

Undergraduate Symposium

2016 Event Program



SCIENCES

SOCIAL SCIENCES

ARTS

HUMANITIES



UNIVERSITY OF
OREGON

UNDERGRADUATE RESEARCH AWARDS 2016



WINNERS ARE SELECTED FROM TWO CATEGORIES

1. Papers or projects completed during a single course at the 300 level or above.
2. A thesis or project developed over more than a single term.

Each year through its Undergraduate Research Awards program, the UO Libraries recognizes undergraduates who produce high-quality research projects using the library's extensive resources and services.

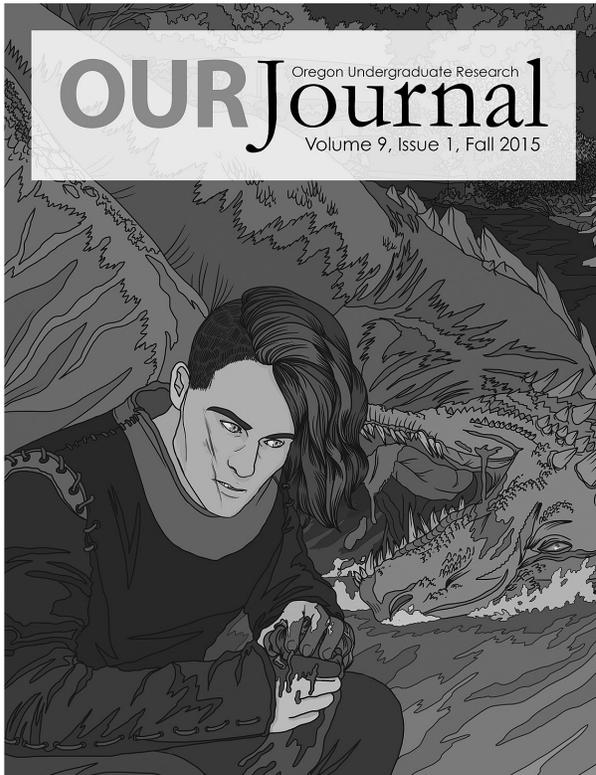
For complete information, visit library.uoregon.edu/undergrad-research-award



UNIVERSITY OF
OREGON

Libraries

WIN UP TO
\$1,500 FOR YOUR RESEARCH



SUBMIT YOUR WORK TO THE OREGON UNDERGRADUATE RESEARCH JOURNAL

OURJ IS A STUDENT-RUN, OPEN-ACCESS
PUBLICATION THAT SHOWCASES WORK IN
EVERY FIELD

NOW ACCEPTING RESEARCH PROJECTS,
CREATIVE WORK, TERM PAPERS, AND
THESES FOR OUR FALL 2016 ISSUE

DEADLINE: 06/30/16

QUESTIONS? OURJ@UOREGON.EDU WEBSITE: OURJ.UOREGON.EDU

May 20, 2016

High Impact Practices

The experts in Higher Education studies will tell you that undergraduate research in its many forms is a “high impact practice”: it offers a dramatic opportunity for student engagement and success. We couldn’t agree more. Those of us involved in this Symposium have seen at close range those amazing “aha” moments when a student realizes that she has uncovered something on the very front lines, at the very growing edge, of human culture and knowledge. Whether these contributions take place in a lab, in the archives, with a museum installation, in a dance studio, at a drafting table, at an easel, on the stage, or even in the streets: we know that undergraduate innovation transforms undergraduate lives.

But we also know that these opportunities are crucial not only for the individuals involved, but for the very institution of Higher Ed itself. The impact of these “high impact practices” reaches us all. When we nurture and celebrate individual creativity at the baccalaureate level, we nourish the very heart of our university’s research mission, and its core principle of public service. We affirm the ways in which wisdom develops within community, and we recognize the inextricable link between teaching, with its transmission of knowledge to new generations—and research, with its creation of new knowledge among classmates and peers, teachers and students.

Congratulations to all the student participants and faculty mentors who have made this event happen! Best wishes, from your fans and supporters in Undergraduate Studies, the Robert D. Clark Honors College, University Housing, the University Libraries, the Division of Equity and Inclusion, and the Office for Research and Innovation



LISA MYÖBUN FREINKEL
ASSOCIATE PROFESSOR OF ENGLISH AND COMPARATIVE LITERATURE
VICE PROVOST, UNDERGRADUATE STUDIES

Undergraduate Symposium 2016 Presentation Awards

Division of Undergraduate Studies—Oral Presentation Award

The award recognizes undergraduate oral presentations characterized by excellence in research and clarity of delivery. The award has a value of \$500 and must be used to attend an academic conference within one year of receiving the award. A graduating Senior may receive the award as a scholarship.

Sponsor: Division of Undergraduate Studies

Eligibility and Conditions:

- Open to students from all academic disciplines.
- Must be accepted to and present at the 2016 UO Undergraduate Symposium.
- Must upload their presentation slideshow to Undergraduate Symposium OneDrive Folder.
- Participants will be notified of the outcome the week following the Undergraduate Symposium.

Pre-Med Research Poster Award

The award recognizes a project in the life sciences with unique or innovative medical applications, or which advances the known frontiers of medical research. The award has a value of \$500 and may be used to cover fees and travel costs associated with the presentation of student work at disciplinary or national conferences or symposiums.

Sponsor: Robert D. Clark Honors College

Eligibility and Conditions:

- Open to students from the life sciences.
- Must be accepted to and present at the 2016 UO Undergraduate Symposium.
- Must install poster by 9:00 a.m. for judging.

Biology Poster Award

The Biology Department will offer one \$300 award to the student with the best poster, and two \$100 awards for posters with honorable mention, in the fields of biology and marine biology. Judging will be performed by senior graduate students.

Sponsor: Department of Biology

Eligibility and Conditions:

- Open to students from the fields of biology and marine biology.
- Must be accepted to and present at the 2016 UO Undergraduate Symposium.
- Must install poster by 9:00 a.m. for judging.

UROP Poster Award

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

Sponsor: Undergraduate Research Opportunities Program, Office for Research and Innovation

Eligibility and Conditions:

- Open to students from all academic disciplines.
- Must be accepted to present at the 2016 UO Undergraduate Symposium.
- Must be returning to the UO the following academic year.
- The award may only be used to assist with attendance to present research at a local, regional, or national conference within one year of award announcement.
- The award may be used to pay for travel, conference registration and/or accommodations.
- Must install poster by 9:00 a.m. for judging.



Asian Studies Undergraduate Research Colloquium

**Thursday, May 26, 2016
Global Scholars Hall, room 117
6 p.m. - 8 p.m.**

***Come hear other students speak and ask them questions
about their research in interdisciplinary Asia Studies!***

Catered reception and other fun activities included.

Undergraduate Symposium 2016 Agenda

Friday, May 20, 2016

- 8:00 a.m.** **Registration/Check-in begins** (Global Scholars Hall lobby)
- 9:00 a.m.** **Poster/Creative work installation begins** (installation deadline for posters participating in award judging)
- 3:15 to 5:00 p.m.** **Concurrent Session 1 Oral Presentations** (Global Scholars Hall 103, 117, 130, 131, 132, Bean West Conference Room, Bean East Conference Room, Moore Dining Room)
- 3:00 p.m.** **Completion of installation of posters/creative works**
(Global Scholars Hall Great Room, Main Hallway, Library Commons, Mezzanine Level, and rooms 113, 114, 115, 116)
- 5:00 p.m.** **Registration/Check-in closes**
- 5:00 to 7:00 p.m.** **Catered buffet reception** (Global Scholars Hall Main Corridor and Great Room)
- 5:15 p.m.** Remarks from **Provost Scott Coltrane** and **Vice Provost of Undergraduate Studies Lisa Freinkel** (Global Scholars Hall Great Room)
- 5:30 to 7:30 p.m.** **Poster and creative work presentations** (Global Scholars Hall Great Room, Main Hallway, Library Commons, Mezzanine Level, and rooms 113, 114, 115, 116)
- 6:00 to 7:30 p.m.** **Concurrent Session 2 Oral Presentations** (Global Scholars Hall 103, 117, 130, 131, 132, Bean West Conference Room, Bean East Conference Room, Moore Dining Room)
- 7:30 p.m.** **Group portrait** (Global Scholars Hall Great Room)
- 7:45 p.m.** **Symposium Concludes**

Undergraduate Symposium 2016 Acknowledgments

Friday, May 20, 2016

Sponsors

Division of Undergraduate Studies (Lisa Freinkel and Josh Snodgrass)
University Housing (Michael Griffel)
UO Robert D. Clark Honors College (Terry Hunt)
UO Libraries (Adrienne Lim)
Office of the Vice President for Research and Innovation (Brad Shelton)

Undergraduate Symposium Planning Committee

Kevin Hatfield (chair), Director of Academic Residential and Research Initiative,
Division of Undergraduate Studies/Residence Life and Adjunct Assistant Professor, History
Renée Dorjahn, Director of Finance and Administration, Robert D. Clark Honors College
Caitlyn Kari, Director of Communications, Robert D. Clark Honors College
Karl Reasoner, Program Manager, Undergraduate Research Opportunity Program, Research and Innovation
Yen Tran, Assistant Librarian, Coordinator for Undergraduate Instruction
Josh Snodgrass, Associate Vice Provost, Division of Undergraduate Studies; Professor, Anthropology
Hannah Bishop, Postdoctoral Research Scholar, Department of Neuroscience
Emily Chinn, Clark Honors College and Student Life Liaison (student)
Jane Conway, Clark Honors College and Student Life Liaison (student)
Alani Estrella, NEXUS (student)
Grieta King, NEXUS and Undergraduate Symposium Research Assistant (student)
Brittany Nefcy, Residence Life Coordinator, Global Scholars Hall
Mandi Severson, NEXUS (student)

Undergraduate Symposium Faculty Abstract Review Committee

Ashley Bateman, Doctoral Student, Biology
Hannah Bishop, Post-Doctoral Researcher, Biology and Institute of Neuroscience
Troy Campbell, Assistant Professor of Marketing, Lundquist College of Business
Aurelie Clement, Research Associate, Institute of Neuroscience
Ann Greenaway, NSF Graduate Research Fellow, Chemistry and Biochemistry
Christina Karns, Research Associate & Instructor, Psychology
Sen-Lin Lai, Research Associate, Institute of Molecular Biology
Stephanie Majewski, Assistant Professor, Physics
Miriam Rigby, Social Sciences Librarian, UO Libraries
Roger Smith, PhD Candidate, Physics
Aldis Weible, Research Associate, Institute of Neuroscience

Undergraduate Symposium 2016 Acknowledgments (continued)

Friday, May 20, 2016

Key Collaborators

Ward Biaggne, UO Libraries (Presenter Video Interviews)
Lynette Boone, UO Libraries (Oral Panel Filming)
Amanda Garcia, UO Libraries (Photography)
David Goodman, UO Marketing and Communications (Graphic Design)
Stacie Irvin, University Housing (Event Scheduling/Set-up)
Trond Jacobsen, UO Forensics Program (Public Speaking/Oral Presentation Workshops)
Lesli Larson, UO Libraries (Photography)
Rebecca Mellnik, Scheduling Coordinator, EMU (Venue Planning)
Dr. Terry Morgan, Oregon Health Sciences University (Guest Judge)

Panel Moderators

EnJolí Alexander, Residence Life Coordinator, University Housing
Rachel Bash, PathwayOregon Advisor, Teaching and Learning Center
Eric Benjaminson, Executive Director, Gabon Center, Office of International Affairs
Johan Bonilla, Graduate Student, Physics
nedzer erilus, Residence Life Coordinator, University Housing
Anna Fetter, Residence Life Coordinator, University Housing
Scott Fisher, Director of Undergraduate Studies, Physics
Dannie Helm, Law Library Manager, UO Libraries
Jennifer Hoy, Research Associate, Institute of Neuroscience
Amy Nuetzman, Associate Director, Teaching and Learning Center
Jeff Ostler, Professor, History
Avinash Singh, Research Associate/Adjunct Instructor, Neuroscience and Biology
Anna Schmidt-MacKenzie, Director of Residence Life and Educational Initiatives
Eric Torrence, Professor, Physics

Undergraduate Symposium Oral Presentation Schedule

Friday, May 20, 2016

Concurrent Oral Session 1 — 3:15–5:00 p.m.

