contradicted their oral tradition. K'iya reported her findings to the students, who continually advised her on needed edits. At the latest student gathering the final shocking truth was laid bare in a rough edit which stunned the students and a Native Professor as well. This is not only The Lost Story of the UO's Mother's Day Pow-wow, but the true story of how the War on Poverty that President Kennedy enacted in his final days created a new political constituency of minorities and disadvantaged youth; which ultimately made it possible for the very first of the UO Native American Student Union's pow-wow as well as their 55-year-old tradition begun with Speelyi-Ootum, The Coyote People, in the mid-1960's.

**Wilson, Nathan**

University of Oregon

Research Mentor(s): Hollie Smith, Deb Morrison

Oral Session

### **Climate Change in Ghana and Alaska: Finding Similarity in Difference**

This quasi-research, long-form story project does two things. First, it stands as a rebuke of more traditional forms of science communication in favor of something more authentic, rooted and emotional. It acknowledges that much of the information circulating around climate change is excessively doomist and overwhelming, arguing that the key to understanding and responding to climate change starts with listening to native voices. Second, it seeks to connect two foreign climate realities and transform difference into agency. Using information from a series of interviews, it reconstructs the climate realities of Accra, Ghana, and Cordova, Alaska, according to the following dimensions: climate impacts, how people discuss climate change, the emotions climate change evokes, what people think their climate future will look like and next steps. By placing different interviews in conversation with each other, this project draws similarities between what one would expect to be two opposing climate realities, demonstrating the universality and uniqueness of climate change.

**Wolfe, Ashton**

Umpqua Community College

Research Mentor(s): Sean Breslin

Poster

### **Reliance of Oscillation on Catalyst and Reagent Concentrations in the Belousov-Zhabotinsky Reaction**

Our study aimed to investigate the condition dependence of chemical oscillations in the Belousov-Zhabotinsky (BZ) reaction by manipulating the catalyst and concentration of reagents. The primary objective was to explore how varying the catalyst and reagent concentrations can modulate the chemical oscillations in the BZ reaction. The methods used involved manipulation of catalyst and reagent concentrations and observing the resulting oscillatory behavior of the system. The study aimed to reveal insights into the mechanisms behind these condition-driven oscillations and to demonstrate that the behavior of the BZ reaction can be controlled and manipulated by varying its conditions. The findings could have implications for the development of new chemical systems

that exhibit oscillatory behavior and may open up new opportunities for exploring the dynamics of non-equilibrium or oscillatory chemical systems. Overall, the study highlights the potential for manipulating chemical reactions to control their behavior and underscores the need for further research in this area.

**Woods, Micah**

**University of Oregon**

**Research Mentor(s): Barbara Muraca, Bill Cresko**

**Oral Session**

### **Exploring Biological Agency and Organismal Subjectivity as a Means to Question Genetic Reductionism**

Much of 20th-century biology was driven by and proceeded through a finer understanding of biological mechanisms at the level of genes and molecules. These gene-centric approaches have located medical interventions, clarified evolutionary histories, and identified molecular signaling pathways, among other invaluable contributions by mechanistically decomposing biological systems into genetic parts to examine how their structure and functioning explain the system as a whole. However, biology and philosophy of biology scholarship reveal that studying organisms in terms of their genes is limited because it overemphasizes genetic components' role in development, inheritance, and evolutionary innovation. Amplifying this scholarship, I show that these limitations call for a complementary approach—biological agency—capable of recognizing organisms as agents of their genes, instead of passive objects of their genes' expression. Engaging biological case studies, I reveal that reducing organisms to objects of their genes cannot account for organisms' context-sensitivity and responsiveness. I also use a feminist critique to show that gene-centrism is limited because it cannot recognize organisms as subjects, which realizes that gene expression is interactively shaped by organisms' spontaneous engagement with their environment. This project helps overcome the limitations of gene-centrism by offering complementary approaches capable of accounting for organisms' agency and subjectivity.

**Worrall, Sean**

University of Oregon

Research Mentor(s): Felix Deku

Poster

### **Conductive coatings to improve neural stimulation devices**

Degradation and inefficient charge transfer are two of the biggest problems when it comes to the long-term reliability of neural implants. In order to address these problems, I will examine the addition of two different conductive coatings on both gold and platinum microelectrode arrays (MEAs). My goal is to determine which coating option, iridium oxide (IrOx) or poly(3,4-ethylenedioxythiophene) (PEDOT), provides the best electrochemical properties for usage in neural implants. These electrodeposited conductive coatings will alter the properties of the electrode by increasing the electrochemically-active surface area and changing the chemical species that will transfer charge between the device and surrounding environment (benchtop electrolyte or neural tissue in vivo). The first experiment is currently in progress and will compare electrodeposition of (i) IrOx on platinum MEAs, (ii) IrOx on gold MEAs, (iii) PEDOT on platinum MEAs, and (iv) PEDOT on gold MEAs. The second experiment will test a two-stage electrodeposition process where (i) IrOx is coated on PEDOT or (ii) PEDOT coated on IrOx. I expect that platinum devices with PEDOT coated on IrOx will provide the best electrochemical properties because of an increased electrical conductivity and charge injection capacity. The impact of this project will allow an upsurge of time an implanted device can be functional, whilst also providing improved current stimulation to the region of the brain it will be implanted.

**Wright, Alexa**

University of Oregon

Research Mentor(s): Aldis Weible, Michael Wehr

Poster

### **The Effect of Ketamine on the Advancement of Alzheimer's Pathology in Mice**

Co-Author(s): Aldis Weible, Michael Wehr, Olivia Estes

Alzheimer's disease (AD) is a treatment-resistant neurodegenerative disease. A leading theory of AD is that the toxic build-up of amyloid-beta-42 (A $\beta$ -42) plaques in the brain leads to synaptic dysfunction. Recent studies have shown ketamine, an anesthetic, and a dissociative hallucinogen, to be an effective antidepressant, which is thought to be due to its ability to promote the growth of

synapses and rescue atrophy of neurons in the prefrontal cortex. Ketamine has also been recently shown to aid in the clearance of soluble A $\beta$ -42. My central research question is whether ketamine can prevent the development and or worsening of AD pathology via this A $\beta$  clearance mechanism. To test this, I started with a pilot study in which I injected Alzheimer's model mice with a low sub-anesthetic dose of ketamine starting when pathology first manifests for 28 consecutive days. I then tested mice using an auditory gap detection behavioral paradigm. Our lab has shown that AD causes progressive gap detection deficits in these mice. My central hypothesis is that mice injected with ketamine will not show the deficits in gap detection behavior seen in untreated AD mice. My preliminary data show that mice injected with ketamine daily did not show the expected deficits after the treatment period. This research could have a significant impact on the field by assessing if ketamine could be a potential pharmacological intervention in humans.

**Wright, Julianna**

**University of Oregon**

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

**Poster**

### **Neighbors in Need: Aiding The Venezuelan Refugee Crisis**

Between 1999 and 2013 Hugo Chávez's authoritarian rule as well as extreme reliance on oil provided the circumstances for Venezuela's economic crisis. Since then, Nicolás Maduro's presidency has done little to fix the economic issues plaguing Venezuela. Rigged elections have allowed Maduro to maintain his power and contribute to the extreme political unrest and instability. Since 2015 over 7 million Venezuelans have fled, mainly into surrounding countries and the United States. In recent years, the overload of Venezuelan refugees has resulted in many refugees being turned away from entering the United States and forced to migrate into other countries such as Mexico, or to return to Venezuela along the dangerous Darien Gap. Our proposal seeks to provide more resources to these countries in order to aid Venezuelan refugees after the failure of the Venezuelan government. These resources would provide adequate housing, healthcare, and jobs for the Venezuelans who have taken refuge. While temporary protection status has been given to Venezuelan refugees currently residing in the United States, there remains concerns for those who are still seeking to escape from their dangerous homeland. Utilizing this information we seek to analyze this crisis and its significance and implications within the larger scheme of foreign affairs and international relations as well as to propose potential steps to create positive change.

**Wu, Sidney**

University of Oregon

Research Mentor(s): Eleanor Wakefield

Poster

### **“Ducks for Change:” Disney's Project Green PSA**

Our research poster will examine Disney's Friends for Change campaign for environmental awareness. The project seeks to examine the difference of environmental awareness in 2009 versus 2023 as evident from the PSA. We will create a trip-fold poster that displays a before and after of the revised campaign for a more modern context. We are anticipating the campaign to be relatable in a modern context. We are hoping the campaign will have a stronger argument than its 2009 version. This is important because ad campaigns need to appeal to a younger audience in order to make an impact.