1. Life at a Molecular Level—Global Scholars Hall 103: Session 1a

- Andrew Siemens** Dust Microbial Communities Have Dosage-Dependent Responses to Daylight
- Colin Hickman** The Role of Post-Translational Modifications in Regulating Distinct Heterochromatin Protein One Functions
- Wanjiru Karanja-Senge** Anthelmintic Drug Sensitivity in Male and Female *Panagrellus redivivus* Nematodes
- Kyla Martichuski** Temporal Variation in Atmospheric Fungal Community Composition

2. Identity, Culture, and Control: Presentations by the Humanities Undergraduate Research Fellows—Global Scholars Hall 117: Session 1b

- Amanda Perkins** Masculinist or Humanist? An Analysis of Rhetoric in College Debate
- Colin Takeo** The People's Music: Rhetoric and Musical Symbolism in the German Democratic Republic's 1954 *Musikfest des VDK*
- Samuel Rodgers** James Baldwin across Literary Forms
- Augustine Beard** The Enemy in the Forests: The Public Perception of Forest Fires in the Pacific Northwest 1933–1965
- Sarah Carey** Depictions of the Algerian War in Contemporary French Cinema: Understanding the Colonizer, the Colonized, and Violence
- Brandi Wilkens** Not Just a Pretty Face: 19th Century Japanese Courtesans and their Influence in Art Exportation

3. Breaking the Mold: Perceptions of Women in Society—Global Scholars Hall 130: Session 1c

- Hoi Nga Wan** Women Working in the Public Relations Industry in Hong Kong
- Karly DeWees** Does Gender Plays A Role in Combat Coverage?
- Dana Glasscock** Criminalizing Black Reproduction: “Crack Babies,” Black Motherhood, and State Intrusion
- Brittany Lang** Feminine Hygiene in America: What Problems America has Socially, Economically, and Environmentally With Current Products and How to Solve Them: A Study in Product Design and Sustainability
- Ruth Grenke** The Academic Climate of Science, Technology, Engineering, and Math Fields: How Stereotypes Influence Perceptions

4. Telling Tales: Stories of Heroes, Myths, and Monsters—Global Scholars Hall 131: Session 1d

- Basil Price** “Then Brynhild Laughed”: Female Heroism and Changing Tradition in Volsunga Saga
- Madeline Salzman** St. Michael the Archangel: his role in Early Christianity
- Sean Pebler** Leslie Marmon Silko's *Almanac of the Dead* and the Neoliberal Nightmare of Global Proportions
- Andrea Cueva** A Close Look at the Portal Motif in Fairy Tale Literature
- Felicia Hamilton** Borges: Time, Nostalgia and Modernity in Evaristo Carriego

5. Understanding Ourselves Through Popular Culture, Conflict, and Cooperation—Global Scholars 132: Session 1e

- Connor Williamson** Examining Inefficiencies in NBA Player Development and Potential Solutions
- Namratha Somayajula** Seeds of Peace: Visible Cooperation between Jews and Muslims in Morocco
- Briauna Jones** The Threshold of the Sublime: Standing in Awe and Fear in José María Heredia's "En el Teocalli de Cholula"
- Nayelli Velazquez** Sociolinguistic Awareness through Cultural Spaces

6. The Intersection of Literature and Identity—Bean West Conference Room: Session 1f

- McKenna O'Dougherty** Poetry as a Portal and the Spaces Left Blank by Modern Settler-Colonial Education: A Native Feminist Reading of Joy Harjo's "Perhaps the World Ends Here"
- Daisy Ahlstone** The Great Tip-stery: An Exploration of Alice Sheldon's Gender Play in the James Tiptree, Jr. Papers (1960's–1970's)
- Cesare Bisbocci** *Down The Manhole*: An Application Of Child Development Research For All
- Braden Prillwitz** "Neat, Clean, Shaved, and Sober": Philip Marlowe as the Modern Knight in Chandler's *The Big Sleep*
- Rebecca Howard** Stigma of PTSD and the Role of Empathic Engagement with Fictional Literature

7. Looking at the Past: Classics and Medieval Studies—Bean Moore Conference Room: Session 1g

- Chelsey Boguslawski** Eternal Pearly Whites: The Meaning of Teeth in the Middle Ages
- John Tuttle** From *Hoplōn* to *Scutum*: The Evolution of the Roman Military's Shield

8. What We Can Learn by Looking at the Body: Feet, Teeth, and THC—Bean East Conference Room: Session 1h

- Mitchell VanVuren** The Increased Danger of High Drivers: Evidence from the Fatal Accident Reporting System
- Jonathan Wallace** Vestibular Modulation of the Abductor Hallucis and Abductor Digiti Minimi in Response to Changes in Head Position and Visual Cues
- Adriane Knorr** Sensations of Pain: Real or Imaginary?
- Selina Robson** Hyenas through Space and Time: Using Teeth to Study Changing Ecological Niches
- Eva Biedron** Use of the Sciuridae as a Paleoenvironmental Indicator Taxa

Concurrent Oral Session 2 — 6:00–7:30 p.m.

9. Language, Phonetics, and Narratives Around the World—Global Scholars Hall 103: Session 2a

- Shelby Arnson** Twentieth Century Sound Change in Washington DC African American English
- Jonathan Faris** The Question of Divine Omnibenevolence: What does the Hebrew Bible Reveal about Yahweh's Nature?
- Brittany Parham** Phonetic Cues by Which Speakers Produce and Identify Stressed Syllables in the Ichiskiin Sahaptin Language
- Grace Shum** The Evolution of the Comic Panel in Japanese Manga: An Exploration of the Comic Panel from Ancient Times to Modern Day

continued next page _____

10. Decolonizing Research: The Northern Paiute History Project— Global Scholars Hall 117: Session 2b

- Sophia Albanis** “The Chieftain’s Weary Daughter”: The Feminist Legacy and Mainstream Appropriation of Sarah Winnemucca
- Victoria Carroll** A Chronicle of the Health Conditions among the Burns Paiute Colony, 1900–1955
- Anna Karvina Pidong** Food and Power at Malheur: Examining the Nexus of Food Systems Implemented on the Malheur Reservation
- Madeline Peara** School House Blues: How the Bureau of Indian Affairs Used the Burns Indian School to Limit Responsibility to the Northern Paiute Indians of the Burns Colony
- Kiara Kashuba** The Plow in a Land of Sand and Sagebrush: Agrarian Ideology as an Agent of Assimilation on the Warm Spring Indian Reservation, 1850–1870
- Augustine Beard** The Network of Resistance: Northern Paiute Opposition to Imprisonment at Yakima Reservation, 1878–1884
- Catherine Jaffe** Slavery, Captivity, and the Fate of Northern Paiutes after the “Snake” War: A Case Study of the Expedition of 1871 and William McKay: Exterminator and Emancipator

11. Stirring the Imagination—Global Scholars Hall 130: Session 2c

- Carly Bushman** “Strain of Black Blood”: The Role of the New Negro Movement in *Passing*
- Angela Maya Rothman** Revolutionary Theatricality: Dramatized American Protest, 1967–1968
- Adam Buchanan** The Intersectionality of Contemporary Punk Music and Political Dialogue for Latino/a Youth in California
- Zachary Sherrod** Room for Thought: A Transformation of the Values of Emerson and Einstein

12. Health and Diseases—Global Scholars Hall 131: Session 2d

- Alani Estrella** Asthma as an Environmental Disease: The Hunt for Easily Accessible Biomarkers Using Monozygotic Twins
- Zoë Wong** Characterization of a Pro-proliferative Microbiota in Transgenic *Drosophila*
- Patrick Johnson** Identification of genes required for nuclear exclusion of Prospero during neural stem cell self-renewal
- Therese Wichmann** The Effect of Rigid Ankle-Foot Orthotics on Joint Range of Motion and Temporospacial Parameters
- Michael Parappilly** Insights into the Development of Gastrointestinal Brunner’s Glands: Critical Stem Cells and Differentiation Factors

13. Governmental and Societal Factors that Shape Our Understanding of Gender— Global Scholars Hall 132: Session 2e

- Xiaoran Li** Understanding Gender-Biased Government Control
- Dorothea Mosman** *The Brokeback Mountain* Controversy: Converging Identities of Queer Masculinity in the American West
- Dongxue Su** The Inequality in Families: Institutional Pressure and Gender Diverse between Family Members
- Cholena Wright** Indian Beauty Pageants: Performing Indigeneity or Celebrating It?

continued next page _____

14. Matter Matters: Answering Questions at a Molecular Level—Bean West Conference Room: Session 2f

- Nicholas Rinehart** Design and Synthesis of a Nitrogen Binding Molecule for Natural Gas Purification
- Alexia Smith** Investigating Iron Oxide Nanoparticle Growth via Slow Injection Synthesis
- Brianna Stamas** Missing Transverse Momentum Trigger Performance Studies for the ATLAS Calorimeter Trigger Upgrades
- Manju Bangalore** How Is Soft Condensed Matter Research Relevant to NASA and Agriculture?
- Samuel Estrella** Charge Trapping in Colloidal Cadmium (II) Selenide Quantum Dots

15. Medieval to Modern: Evolution of the Justice System—Bean Moore Conference Room: Session 2g

- Caroline Doss** The Evolution of Law: How Medieval Peasant Disputes Shaped Legal Systems
- Claire Aubin** Legality, Memory, and Monstrosity: an Examination of International Postwar Justice Systems and the Trials of John Demjanjuk
- Samantha Lowery** Speed Dating Lady Justice: The Predictive Devices Attorneys Use to Select Jurors in Petit Trials
- Ethan McCormac** What is Past is Prologue: The History of the Breakdown of Economic Models Before and During the 2008 Financial Crisis
- Anne Yilmaz** Eyewitness Memory: How Stress and Situational Factors Affect Eyewitness Recall

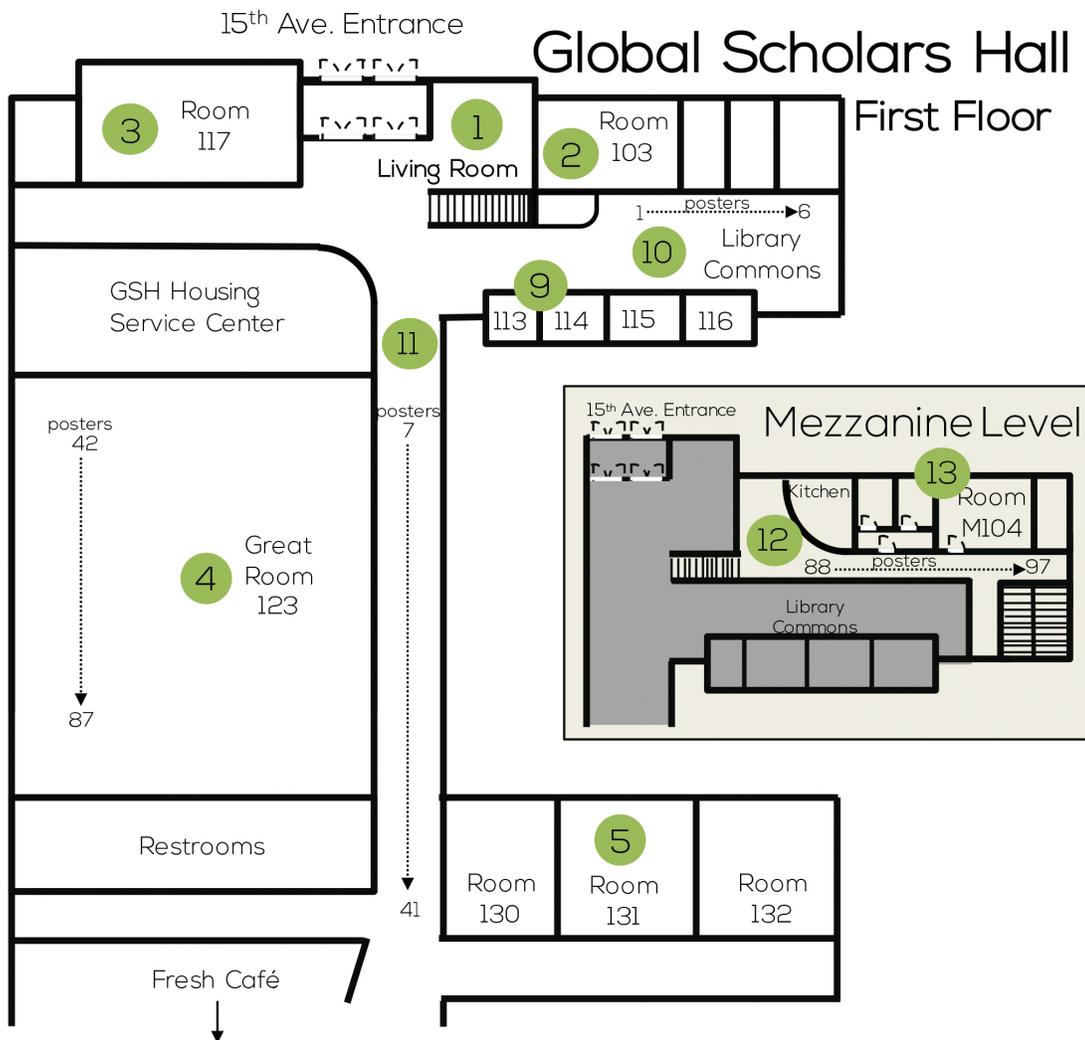
16. Humans and Their Interactions with Nature—Bean East Conference Room: Session 2h

- Phoebe Lett** Restoring Connections: Eugene Youth to the Great Outdoors
- Maxfield Lydum** The Anthropocene and the Reinvention of the Human
- Emma Gjerdseth** Quantitative Study of Beach Debris in Northern Madagascar
- Kennedy Potts** Canopy Connections 2016
- Kendra Walters** The Ups and Downs of the Mammal World: How Mammal Diversity has Changed in the United States throughout the 20th Century

Undergraduate Symposium 2016 Venue Maps—Global Scholars Hall

Friday, May 20, 2016

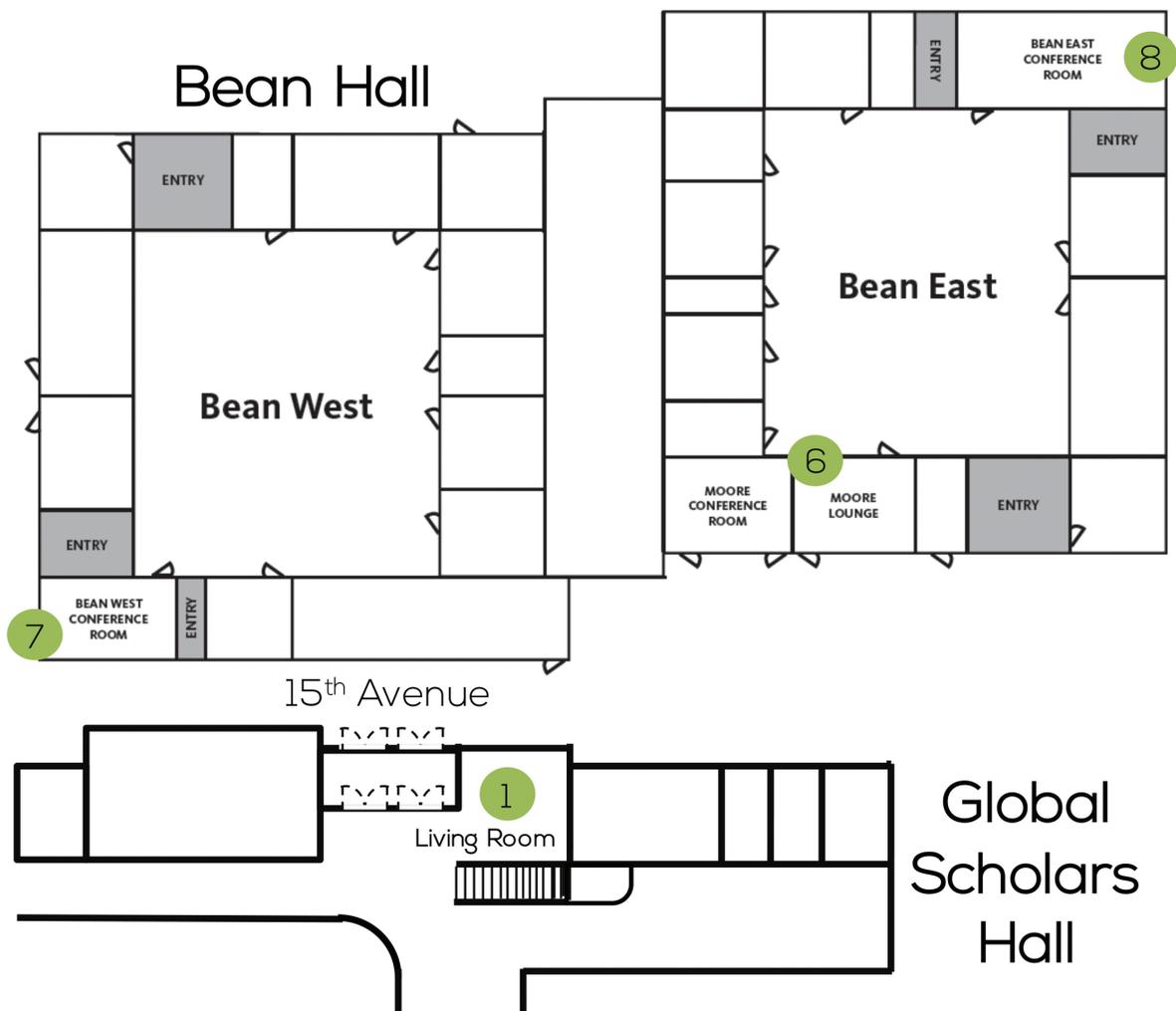
<p>Registration</p> <p>1. Living Room (GSH)</p>	<p>Posters</p> <p>10. #1-6, Library Commons (GSH)</p> <p>11. #7-41, Main Hallway (GSH)</p> <p>4. #42-87, Great Room 123 (GSH)</p> <p>12. #88-97, Mezzanine Level (GSH)</p>
<p>Oral Presentations</p> <p>2. Room 103 (GSH)</p> <p>3. Room 117 (GSH)</p> <p>4. Room 123 (GSH)</p> <p>5. Room 130-132 (GSH)</p> <p>6. Bean East Conference Room (Bean)</p> <p>7. Bean West Conference Room (Bean)</p> <p>8. Moore Conference Room (Bean)</p>	<p>Performances</p> <p>4. Great Room 123 (GSH)</p>
<p>Film Screenings</p> <p>9. Rooms 113-116 (GSH)</p>	<p>Reception</p> <p>4. Great Room 123 (GSH)</p>
	<p>Video Interviews</p> <p>13. Room M104 (GSH)</p>



Undergraduate Symposium 2016 Venue Maps—Bean Hall

Friday, May 20, 2016

<p>Registration 1. Living Room (GSH)</p> <p>Oral Presentations 2. Room 103 (GSH) 3. Room 117 (GSH) 4. Room 123 (GSH) 5. Room 130-132 (GSH) 6. Bean East Conference Room (Bean) 7. Bean West Conference Room (Bean) 8. Moore Conference Room (Bean)</p> <p>Film Screenings 9. Rooms 113-116 (GSH)</p>	<p>Posters 10. #1-6, Library Commons (GSH) 11. #7-41, Main Hallway (GSH) 4. #42-87, Great Room 123 (GSH) 12. #88-97, Mezzanine Level (GSH)</p> <p>Performances 4. Great Room 123 (GSH)</p> <p>Reception 4. Great Room 123 (GSH)</p> <p>Video Interviews 13. Room M104 (GSH)</p>
---	---



Undergraduate Symposium Presentation Abstracts

Friday, May 20, 2016

Title: The BAH Domains of the DIM-2 DNA methyltransferase Are Required for DIM-2 Localization and Normal DNA methylation

Presentation Type: Poster 42

Primary Research Area: Science

Presenter: Sabrina Abdulla

Faculty Mentor: Eric Selker, Vincent Bicocca

Major: Biology

Funding Source: OURS (Oregon Undergraduate Researchers in SPUR), NICDH, \$4500

Abstract:

The regulation of epigenetic marks, including histone modifications and DNA methylation, is critical for normal development. Defects in the processes that regulate epigenetic marks can lead to the development of diseases, including cancer. To better understand these processes, we utilize the model organism *Neurospora crassa*, a filamentous fungus that possesses many epigenetic marks that are common to higher order eukaryotes, including humans. Using this model, we have investigated the functional requirements of the DNA methyltransferase DIM-2, which is responsible for all DNA methylation in *Neurospora*. Using site-directed mutagenesis to systematically disrupt regions of DIM-2, and Southern blotting to assay DNA methylation, we discovered that the bromo-adjacent homology (BAH) domains of DIM-2 are required for normal DNA methylation activity. Based upon these observations, we hypothesized that the BAH domains are essential for making specific interactions with histone residues, and that these interactions are necessary for DIM-2 methyltransferase activity. To test this hypothesis, we utilized a DNA adenine methyltransferase (DAM) construct that allowed us to test the ability of the protein to localize to regions that are normally methylated based on the presence of adenine methylation. These experiments revealed that disruption of the BAH domains is sufficient to eliminate DIM-2 chromatin localization. Thus, the BAH domains prove to be essential for DNA methylation due to their role in DIM-2 localization.

Title: Aging Effects on Perceptual and Conceptual Memory: Transformations from Short-term to Long-term Memory

Presentation Type: Poster 43

Primary Research Area: Science

Presenter: Anisha Adke

Faculty Mentor: Dasa Zeithamova-Demircan

Major: Biology

Funding Source: UROP Mini-Grant, University of Oregon, \$1,000

Abstract:

Conceptual and precision memory are two functions of healthy and adaptive memory. Conceptual memory retains the gist of events. Precision memory allows memory of specific perceptual details of events, contrasting them from other similar experiences. Precision and conceptual memory may be differentially important for short-term memory and long-term memory. Long-term memories may have a tendency to retain meaning but lose details. This is adaptive in daily life, but may be a problem in certain situations, like during eyewitness testimonies, where details rather than generalities are essential. Loss of memory precision also characterizes normal aging, but it is unclear whether this occurs because details are lost in long-term memory or they are not encoded in short-term memory. The purpose of the study was to determine if memories transform from perceptual to conceptual over time and identify the effect of aging on this relationship.