**Yep, Jadelyn**

University of Oregon

Research Mentor(s): Christopher Chapman

Poster

### **Oral Protein Bolus During Prolonged Mild Hypohydration Does Not Enhance Urine Concentrating Ability**

**Co-Author(s): John Halliwill, Christopher Minson, Sadie Holt, Shaun Brazelton, Cameron O'Connell**

We tested the hypothesis that oral protein loading following prolonged mild hypohydration attenuates reductions in free water clearance (CH<sub>2</sub>O) compared to during euhydration. In a block-randomized crossover design, twenty healthy adults [9 females, 11 males; age: 21 (3) years] completed 24 h fluid deprivation (HYPO) and 24 h normal fluid consumption (EUHY). Subjects consumed a whey protein shake within 10 minutes. Body fluid loss was percent change in body mass ( $\Delta$ BM) over 24 hours. Blood and urine samples collected at pre-, and 150-min post-protein intake (POST) were analyzed for osmolality to calculate CH<sub>2</sub>O.  $\Delta$ BM reduced in HYPO vs. EUHY [-2.6% (-3.0, -2.2) vs. 0.1% (-0.3, 0.4), P<0.01].  $\Delta$ BM was reduced in HYPO vs. EUHY [-2.6% (-3.0, -2.2) vs. 0.1% (-0.3, 0.4), P<0.01]. Baseline CH<sub>2</sub>O was lower in HYPO vs. EUHY [-1.6 ml/min (-1.8, -1.4) vs. 4.8 ml/min (3.5, 6.1), P<0.01]. There were no differences in CH<sub>2</sub>O between conditions at POST [HYPO: -2.4 ml/min (-2.7, -2.1); EUHY: -2.1 ml/min (-2.4, -2.1), P=0.08]. Compared to baseline, CH<sub>2</sub>O at POST was reduced in EUHY (P<0.01) but was not different in HYPO (P=0.15). These findings indicate oral protein loading does not enhance urine concentrating ability during prolonged mild hypohydration. It is unclear whether

the lack of further reductions in CH<sub>2</sub>O during HYPO, as opposed to EUHY, reflect a “ceiling effect” of having reached the physiological maximal ability to concentrate the urine. Supported by NIH R01HL144128 and F32HL164021.

**Yotsuya, Graham**

University of Oregon

Research Mentor(s): Courtney Mathers, Peg Boulay

Oral Session

### **Carbon Sequestration in Soils to Allocate Solutions for Atmospheric Carbon**

There is more carbon contained in the soil than the atmosphere and vegetation combined. Understanding the mechanisms that control the accumulation and stability of carbon in soil, we can mitigate our planet’s changing climate. By using a variety of existing soil and forest management techniques, this study will produce valuable data regarding which plant species and management techniques are most effective at storing atmospheric carbon in the soil. This is the first large-scale, long-term data collection study performed to measure carbon sequestration rates among Oregon native tree and shrub species. In 2022, the Soil Plant and Atmosphere Lab (SPA) and EWEB’s Carbon Forestry Lab planted eighteen different native Oregon tree and shrub species at the Highbanks site. The trees and shrub species were planted in various treatments which include hardwood-only, conifer-only, mixed tree and shrub, and shrubs-only plantings. We will monitor the soil’s health using methods such as soil sampling, pH measurement, aggregate stability measurement, carbon respiration and water quality measurement. This will allow us to answer our monitoring question regarding which types of plant species and planting treatments are most effective at storing carbon. The implications of this study have the potential to influence the way forests are restored and managed in Eugene and potentially beyond, within the goal of increasing carbon sequestration in soil in order to create sustainable climate solutions.

**Young, Patricia**

University of Oregon

Research Mentor(s): Mai-Lin Cheng

Poster

### **How to Read a Quilt: Commonplace, Quilts, & Reading**

This project is a literary view of the art of loving books, for Professor Mai-Lin Cheng’s “Book Love” course, with the hypothetical task of curating an exhibit about “book love.” I am approaching

this project by studying various works written by women and investigating their relationships to quilting in order to find out how the interaction between the reader, author, and the work act as a metaphor for making a quilt. I want my audience to understand how quilting is a project of love and commitment, created by binding many differently-patterned fabrics together to make a cohesive picture, and how creating and reading a piece of writing is a very similar act of love and dedication. Additionally, I want to address how ideas and traditions of femininity endure through this “quilting” process. I will use my own commonplace book, a 1993 thesis on quilting and femininity, and a novel about American women quilting together (the latter two from the University of Oregon Libraries Special Collections) to examine how feminine ideas are transferred via the quilt-like process of writing and reading.