Subjects' memory were tested for general meaning (conceptual memory) or specific details (perceptual memory) either immediately (short-term) or after thirty minutes (long-term). Preliminary results show that short-term memory supports quicker and more accurate judgments of perceptual details, whereas long-term memory supports quicker and more accurate judgments of meaning. Future testing will assess whether older adults are quicker and more accurate in judgments of meaning in both long and short-term memory, suggesting that older adults process events on a conceptual level even when information is maintained over very short delays.

Title: Parenting Quality and its Relation to Child Brain Function for Selective Attention in Low Socioeconomic Status Families

Presentation Type: Poster 44

Primary Research Area: Science

Presenter: Courtney Adler

Faculty Mentor: Helen Neville, Jimena Santillan

Major: Psychology, Biology

Abstract:

Selective attention is a foundational skill that is important for academic readiness and success. Past research indicates that children from low socioeconomic status (SES) families exhibit deficits in a neural index of selective attention relative to their high SES peers, which is consistent with the academic achievement gap seen between low and high SES children. Selective attention exhibits neuroplasticity and can be enhanced or decreased by the surrounding environment. One of the most prominent factors children are exposed to early on is the quality of parenting they receive. Previous research has shown that parenting quality predicts behavioral measures of many cognitive abilities related to academic success. This study examined whether the quality of parenting shapes neural indices of selective attention in children from low SES families. To measure parenting quality, four parenting behaviors (affection, responsiveness, encouragement, & teaching) were coded from videos of mother-child interactions during a free play task. To assess brain function for selective attention, event-related potentials (ERPs) were recorded during an auditory task in which children were simultaneously presented with two different children's stories and were instructed to attend to one story while ignoring the other. We hypothesized that higher parenting quality would predict enhanced brain function for selective attention. Results will be discussed.

Title: The Great Tip-stery: An Exploration of Alice Sheldon's Gender Play in the James Tiptree, Jr. Papers (1960's-1970's)

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Daisy Ahlstone

Faculty Mentor: Carole Stabile, John Baumann

Major: Folklore, Minor in WGS, and Film Studies

Abstract:

James Tiptree, Jr. was an award winning feminist science fiction author of the 1960's and 70's. When suspicion began to arise about the author's identity, Alice Sheldon was forced to reveal herself as the woman behind the male pseudonym. However, before she was pressured into revealing her identity, Sheldon, as James Tiptree, Jr., was able to develop close relationships with many members of the science fiction community, particularly Ursula Le Guin and Joanna Russ. Their relationships, mostly contrived through epistolary communication, were incredibly flirtatious, intimate, and based heavily on the notion that James Tiptree, Jr. was a heterosexual man. How was Sheldon able to convince her friends of her male persona's validity for so long, despite the intimacy of their letters? Looking at the Tiptree Papers collection in the Special Collections and University Archives to unpack the language Sheldon used with Le Guin and Russ to "prove" that she was in fact a man, Ahlstone found little, if any, of a stereotypically masculine voice, but rather that it was the traditionally male-gendered name, James Tiptree, Jr., as well as brief moments of physical description, that was the main factor contributing to the success of Sheldon's persona.

Title: "The Chieftain's Weary Daughter": The Feminist Legacy and Mainstream Appropriation of Sarah Winnemucca

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Sophia Albanis

Faculty Mentor: Kevin Hatfield, Jennifer O'Neal

Major: Women's & Gender Studies

Abstract:

To say the least, Sarah Winnemucca of the Northern Paiute was controversial: she was a collaborator with the United States Army, she was an outspoken Native American rights activist and public figure, and she was, of course, a woman. This project investigates the political legacy of Sarah Winnemucca through the lens of her womanhood, employing as comparative tools the often-contrasting critical theories of "mainstream" feminism

and Native feminism(s). Relying upon the understanding that Sarah Winnemucca constantly juggled a series of conflicting identities—and utilizing the theory of intersectionality to investigate those identities and their impact on her work—this research effort emphasizes the aspects of her identity that are often overlooked in the assumption that she was a “feminist heroine.” Popular imaginings of Sarah Winnemucca—like those found in the writings of her contemporary biographers—are often idealistic, oversimplified, and heavily influenced by feminist modes of thought that are distinctly white. Including the voices of Native feminists in the ongoing scrutiny of Sarah as an indigenous woman and thinker is necessary, both in understanding the real implications of her actions, and in doing justice to the narratives and perspectives of the Northern Paiute. Sarah Winnemucca was a mediator between settler society and the Paiute community, between the public realm and her traditional heritage, and between political assertiveness and conventional forms of femininity. Thus, in comparing mainstream feminism’s and Native feminism’s perceptions of Sarah Winnemucca, the complexity and contentiousness of her political legacy and modes of advocacy offer distinctive insight into what it means to be Native, female, and radical.

Title: “Air Proof My Leaking Apartment”: Design Heat Lost through Infiltration in Old Apartment Buildings

Presentation Type: Poster 1

Primary Research Area:

Presenter: Sharon Alitema

Co-Presenters: Maryam Alnemer, Yue Gu

Faculty Mentor: Alison Kwok, Jenni Hyunh

Major: Architecture

Abstract:

Infiltration, a common source of heat loss, especially in old houses, is the unintentional introduction of outside air into a building. Air escapes through cracks of the building’s envelope, windows, and through use of doors. This case study focuses on an old duplex apartment in Eugene where infiltration is most pronounced in the winter due to indoor-outdoor temperature differences. The hypothesis was that by sealing the large leaks/cracks in the apartment, it would result in a 50% reduction in infiltration, allowing the apartment to maintain a room temperature of 68 °F. A powerful fan, blower door, that enables one to identify major air leaks by lowering the air pressure inside the house and letting air flow through all unsealed cracks, was used to test these hypotheses. Temperature values were recorded before and after possible solutions were implemented. While the hypothesis predicted a 50% reduction in infiltration, the 41.1% reduction achieved proved infiltration was the greatest contributor of heat loss. Further analysis revealed that the reduction of infiltration, led to energy saving costs of about up to \$50 during the winter months.

Title: Do Behavior Problems Predict a Child’s Ability to Self-Regulate When Performing a Stressful Task?

Presentation Type: Poster 2

Primary Research Area: Social Science

Presenter: Brigette Amidon

Faculty Mentor: Leslie Roos

Major: Psychology

Abstract:

In the present study, we examined preschool aged boys’ minute-to-minute physiological adjustments and emotional behaviors elicited in response to a stressful task, as a predictive measure of child externalizing behavior problems. A sample of (N=27) four to six year old boys, varying in levels of externalizing behavior problems, participated in a matching task, while parasympathetic physiology and expression of emotions were observed and recorded as measures of self-regulation. Externalizing behavior problems were assessed using the Child Behavior Checklist (CBCL) (Achenbach, 1991). In addition, regulation of parasympathetic physiology was assessed using constructed measures of respiratory sinus arrhythmia (RSA) during a resting baseline and during the stressful task, while emotion regulation was examined using observer-coded measures of child emotions (shame, embarrassment, anger, frustration, withdrawal, anxiety, self-determination, and pride) and affect (positive, negative). It is hypothesized that children reported as having greater externalizing behavior problems would have difficulty self-regulating while performing the stressful task.

Title: #SaveTheEarth: A Comparison of Environmental Organization's Twitter Content to Uncover Which Types of Tweets Engage Users

Presentation Type: Poster 3

Primary Research Area: Social Science

Presenter: Sarah Arnell

Faculty Mentor: Autumn Shafer

Major: Journalism: Public Relations

Abstract:

Large environmental organizations operating in the U.S., such as Sierra Club and the World Wildlife Fund (WWF), are widely considered to be influential in shaping political policies and public opinion in regards to climate change, greenhouse gasses, preserving ecosystems, energy, and water consumption. In addition to relying on private public donors for funding, environmental organizations often call members to action in support of local and national lobbying efforts and community-based volunteer activities. One key outreach channel used by such organizations is Twitter. Although many of these organizations send several tweets a day to hundreds of thousands of followers, an initial review of the Twitter accounts of the largest U.S. based environmental organizations revealed most have extremely low engagement among their followers (i.e., less than 1% of followers are engaging with their tweets). In this study, we will conduct a quantitative content analysis of the Twitter feeds of four major environmental organizations and analyze successes (i.e., WWF has 3.7 times as many followers as Sierra Club, yet recent WWF tweets were shared 8.8 times and liked 21.1 times more often) and opportunities to better engage with their publics. We will compare organizations and tweets based on content, such as message framing (e.g., gain and loss frames), and follower engagement. This research will provide insights as to what types of tweets are most effective in motivating engagement.

Title: Twentieth Century Sound Change in Washington D.C. African American English

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Shelby Arnson

Faculty Mentor: Tyler Kendall, Charlie Farrington

Major: Linguistics

Abstract:

African American English (AAE) is the most extensively researched and discussed dialect of American English. AAE, like other minority ethnic dialects, is often compared to the local benchmark European American English (EAE) varieties (Fought 2013). As such, there remain important questions about sound change within AAE. In the present study, I examine vowel differences, which are perceptually salient for judgments about speakers (Purnell et al. 1999). I pay special attention to Thomas's (2007) African American Vowel Shift configuration (AAVS), which has been identified in a number of regions across the country and affects different vowel classes. The data come from a unique corpus of African Americans in Washington, D.C., comprised of both legacy data, recorded in 1968, as well as modern data recorded in 2015. I explore the full vowel systems of 20 speakers born between 1890 and 2002.

Over 4000 vowels were extracted for analysis. Phonetic correlates of pronunciation, notably the first and second formants, were used to quantify variation. Results indicate some change over time, including the retraction of the high back vowels, suggesting a movement toward the AAVS configuration. Additionally, we see the emergence of front vowel centralization before /r/, highlighting the role of regionality in Washington D.C. AAE speech. While traditional analyses often use EAE as a comparison, this study demonstrates the complex nature of sound change occurring within AAE.

Title: Legality, Memory, and Monstrosity: An Examination of International Postwar Justice Systems and the Trials of John Demjanjuk

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Claire Aubin

Faculty Mentor: Julie Hessler

Major: International Studies/Russian, East European, and Eurasian Studies

Funding Source: Research Seminar Participant, United States Holocaust Memorial Museum, Travel and accommodation expenses & \$250 stipend;

UROP Mini-grant, UO Undergraduate Research Opportunity Program, \$1000

Abstract:

In the 1980s, John Demjanjuk, a Ukrainian immigrant living in suburban Ohio who had been accused of a singularly horrific type of Holocaust perpetration, became the accidental poster child for international legal battles. He would face multiple deportations, be subjected to two lengthy trials for two different sets of war crimes committed by two different people, and ultimately die in Germany without a completed appeals process or criminal record. Though Demjanjuk's relationship to the Holocaust has been the subject of much debate, there has not been enough discussion of the ways his trials reveal the abilities of international bodies to serve as arbiters of justice. Demjanjuk's case calls into question the efficacy of both domestic and international legal systems, most especially their relationships with war crimes investigative processes and the politics of postwar justice. The influence of history, memory, and political goals on the legal system as it relates to late-period Holocaust trials is enormous, and this project explores how that influence can be seen throughout the Demjanjuk trials. The failures and successes of the trials are exemplary of the postwar international legal system in almost all ways, particularly as that legal system has attempted to provide redemption for survivors of genocide. Archival documents, interviews with original trial investigators, and trial transcripts are used to provide social, political, and historical context for the case. This project is also the basis of a more in-depth undergraduate departmental honors thesis.

Title: Muffled Voices: Press Censorship in the Former Soviet Union

Presentation Type: Poster 4

Primary Research Area: Humanities

Presenter: Jonathan Bach

Faculty Mentor: Peter Laufer, Kim Sheehan

Major: Journalism

Funding Source: The University of Oregon-UNESCO Crossings Institute, Airfare to Azerbaijan; the University of Oregon College of Arts and Sciences, \$1914.26 for airfare; the Government of Azerbaijan, hotel and occasional food

Abstract:

Around the globe, countries suffer from constrained media outlets and a lack of access to public information. In the former Soviet Union, there has been a struggle to maintain a balance between media autonomy and censorship. Such censorship hinders reporters' roles as watchdogs against the government, free to uncover corruption without fear of a threat to their lives. But as I found through research in and outside of Azerbaijan—a country on the Caspian Sea—those at the top of the government come down harshly on journalists who are just doing their jobs. So that I could better understand the ways in which censorship occurs, I conducted interviews via my research fellowship with the University of Oregon-UNESCO Crossings Institute for Conflict Sensitive Reporting and Intercultural Dialogue with journalists and academics in Oregon and Finland. For this thesis, I draw on my experience at the World Forum for Intercultural Dialogue in Baku, Azerbaijan, as well as the experiences of journalists who have worked on press freedom issues in countries like Ukraine. For example, I spoke with Steve Bass, President and CEO of Oregon Public Broadcasting, about his time in Kiev, Ukraine, working with national broadcasters there to develop a cohesive national public station. I also spoke with Juan Barata Mir, who works with the Organization for Security and Cooperation in Europe, about the ways in which external officials put pressure on governments like Azerbaijan to release jailed journalists. It's a common fact that the public has a right to access official information—so when that right's impeded, there must be backlash.

Title: Characterization of In_xGa_{1-x}P grown by Close-Space Vapor Transport
Presentation Type: Poster 45
Primary Research Area: Science
Presenter: Benjamin Bachman
Faculty Mentor: Shannon Boettcher, Annie Greenaway
Major: Chemistry
Funding Source: UROP Mini-grant, University of Oregon, \$1000

Abstract:

Indium gallium phosphide (In_xGa_{1-x}P) has shown promise as a potential material for photoelectrochemical (PEC) hydrogen generation through water-splitting, as well as for use as a passivation layer for high-efficiency gallium arsenide (GaAs) solar cells. We seek a better understanding of the growth conditions and source material preparation optimal for depositing InGaP₂ onto GaAs using close-space vapor transport (CSV_T). CSV_T is a promising method for depositing materials such as InGaP₂, because it uses less toxic precursors and has the potential to be scaled up to an industrial level. Using CSV_T to deposit InGaP₂ onto GaAs could potentially reduce the cost of manufacturing GaAs devices as well as reduce the risks involved that are inherent in status quo growth techniques such as metal-organic chemical vapor deposition. To characterize the InGaP₂ we will utilize x-ray diffraction, x-ray fluorescence, Hall effect, SEM, non-aqueous photoelectrochemistry, and Mott-Schottkey analysis. Further work will determine if these devices would be well suited for PEC water-splitting or solar energy generation.

Title: How Is Soft Condensed Matter Research Relevant to NASA and Agriculture?

Presentation Type: Oral
Primary Research Area: Science
Presenter: Manju Bangalore
Faculty Mentor: Eric Corwin
Major: Physics, Math

Abstract:

Granular materials are ubiquitous in nature. Depending on the thermal and physical conditions, they are capable of acting like a solid or a liquid. A jammed granular system occurs at a critical particle concentration at which the particles can no longer be rearranged by an external force. Oil droplets in oil-in-water emulsion can serve as a simplified model for the jamming of granular materials. The purpose of our project in Dr. Eric Corwin's lab is to study force networks in granular systems and how individual particles perturb the packing systems can benefit industries as diverse as agriculture and space exploration.

Title: Spatia: A New Work for Digital Organ
Presentation Type: Creative Work 1 (GSH Great Room Stage)
Primary Research Area: Fine/Performance Arts
Presenter: Alexander Bean
Faculty Mentor: Robert Kyr, Barbara Baird
Major: Music Composition, Performance

Abstract:

The digital organ is a singularly unique instrument. The acoustic pipe organ is fixed in one location with a limited number of stops available to the organist. In contrast, the digital organ is mobile and when used in combination with a computer, offers the organist an infinite array of different stops. Unfortunately, composers and performers have hitherto ignored the unique capabilities of the digital organ. In my composition for digital organ, Spatia, I explore the possibilities of composing specifically for digital organ. I designed a unique set of nine organ stops for each specific performance venue and date. Six of these stops feature sounds recorded from the performance. The three other stops feature the sound of the full organ altered by the resonant frequencies of the performance space (i.e. those pitches which sound the clearest in a particular room). One stop features the unaltered full organ sound, one stop features the full organ sound distorted by the resonant frequencies, and the final stop features the resonant frequencies without the full organ sound. In this presentation I will describe the methods used to create the digital organ stops and the compositional technique, followed by a performance of the composition with commentary about the structure of the piece. This composition explores the limitless potential of the digital organ, having implications for other composers and performers to embrace this instrument.

Title: The Enemy in the Forests: The Public Perception of Forest Fires in the Pacific Northwest 1933–1965

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Augustine Beard

Faculty Mentor: Mark Carey

Major: History

Abstract:

Fire plays a vital role in the ecology of the Pacific Northwest. However, throughout most of the twentieth century, the National Forest Service promoted a strict policy of fire suppression that has disrupted the cyclical nature of fires and led to the growth of “megafires” in the past few decades. For the most part, the National Forest Service and the timber industry both financially benefited from the suppression policies. While historians have discussed the relation between scientists, the timber and ranching industries, and the state, there has been little analysis of public perception as it relates to fire policy and the actors involved. Groups and campaigns like the Keep Oregon Green Association and Smokey Bear encompassed a broad range of representatives including environmentalists, politicians, private loggers, and scholars, developing quasi-state entities that emphasized the importance of timber capital and national security above all else. Using various sources such as records of the Keep Oregon Green Association, OSU Forestry School archives, and World War II propaganda posters, I argue that the wide range of organizers promoting a uniform conception of fire disallowed any other. Fire prevention campaigns and the extreme vilification of fire in the public eye were vital to developing the environmental narrative that ensured an unquestioned fire suppression policy for so long.

Title: The Network of Resistance: Northern Paiute Opposition to Imprisonment at Yakima Reservation, 1878–1884

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Augustine Beard

Faculty Mentor: Kevin Hatfield, Jennifer O’Neal

Major: History

Abstract:

After the Bannock-Paiute ended in 1878, General Howard and the US army led approximately 550 Northern Paiute Indians on a trail of tears from Oregon Great Basin to the Yakima Reservation in southern Washington with intent for them to remain there permanently as prisoners of war. While at Yakima, the Northern Paiutes faced discrimination from the Yakima Indians as well as mistreatment by Indian Agency that failed to provide them with adequate food, shelter, and clothing. The Northern Paiutes refused to accept internment in Yakima and engaged in resistance, primarily through civil disobedience, in attempt to return home to Oregon. This paper investigates the nature of the Northern Paiutes’ resistance while at Yakima between their arrival in 1878 and departure in 1882. The current understanding of this history focuses on Sarah Winnemucca’s lectures and activism, and the role of the individuals in the Department of War and Department of Interior in advocating for the Northern Paiutes. I demonstrate that the Northern Paiutes refused to be passive victims, and that their resistance was one of the primary reasons for their return home as well as the Yakima Indian Agent James Wilbur’s resignation. I introduce a resistance network framework, which better accounts for the plurality of actors and motives. I use primary sources mostly in the form of correspondence between government officials, and partly from the existing body of secondary literature. Additionally, I draw upon sources from “resistance studies,” a critical theory on non-revolutionary acts of resistance, for an understanding of how resistance is typically discussed in history and anthropology.

Title: Measuring Finger Ratios in Hands and Bones: Testing the Reliability and Accuracy of Post-mortem Methods of Second-to-Fourth Digit Ratio Assessment in Primates

Presentation Type: Poster 46

Primary Research Area: Science

Presenter: Josie Beavers

Co-Presenters: Enrique Gomez

Faculty Mentor: Frances White, Stephen Frost

Major: Biological Anthropology

Abstract:

The ratio of length of the second digit to fourth digit indicates individual exposure to gonadal hormones in utero (Manning 2002). 2D:4D is therefore used as a proxy for prenatal androgen exposure; a lower 2D:4D indicates more prenatal androgen exposure, and a higher 2D:4D indicates less prenatal androgen exposure (Manning 2002). The most accurate way to measure 2D:4D is to measure from the proximal crease to the most distal end of the digit in living and recently deceased individuals (Manning 2002). However, in many cases an individual may be mummified or decomposed prior to measuring 2D:4D. Our research seeks to determine the accuracy of different 2D:4D measurement methods by comparing obtained 2D:4D values from the fully fleshed, skinned, disarticulated, and articulated phalangeal bones of the same rhesus macaque individual (*Macaca mulatta*). We also determined if the position of the hand (i.e. flattened palm or curled fingers) yielded significantly different 2D:4D ratios. Our findings indicate that the 2D:4D values obtained in all flattened measurements closely correlated ($r = 0.997 - 0.999$), but the measurements obtained from the curled hands were not as closely correlated ($r = 0.962 - 0.982$). These results suggest that 2D:4D measurements on articulated bones are most closely correlated to the fully fleshed 2D:4D measurement. These findings will allow scientists to more accurately obtain 2D:4D measurements on non-living specimens in the future.

Title: Use of the Sciuridae as a Paleoenvironmental Indicator Taxa

Presentation Type: Oral

Primary Research Area: Science

Presenter: Eva Biedron

Faculty Mentor: Samantha S. B. Hopkins, Edward B. Davis

Major: Geological Sciences, Biology

Abstract:

Relationships between mammal species and their preferred habitats are often used to reconstruct past ecology in fossil ecosystems. Ungulate herbivores, whose teeth reflect their diet, are one of the most common terrestrial mammal groups used in habitat reconstruction. However, small mammals, like squirrels, may sample over a narrower geographic range and offer a more sensitive signal. If squirrels and ungulates show the same paleoecological signal in the fossil record, squirrels could be used as a new habitat indicator taxa.

We hypothesized open-habitat squirrel taxa would be found in assemblages dominated by grazing ungulates and closed-habitat sciurid taxa would be found in assemblages dominated by browsing ungulates. We compiled a dataset of 25 Oregon fossil localities (aged mid-Miocene to Recent), including specimen data and ecology, using the MioMap and Fossilworks Paleobiology database. We calculated the chord distance between each unique pair of sites to understand the differences in dominant squirrel and ungulate ecologies.

We found the chord distance values of squirrels form three distinct clusters while ungulate chord distance values do not cluster, indicating differences between sciurids and ungulates as habitat indicators. The differences between these large and small mammals in home range size may yield different information about a heterogeneous landscape. If so, these results suggest sciurids and ungulates are both useful as paleoecological indicators, but at different spatial scales.

Title: Down The Manhole: An Application Of Child Development Research For All
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Cesare Bisbocci
Faculty Mentor: Jeffrey Measell
Major: Psychology

Abstract:

At its essence Down The Manhole is the story about a mother, Beatrix, and her son Enzo as they find their way in the world together. Given their dysfunctional beginnings this story is not uncommon, but what is remarkable is its ability to break barriers. As it currently stands the majority of academic knowledge is allocated to a state of privileged seclusion, and the findings that come out of research in the field of child psychology are no exception. Down The Manhole is a manifesto which declares accessibility of knowledge to be a basic human right. It accomplishes this goal by making research and theories about child development accessible, and comprehensible to the layperson. The novel uses a combination of symbols, motifs and psychological theories in order to weave engaging characters, and a compelling plot. Throughout the narrative a large emphasis is placed on the restorative properties of mindfulness, and secure attachment as a path to greater health and well-being.