**Zagorin, Zack**

**University of Oregon**

**Research Mentor(s): Chantelle Russel**

**Oral Session**

### **Increase Community for First Year Students; The Value and the Methods**

Academic Residential Communities (ARCs) are a proven way to increase a sense of belonging, build relationships and improve one’s well-being. As members of Thrive; an ARC here at UO, we have noticed these effects first hand and how positive an impact joining an ARC has been. However, during conversations with students on campus who are not involved in ARCs, we frequently encounter shared themes of loneliness and disconnection. Some students not in ARCs don’t even know their next door neighbor. This has prompted us to find and promote strategies to enhance the community experience and well being of students who are not a part of ARC’s. The University of Oregon website states that “About 25 percent of incoming freshmen join one of the 15 ARCs at the UO,” this means three out of every four students are left to navigate an entirely new environment on their own. We talked with faculty and students along with using research articles to figure out methods for improving a feeling of community. Through research we found that students can increase their sense of belonging and happiness by starting conversations and getting involved in campus activities. This is particularly important for those not in ARCs because we all have a psychological need for belonging and all students should know how they can cultivate community while in college.

**Zaidan, Dana**

University of Oregon

Research Mentor(s): Joseph Bruckner, Professor Judith Eisen

Poster

### **Exploring the effect of bacterial signaling pathways on zebrafish neuro-immune development**

Co-Author(s): Joseph Bruckner, Judith Eisen

The gut microbiota has been linked to human health and development. We found that the gut microbiota is required for normal zebrafish social behavior, but how it influences the brain development required for social behavior is not well understood. We previously identified a population of zebrafish forebrain neurons that are also required for normal social behavior. By raising zebrafish “germ-free”, we found that the microbiota is required for normal forebrain neuronal arborization. Microglia are brain-resident immune cells that remodel neurons and are excellent candidates for mediating interactions between the microbiota and the brain. We previously discovered that the microbiota promotes forebrain microglial abundance. We also found that neuronal arborization and microglial abundance are restored in germ-free fish after colonization with several different zebrafish-associated bacterial strains, suggesting that the microbiota might influence social neurodevelopment by a mechanism common to many bacteria. One pathway we explored involves a class of host proteins that receive bacterial signals called the Toll-like receptor (TLR) proteins. We also explored if and how proteins present in bacterial cell walls are sensed by host mechanisms in the brain. Identifying the signaling components that link the microbiota and brain development will clarify our understanding of how host-microbe interactions can influence human health.

**Zarlons, Iman**

University of Oregon

Research Mentor(s): Priscilla Peña Ovalle

Oral Session

### **Crazy Indonesia: Examining the Transnational Success of Indonesian Exploitation Film**

Exploitation film has been a condemned yet prevalent industry throughout history, the success of which is structured on content that taps into any and every social taboo. This paper looks at the 1970s to 1990s New Order era of Indonesia and compares Indonesian exploitation film as a local

product versus cultural export. Centering the analysis of two films from the Indonesian market, *Lady Terminator/Pembalasan Ratu Pantai Selatan* (1988) and *The Warrior/Jaka Sembung* (1981), this paper outlines the differing historical and political climates that shaped their global reception. This research conclusively acknowledges the escapist purpose it served for local audiences while western audiences were significantly influenced by exoticist notions. By engaging with this discussion, we are able to more intricately recognize how alternative media represents cultural anxieties and desires, as well as the varying efforts made by developing industries in order to penetrate western media's dominant sphere. This paper demonstrates the complexities of industry trends by considering inherent power dynamics in consumption and the impact of exploitation film on contemporary transnational media.

**Zinn, Laney**

University of Oregon

Research Mentor(s): Lauren M. Berny, Emily Tanner-Smith

Poster

### **Problem-solving and parenting: Associations with sexual risk-taking in an adolescent clinical sample**

Co-Author(s): Lauren M. Berny, Emily E. Tanner-Smith

**Purpose:** The present study examines whether parenting styles (inconsistent discipline, poor monitoring/supervision, and positive parenting) and negative problem-solving scores differ between participants who engaged in past-year sexual risk-taking behaviors and those who did not in a clinical sample of adolescents with histories of substance use disorders (SUDs).

**Methods:** Cross-sectional data were used from a sample of 294 adolescents enrolled in a larger parent study. Independent t-tests were used with baseline data to examine whether average parenting style and negative problem-solving scores were significantly different between participants who engaged in past-year unprotected or intoxicated sex and those who did not. Standardized mean difference effect sizes (Hedges'  $g$ ) were calculated to measure the magnitude of these differences.

**Results:** Adolescents who engaged in sex while intoxicated reported significantly higher inconsistent discipline ( $g = 0.42, p = .001$ ) and negative problem-solving scores ( $g = 0.39, p = .002$ ) than their peers, but no differences were observed for unprotected sex.

**Conclusions:** Incorporating social-emotional learning components that bolster rational problem-

solving and healthy decision-making into sexual health programming may be beneficial for adolescents with SUDs. Moreover, parenting programs that target consistent discipline may be an upstream preventive intervention for sexual risk-taking behavior.