Title: Sea Star Plasticity: Morphological Variation of *Pisaster ochraceus* in Response to Wave Exposure
Presentation Type: Poster 47
Primary Research Area: Science
Presenter: Alyssa Bjorkquist
Faculty Mentor: Richard Emlet, Kelly Sutherland
Major: Marine Biology, Psychology
Funding Source: Undergraduate Research Opportunity Mini-Grant, UROP, \$1000

Abstract:

Pisaster ochraceus (the Ochre Sea Star) is a keystone species in the NE Pacific whose role as an ecological engineer influences intertidal diversity by preying on space-competing organisms. Individuals inhabit a broad range of habitats ranging from sheltered coves to exposed cliffs and experience large temporal and spatial variability in water flow throughout their lifetime. However, it is largely unknown how sea star body shape changes between wave-exposed and wave-sheltered environments throughout an organism's lifetime. Wave exposure was measured at each study site near Charleston, OR using dissimilar metal dissolution and intertidal zonation of sessile organisms. Furthermore, I analyzed how aspects of juvenile and adult *P. ochraceus* morphology differed between sites as functions of wave exposure.

Sites with more wave exposure were associated with greater anode mass loss over time ($F_{1,30} = 256.21, p < 0.001$) and broader vertical zone boundaries relative to mean water level than sheltered sites ($F_{2,8} = 3.03, p < 0.01$). Adult sea star populations from wave-exposed sites had longer, narrower arms and smaller central discs relative to individuals from sheltered habitats for a given weight ($F_{2,152} = 70.0, p < 0.001$). Juveniles appeared to exhibit similar morphological trends but results were inconclusive. The relationship between wave exposure and sea star morphology indicate that hydrodynamic conditions play a large role in shaping sea star development and environmental adaptability post-larval metamorphosis.

Title: Eternal Pearly Whites: The Meaning of Teeth in the Middle Ages
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Chelsey Boguslawski
Faculty Mentor: Michael Peixoto
Major: General Science

Abstract:

As the only bones that can fall out without hindering our everyday progress, teeth are miraculous. They help us consume food to obtain energy, give us wonderful smiles, and can indicate a lot about the body's health. However, they have not always been portrayed in such positive light. Teeth in the middle ages carried a multitude of meanings, from indications of value to symbolic representations of the grotesque or monstrous. Perceptions varied from relics of religious significance to practical tools used for hunting and survival. Despite their prevalence in medieval literature,

little modern scholarship has ever considered the ultimate meaning of teeth during the period. Using primarily monastic writings, in particular the work of Guibert of Nogent on relics, and encyclopedia cosmological texts such as Isidore of Seville's Etymologies, I aim to change the common misunderstanding of the tooth's irrelevance outside the scope of the human body. Through this exploration, my paper argues that teeth could act as physical representations of eternity. Through drawing connections between biblical descriptions and medieval stories, I critically examine the capacity of the tooth to hold complex and often competing meanings in medieval society. In so doing, my paper connects the diverse discourse on teeth to metaphysical meaning of the tooth as a semiotic object to elucidate how medieval people understood their world, as well as their pearly white smiles.

Title: Symmetry Differences in Clinical and Running Measures between Achilles Tendinopathy and Medial Tibial Stress Syndrome and Controls

Presentation Type: Poster 80

Primary Research Area: Science

Presenter: Varneet Brar

Faculty Mentor: Li-Shan Chou, JJ Hannigan

Major: Human Physiology

Abstract:

Achilles tendinopathy (AT) and medial tibial stress syndrome (MTSS) are two common overuse injuries prevalent in the running population (Gallo et al, 2012). Susceptibility to such injuries may arise from training errors, but biomechanical and structural asymmetries may also be contributing factors (Zifchock, 2008). The purpose of this study was to compare static and dynamic asymmetries between injured (AT and MTSS) and healthy runners. 12 AT and 9 MTSS injured subjects and 21 matched, healthy, uninjured subjects running at least 20 miles per week participated in the study. Dynamic ankle range of motion (ROM) was collected as subjects ran continuous laps in the UO Motion Analysis Laboratory using a 10 camera motion capture system. Static flexibility and ROM measures of the lower extremity were gathered by a trained clinician using a goniometer. Asymmetry between limbs for both running and clinical measures was then calculated using an established method: the symmetry index (SI). An independent samples t-test calculated differences between the symmetry indices of injured and control subjects, $p < .05$. A significant difference between AT and matched controls was seen for ankle dorsiflexion ($p = 0.041$). Subtalar eversion ($p=0.052$) also trended towards significance. In both measures, there was greater asymmetry in the injured population. No additional significant differences were found. Future studies should evaluate the efficacy of corrections to these asymmetries in runners with AT.

Title: Socio-Economic Inequality in Sweden and France: A Comparative Study

Presentation Type: Poster 5

Primary Research Area: Social Science

Presenter: Korinne Breed

Faculty Mentor: Geoff Kennedy

Major: Economics and International Studies

Abstract:

Sweden and France have two of the highest levels of public social spending in Europe with each country exemplifying a different welfare state model. While there are some similarities in their labor market and social policies, the differences have contributed to discrepancies between the two countries in terms of socio-economic inequality. This study features the most recent data available to analyze factors contributing to socio-economic inequality, specifically income inequality, labor market policies, fiscal sustainability, and educational systems. It compares visual representations of this data to reports by governing bodies and international organizations. Findings indicate that Sweden generally has lower levels of inequality and better well-being than France, but not in all cases. Sweden faces high unemployment for the low skilled and migrants, as well as problematic educational outcomes. France's social transfers are poorly targeted. Its government has struggled to control its increasing debt, and is facing calls to reduce its social services. This research is significant because inequality is correlated with poverty, leads to social exclusion, and can even curb economic growth.

Title: Radiole Regeneration of the Feather Duster Worm, *Schizobranchia insignis*
Presentation Type: Poster 49
Primary Research Area: Science
Presenter: Shannon Brown
Faculty Mentor: Richard Emlet, Kelly Sutherland
Major: Marine Biology

Abstract:

The annelid feather duster worm, *Schizobranchia insignis*, is a prevalent marine invertebrate found along the coastlines of the Northeastern Pacific Ocean. The regenerative ability of feather duster worms is frequently studied as a model for regeneration because the annelid phylum demonstrates a pronounced array of regeneration processes. The main purpose of my study is to examine the regeneration of a single radiole in *S. insignis*. Previous studies have examined the regeneration of the entire posterior and anterior region of the worm; however, limited information is available on radioles, the anterior appendages used for feeding and respiration. By cutting *S. insignis* radioles and observing resulting regeneration, I was able to categorize the regeneration into 12 distinctive stages with detailed descriptions of the external and internal structures that developed during each stage. In addition, to support potential regenerative conclusions, I performed an overall survey of the feather duster worm's branchial crown and found that there is a non-significant positive linear relationship between the number of radioles and the weight of the *S. insignis*. Although a full analysis of the data has not been completed, I expect that the information collected for this study will provide additional knowledge to the currently limited regeneration field.

Title: The Intersectionality of Contemporary Punk Music and Political Dialogue for Latino/a Youth in California
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Adam Buchanan
Faculty Mentor: Sharon Luk
Major: English

Abstract:

Punk music has created a multinational community for radical political discourse among Latino youth through the creative expression of their emotions, via intense lyrics and musicality, toward a hegemonic society that has consistently worked to confine them to the lower class. Drawing primarily from George Sánchez's article, "Face of the Nation: Race Immigration, and the Rise of Nativism in Late Twentieth Century America", David Ensminger's book *Visual Vitriol: The Street Art and Subcultures of the Punk and Hardcore Generation*, and several other articles pertaining to the specifics of the growing Latino Punk culture in California, I argue that the counterculture of punk music encourages the diverse exchange of ideas by those who society deems undereducated, too extreme, and ultimately unimportant in the conversation about sociopolitical and geographical standings in the United States. Because of punk music, the Latino youth voice has even greater importance as it is that of the repressed and subjugated which would otherwise go unheard and therefore allow the social structure to go unchanged.

Title: Traditional Butchering in Oregon; A Folkloric Film Analysis
Presentation Type: Creative Work 2 (GSH 116)
Primary Research Area: Humanities
Presenter: Sarah Buck
Faculty Mentor: John Baumann, Carol Silverman
Major: Folklore

Abstract:

For generations, the Speelman family of Grants Pass, Oregon have been the unconscious preservers of traditional methods of butchering that nearly died out in the early 1900s. Transmitting their knowledge from father to son and brother to brother, this butchering family presents a unique piece of oft overlooked Oregon folklore. Within this fieldwork project, fieldworker Sarah Buck discusses the theory and methodology which was used during her research, from staples of the folklore discipline to Jim Dodge's writing on bioregionalism. The folkloric aspects of the Speelman family's trade is defined and discussed using Dan Ben-Amos' *Towards a Definition of Folklore in Context* as a communal knowledge of butchering that is a small cross-section of antiquity which is transmitted through family members verbally and through imitation. The Speelman family's story is told in short documentary format, in which the fieldworker utilizes filmed interviews, her research and photographs.

Title: Synapse Formation Is Modulated by a Molecular Hitch

Presentation Type: Poster 50

Primary Research Area: Science

Presenter: Erik Burlingame

Faculty Mentor: Philip Washbourne

Major: Biochemistry

Funding Source: Undergraduate Research Fellowship, Center on Teaching and Learning, \$9369; UROP Mini-grant, Undergraduate Research Opportunity Program, \$1000; McNair Scholars Program, TRiO, \$13221; Swayne Family Scholarship, Swayne Family Foundation, \$8800

Abstract:

Synapses are functional units of connectivity that permit the exchange of information between cells in the nervous system. As such, aberrant synapse formation is implicated in a host of neurodevelopmental disorders. Normal formation of synapses requires the transport, recruitment, and stabilization of the synaptic vesicle-regulating protein synapsin to nascent synapses. Recruitment of synapsin to nascent synapses is regulated by cyclin-dependent kinase 5 (Cdk5), but the downstream effectors of Cdk5 that enable this recruitment remain elusive. Using a zebrafish model, our research examines a putative role of the scaffolding protein calcium/calmodulin-dependent serine kinase a (CASKa) in synapsin recruitment. The mammalian ortholog CASK participates in multipartite transport complexes and is localized to presynaptic terminals by Cdk5-mediated phosphorylation. These observations spurred our hypothesis that Cdk5 phosphorylates CASKa to recruit synapsin to presynaptic terminals. Using a stereotypical touch-evoked behavior to assess synapse function, we found that embryos misexpressing non-phosphorylatable CASK protein exhibit a significant reduction in touch response when compared to embryos expressing either endogenous CASKa or exogenous mammalian CASK protein. Immunofluorescent characterization of synapses from touch-sensitive neurons in these touch-insensitive embryos shows deficits in synapsin localization, further supporting a physical intersection of CASK and Cdk5 during synaptic development. With human CASK dysfunction being linked to defects in synapses, microcephaly, and X-linked intellectual disability, this examination may help establish a novel target for CASK-associated disorder remediation.

Title: “Strain of Black Blood”: The Role of the New Negro Movement in Passing

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Carly Bushman

Faculty Mentor: Mai-Lin Cheng

Major: Architecture

Abstract:

African American authors of the Harlem Renaissance used the term “New Negro” to represent racial progress and to unite the African American community around a mutual identity. Nella Larsen’s book, *Passing*, was affected by the rhetoric of the New Negro Movement in Harlem during the 1920s, as it manifests her perception of racial consciousness. Using Larsen’s text, scholarly journals and primary sources (specifically poems, short stories and essays from *The New Negro: An Interpretation*), I establish that the New Negro movement relates to the conflicts and character development of *Passing* as it reveals the contradictions surrounding the racial consciousness of the African American community during the time period. Specifically, African American individuals “passed” as Caucasian to survive in an environment of discrimination, but the act of “passing” negated the ideologies of the New Negro movement by conforming to Caucasian norms and shying away from African American heritage. This initial research on Larsen’s *Passing* could inform a study of her first novel, *Quicksand*, which has the potential to introduce additional ideas of racial consciousness in relation to the movement’s propaganda.

Title: Probing the Nucleic Acid Binding Properties of the Single-stranded DNA Binding Protein of bacteriophage T4 Replication Complex at Single Nucleotide Resolution

Presentation Type: Poster 51

Primary Research Area: Science

Presenter: Benjamin Camel

Co-Presenters: Katherine Meze, Davis Jose, Peter von Hippel

Faculty Mentor: Davis Jose, Peter von Hippel

Major: Biochemistry

Funding Source: GM-15792, NIH, \$350k/yr. (4 yrs.)

Abstract:

Previous studies have mapped the structural details and assembly properties of the single-stranded (ss)DNA binding protein (gp32) of bacteriophage T4 as it binds to various ssDNA lattices, both as isolated monomers and as cooperatively bound gp32 clusters. Building on previous studies, our work seeks to understand these binding interactions at single nucleotide resolution. We have utilized site-specifically positioned 2-aminopurine (2-AP) fluorescent base analogs of adenine incorporated into ssDNA lattices as either monomer or dimer-pair probes, to map the detailed interactions of gp32 with ssDNA lattices of various lengths. To this end we have employed changes in the fluorescent and circular dichroism (CD) spectra of these probes in order to determine how the binding site of the protein interacts with these site-specifically positioned probes. Our results demonstrate that gp32 binds at random at low concentrations, and then shifts to preferential binding at the 5'-end of the lattice as the proteins shift into cooperative, cluster-bound forms at higher gp32 concentrations. We have also used acrylamide quenching to monitor solvent exposure of the ssDNA bases at various lattice positions. These results provide new insights into the molecular mechanisms of the gp32-ssDNA interactions that are involved in controlling the functions of the T4 DNA replication complex.

Title: Searching for Simpler Models of Astrophysical Pattern Formation

Presentation Type: Poster 6

Primary Research Area: Science

Presenter: Eryn Cangj

Co-Presenters: Daniel Abrams

Faculty Mentor: Daniel Abrams, James Imamura

Major: Physics

Funding Source: REU, National Science Foundation and Northwestern University, \$4500

Abstract:

In astrophysics, it is easy to solve problems relating two objects, such as two stars in a binary star or a planet and its moon. Systems of more than three bodies are both unsolvable analytically ("by hand") and require large amounts of computation time to simulate, scaling with the square of the number of objects. Thus, astrophysical synchronization, in which orbital periods of objects converge, is well understood for systems of two or three objects but largely unexplored for systems of many objects. We investigate the possibility of using mathematical models of nonlinear oscillations (in which objects that oscillate in some way change their frequency in a non-constant fashion) in lieu of Newtonian gravitation to understand how systems of astronomical objects form larger structures. In particular, we use methods drawn from the study of the Kuramoto model, a model which has been used to describe synchronization in systems containing many similar objects, such as the blinking of fireflies or people marching across a bridge. With modification, this model can produce either strong synchronization (one synchronized group) or partial synchronization (two or more groups of synchronized objects form). This partial synchronization may be suggestive of astronomical systems. As an example, we developed a model for N small objects orbiting a massive planet and in MATLAB. Preliminary models show promise that this approach will yield new insight into astronomical synchronization across a range of length scales.

Title: Understanding the Violence of Colonial Relations: Depictions of the Algerian War in Contemporary French Cinema
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Sarah Carey
Faculty Mentor: Steven Brence
Major: Philosophy
Funding Source: Humanities Undergraduate Research Fellowship, UROP and Oregon Humanities Center, \$2,500

Abstract:

In the past fifteen years, the Algerian War, long a taboo topic in France, has begun to receive attention in public discourse and mainstream media, including a number of recent films. In my work, I analyze five contemporary French films' portrayals of the war, asking what these films say about the ways in which violence and oppressive colonial relations harm both the colonizers and the colonized. I engage critically with the theories of Albert Memmi, Jean-Paul Sartre, and Albert Camus, and argue that these films simultaneously illustrate and complicate these philosophers' theories of the colonizer as a perpetrator of violence. I argue that these films' graphic portrayals of the degrading effects of extreme violence on colonizers and colonized alike challenge Franz Fanon's theory of the essential, cathartic, and redeeming role of violence in revolutions. My research contributes to the slowly growing body of scholarly work on the Algerian War in a unique way, as I address these films philosophically and reveal how the war continues to inform French identity. Additionally, my research comes at a pivotal moment as France becomes increasingly involved in the growing conflicts in the Middle East and Northern Africa and is reminded of its colonial history. And finally, my research helps shed light on the effects of systematic oppression and violence on people in the world at large.

Title: A Chronicle of the Health Conditions among the Burns Paiute Colony, 1900–1955
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Victoria Carroll
Faculty Mentor: Kevin Hatfield, Jennifer O'Neal
Major: General Science

Abstract:

Native Americans have experienced the spread of disease and sickness ever since they were colonized by Euro-Americans. In the 19th century, the establishment of reservations introduced public health problems that were previously unknown to native communities. Particularly dramatic changes in the lifestyle, culture, and health of indigenous communities occurred during the Post-allotment Era from 1900–1955. This paper discusses the living conditions and health issues faced by the Northern Paiutes living outside of the town of Burns in Eastern Oregon during this time period. The lifestyle and living conditions, including sanitation, disease prominence, medicinal choices and healthcare availability will be discussed to shed light on the previously unknown conditions faced by the Paiute people. Additionally, an analysis of the correlation between legislature and public health status will show the direct impact that policy and administration had on the conditions experienced by the Paiutes. Specifically, this paper investigates how legislative changes such as the Indian Reorganization Act and Johnson O'Malley Act had an impact on the lives of the Paiutes and their health. This paper examines how public health among the Burns Paiute improved through changes in administration, influential politicians, increases in funding, and the development of new medical treatments. Thanks to the documents from the National Archives in Seattle, this paper will contribute to the record of public health among the Burns Paiute.

Title: The Effects of Inhibiting Neurons in Layer-II of the Medial Entorhinal Cortex on Hippocampal Place Cells in CA1 and CA3

Presentation Type: Poster 52

Primary Research Area: Science

Presenter: Roshan Chikarmane

Faculty Mentor: Daniel Avesar

Major: Biochemistry, Biology

Abstract:

The hippocampus and medial entorhinal cortex (MEC) are brain regions important for the formation and retrieval of episodic memories. Problems with hippocampus, MEC, and other related brain regions underlie neurodegenerative disorders like Alzheimer's and Dementia (1). Therefore, it is important to understand how these brain regions work and interact. Neurons called place cells in the hippocampal CA3 and CA1 regions fire whenever an animal is in a certain location (place field), relative to landmarks in that local environment (2,3). The population level activity across all place cells represent an entire local environment, forming a comprehensive cognitive map of an environment (4). The MEC receives inputs from many regions of the cerebral cortex and projects into the hippocampus from Layer II (5). The MEC Layer II (MEC-LII) itself contains spatially responsive neurons called grid cells (6). While the behaviors of spatially responsive cells types in the MEC-LII and the hippocampus have been well established, it is unclear whether place cells utilize information from MEC-LII that contributes to their spatially selective nature. To investigate the relationship between MEC-LII activity levels and place cells, experiments will be conducted with a transgenic lines of mice that have had either HM4 or HM3 Designer Receptors Exclusively Activated by Designer Drugs (DREADD) expressed in the MECLII. Activation of DREADD receptors by administration of the pharmacologically inert ligand clozapine-n-oxide (CNO) decreases (the HM4 line) or increases (the HM3 line) neuronal activity. Using this method, we can examine how changes in MEC-LII activity impact the spatial properties of places cells in awake behaving mice as they explore their environment. This experiment will measure the transfer of information between two important brain regions that give rise to learning and memory. Understanding the brain networks involved in memory is a necessary step towards determining the causes of Alzheimer's and Dementia.

Title: Pheromones and Path Selection of Atta. Cephalotes

Presentation Type: Poster 53

Primary Research Area: Science

Presenter: Joshua Coon

Faculty Mentor: Robert Schofield

Major: Biology

Funding Source: McNair Scholar, University of Oregon \$3,500

Abstract:

Atta cephalotes has been studied widely for their use of pheromones in terms of foraging trail choice, however there is a lack of research in terms of energetically successful trail choice. According to the current methodology, once a trail is established there is no way for a new trail to become established, even if energetically favored. I propose that pheromones play a role in controlling the preference for a foraging trail that is shorter and consumes less energy. Looking for differences in leaf carrying and non-leaf carrying ants, when given a new path to walk along. Using Teflon tubing to collect the pheromones laid down by each group of ants in two separate scenarios allowed for a clean rinse after collection. The samples were then analyzed using a coupled gas chromatographer and mass spectrometer (GC-MS), using a split method. Preliminary results show a lack of sensitivity of the machine which is necessary for the detection of minuscule analyte quantities. Attempting to counteract the poor sensitivity new optimization methods of collection for obtaining a higher amount of analyte. Including the new preliminary data with optimized collection methods we can begin to piece together new hypothesis about pheromonal control switches using energetic theory.

Title: Electrochemical Etching of Silver Scanning Tunneling Microscope Tips in Dilute Acetic Acid
Presentation Type: Poster 54
Primary Research Area: Science
Presenter: William Crowley
Co-Presenter: Ariel Rosenfield
Faculty Mentor: George Nazin, Ben Taber
Major: Chemistry
Funding Source: UROP Mini Grant, Univesrity of Oregon, \$1,000

Abstract:

Scanning Tunneling Microscopy (STM) is used to image, manipulate, and spectroscopically characterize individual atoms and molecules to further develop an understanding of materials that have application in the semiconductor field. The fabrication of sharp and smooth metallic tips plays an essential role in STM as the radius of curvature of tips used in STM directly influences resolution. The smaller the radius of curvature, the finer the resolution. We describe a reproducible fabrication procedure of silver STM tips. Silver wire is electrochemically etched using an environmentally benign electrolyte solution of volume ratio 1:8 glacial acetic acid:deionized water to form a blunt cone. The roughly shaped tip is then manually electropolished to yield a sharp and smooth cone shape. The tip is then heated at 300°C to remove contaminants such as silver oxide. Silver is used for its plasmonic enhancing properties. The elemental purity and small radius of curvature (~100nm) of silver tips permits atomically resolved STM imaging, as well as photon emission and ultrafast electron emission measurements. These measurements which would not be possible with previous materials used as STM tips such as tungsten will allow for a better understanding of potential semiconductor materials which may lead to more efficient solar panels or smaller computer circuits.

Title: Landscapes of Culture: Vincent Van Gogh and Utagawa Hiroshige
Presentation Type: Poster 55
Primary Research Area: Humanities
Presenter: William Crowley
Faculty Mentor: Roxanne Prazniak
Major: Chemistry

Abstract:

The valued characteristics of art and aesthetics has differed over time and across cultures, however with these seeming differences art can still be used to link cultures and people together. From different backgrounds, artists Vincent Van Gogh (1853-1890), a Dutch post-impressionist painter and Utagawa Hiroshige (1797-1858), an Edo period Japanese printmaker, came to depict the same motifs of nature in their art work. Through a comparative historiographical analysis of the social and economic conditions in which Vincent Van Gogh and Utagawa Hiroshige created their works of art, I have highlighted how these two artists, though influenced by different social factors and artistic traditions, came to cultivate a common dedication and reverence to depict nature. The connection between these seemingly different yet quite similar artists highlights the cross-cultural connection of art as a universal form of human expression. These artists experienced the elements of social, economic, religious, technological, and artistic tradition to different extents. Yet, both pondered and desired to portray nature, the striking similarities in their artistic backgrounds as portrait painters, reverence for religion, and attention to nature link these two artists.

Title: A Close Look at the Portal Motif in Fairy Tale Literature
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Andrea Cueva
Faculty Mentor: Sheila Rabun, Rachel Branson
Major: Folklore

Abstract:

In an exploration of fairytale literature, my research examines and evaluates how the widely overlooked portal motif in fairytales in fact plays a role in our daily lives—lives that function in a strictly social reality, not a magical one. The use of portals in Harry Potter and the Sorcerer's Stone, by J.K. Rowling, leaves readers with a sense of longing for a more magical world, and a disappointment in our, by comparison, non-magical reality. Similarly, the use of modern day portals that provide us with access to other realities, such as the internet, can have detrimental effects on perception and unfulfilled expectations. Specifically, a study on Facebook has found that using Facebook consistently

compromises a person's "inherent well-being," directly referring to their mental state. Because we compare our very in-depth and complicated lives to another person's highlight reel on Facebook, young adults specifically are especially vulnerable to this degradation of mental well-being from longing for something more, and when they don't seem to find it walk away feeling unfulfilled instead. Building on the research of Jack Zipes' *Why Do Fairy Tales Stick*, I discuss the ethical choices an author has to make when writing a piece that is designed to be absorbed en masse, such as the Harry Potter franchise.

Title: The Influence of Climate Change on 15 Native Plant Species Phenology and Range Shifts in Mediterranean Climate Prairies within the Pacific Northwest

Presentation Type: Poster 7

Primary Research Area: Science

Presenter: Justin Culman

Co-Presenters: Kassandra McIntyre, Kaitlin Loomis, Olivia Somhegyi, Jacob Hyman

Faculty Mentor: Peg Boulay, Lauren Hendricks

Major: Environmental Science and Geography

Abstract:

Changes in the seasonal timing of flowering plant species (phenology) and species geographic distribution (range shifts) within the Mediterranean climate of the Pacific Northwest are related to changes in climate patterns. This change in flowering phenology affects prairie community composition and ecosystem function. Since climate influences the range of individual native plant species, understanding the effects of climate change is important to determine potential shifts in species dynamics. We examined how climate change variables affect the phenology of plants through a field experiment conducted at an upland prairie site at Willow Creek Conservation Area on 15 native plant species, both forbs and grasses. The variables included an increase in temperature (+2.5–3.0 °C) and a "drought" measurement (a drainage run-off system of 40% of the precipitation over each plot). As measures of the rate of phenology for each plant species, we used the time of visible germination, seedlings and flowering measures. We conducted a Normalized Difference Vegetation Index (NDVI) analysis to measure the photosynthetic activity as an indicator of primary productivity using a four-factorial ANOVA. We also examined Pollinator surveys that recorded numbers and species groups of pollinators to understand their influences on phenology and productivity. We anticipate our findings will demonstrate that both heating and drought conditions change the timing of phenology compared to the control group. The overall study demonstrates how climate change will dramatically alter the ecosystem dynamics and relationships of plants, pollinators, and other organisms, which should be addressed as an important environmental issue.

Title: Franz Schubert's *Schwanengesang*: A Posthumously Published Grouping of Romantic German Lieder Containing What Is Perhaps Meant to Be Schubert's Unpublished Final Song Cycle of Heinrich Heine's Poetry

Presentation Type: Creative Work 3 (GSH Great Room Stage)

Primary Research Area: Fine/Performance Arts

Presenter: Thomas Dasso

Faculty Mentor: Laura Wayte, Stephen Rodgers

Major: Music

Abstract:

Schubert is known as one of the finest composers of German art song. Among his many song cycles (a grouping of songs forming a narrative) is *Schwanengesang* (Swan-song), a cycle consisting of 14 songs with three different poets: Rellstab, Heine, and Seidl. *Schwanengesang* was published posthumously with little known about what order, if any, Schubert intended the music to appear. However, due to some convincing evidence it is quite possible that Schubert meant for Heine's poetry to remain in the order it originally appeared in Heine's publication of *Die Heimkehr* ("The Homecoming," 1826). A publication of these six songs as a "Heine Cycle" does not exist currently. After expanding on the new narrative handpicked by Schubert from Heine's publication and a thorough musical analysis (including identifying repeated themes, harmonic relationships, and an overarching relationship among key areas to supplement the poetry's narrative), a seamless body of work emerges from a previously vague assortment of music. With a thorough analysis and a live performance of the six songs, Scarley Liu and I, Tom Dasso, plan to introduce Schubert's previously unknown cycle to the stage on voice and piano.

"A proper understanding of Schubert's last works hangs in the balance..." —Richard Kramer

Title: Continued Riparian Restoration and Monitoring of Goose Creek at Whitewater Ranch
Presentation Type: Poster 8
Primary Research Area: Science
Presenter: Alyssa Dawson
Co-Presenters: Brady Cox, Cassidy DeBlois, AJ Nichols, Katrina Henderson, Joe Nickless, Nathan Wolk
Faculty Mentor: Peg Boulay
Major: Environmental Studies

Abstract:

Healthy riparian zones are important to the ecological function of aquatic areas. They support water quality and a variety of flora and fauna. Restoration of degraded riparian zones are central to rebuilding these ecosystems. In 2014-2015, through a partnership between the University of Oregon Environmental Leadership Program (ELP) and Whitewater Ranch, students implemented a 0.25 acre pilot riparian restoration project along Goose Creek, a tributary of the McKenzie River, with the goals of improving fish and pollinator habitat. During winter term 2016, our team continued to conduct riparian restoration along Goose Creek by planting more native plants and creating a pollinator hedgerow. In order to evaluate the success of the restoration work, we will continue monitoring conducted by past ELP teams. This will be done by monitoring the survival, growth, and vigor of previous plantings, measuring stream temperatures, conducting photo points, and surveying pollinator and macroinvertebrate populations. So far we have found that survival was better than we expected and growth and vigor are looking very promising. In addition to monitoring, we will also begin the next step in our long-term restoration plans by performing baseline monitoring of vegetation in the next phase of Goose Creek restoration. With these efforts, we hope to move closer towards our eventual goal of improving the general health of the riparian habitat at Goose Creek, so it may serve its ecological functions.

Title: The Hepatopancreatic Duct: A Conduit for Bacterial Factors from the Gut to Reach Peripheral Organs?
Presentation Type: Poster 56
Primary Research Area: Science
Presenter: Daniel Derrick
Co-Presenters: Jennifer Hampton, Karen Guillemin
Faculty Mentor: Karen Guillemin, Jennifer Hampton
Major: Biology
Funding Source: NIH: National Institute of General Medical Sciences grant, award number P50GM098911, \$162,152

Abstract:

Host-microbe interactions are important for normal development of the host, and often, secreted bacterial products play essential roles in these interactions. In zebrafish, the protein BefA is secreted by a subset of resident bacterial species in the gut. Interestingly, BefA is sufficient to induce expansion of pancreatic beta cells during early larval development. Previously, BefA has also been shown to have effects on cultured murine beta cells, suggesting that it may have a direct mechanism of action. This raises an intriguing question: how can a protein secreted by bacteria in the lumen of the gut exert effects on an entirely separate organ? For BefA to act directly on beta cells in vivo, it must somehow travel from the gut to the pancreas. Here, we examined whether a functional hepatopancreatic duct, which connects the pancreas to the gastrointestinal tract, is necessary for BefA-mediated expansion of beta cells. To do so, immunofluorescence labeling and confocal microscopy were used to count pancreatic beta cells in zebrafish that lack an intact hepatopancreatic duct due to a loss-of-function mutation in the *sox9b* gene. Despite the lack of this duct, *sox9b* mutants still exhibited a robust response to BefA treatment, which suggests that BefA promotes beta cell expansion independent of the hepatopancreatic duct.

Title: Does Gender Play A Role In Combat Coverage?

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Karly DeWees

Faculty Mentor: Kim Sheehan, Dan Morrison

Major: Journalism: Advertising

Abstract:

If the powers who control media access to combat zones believe that a photographer's gender affects how conflict is framed within the media, then that will affect the decision of who gains access to combat zones. And if that is the case, then gender plays a significant role in how combat is covered, how it is reported, how it is consumed by the public, and ultimately the public's perception of whether that particular conflict or war is justified. This study will examine if gender plays a role in combat coverage and if, in fact, gender affects the outcome of the story. In pursuing this research, I will use the theoretical frameworks of framing theory, orientation theory, and differences in gender risk assessment. While utilizing those frameworks I will attempt to determine if gender plays a role in combat coverage. My research will aim to answer the question of whether or not gender affects how conflict is framed. If the Department of Defense (DoD) and the powers within the media believe that women photographers create images differently than men it is reasonable to assume that belief will affect their decisions regarding to whom they will issue media credentials during combat operations.

Title: Determining Ancestry of Unprovenienced Human Remains from the Grenadines, Southern Caribbean:

Dental Morphology and Craniometric Analyses

Presentation Type: Poster 57

Primary Research Area: Science

Presenter: Taylor Dodrill

Co-Presenters: Greg Nelson, Jessica Stone, Scott Fitzpatrick

Faculty Mentor: Greg Nelson, Scott Fitzpatrick

Major: Anthropology, Biology

Funding Source: UROP Mini-Grant, UROP, \$1000

Abstract:

The bioarchaeological record of the southern Caribbean reflects a diverse population history due to the replacement of founding indigenous groups by European and African populations. This is a result of colonial incursion and processes surrounding the Transatlantic Slave Trade that occurred over a period of centuries. This complex history can present problems for proper dispensation of archaeological material and human skeletal remains, particularly those recovered outside the strictures of controlled excavation. In this case study we examined a collection of unprovenienced skeletal material comprising four individuals of unknown ancestry. This collection derives from a private collection on the island of Mustique in the southern Grenadines that supposedly originated on the smaller nearby island of Petite Mustique. Ancestry has been estimated using a combination of craniometrics and dental morphology, the latter assessed by scoring a suite of 23 Arizona State University Dental Anthropology System (ASUDAS) traits for comparison against existing population data from Africa, Europe, and the Americas. Standard craniometric measurements were also assessed using the FORDISC database. We find that these data do not support an Amerindian ancestry for these individuals, and instead and/or African descent that date to the historic period. These and other ongoing analyses, including possible mtDNA extraction and stable isotope analyses, should help in efforts to repatriate the remains to the appropriate governing body and location.

Title: The Ecology and Distribution of the Invasive Violet Tunicate (*Botrylloides violaceus*) in the Coos Estuary (OR)

Presentation Type: Poster 58

Primary Research Area: Science

Presenter: Sandra Dorning

Faculty Mentor: Craig Young

Major: Marine Biology

Funding Source: Undergraduate Research Opportunity Program Mini-Grant, University of Oregon Undergraduate Research Opportunity Program, \$1000

Abstract:

Marine fouling communities on docks and other manmade structures are frequently susceptible to invasions of non-native ascidians—sessile, sac-like marine invertebrates. *Botrylloides violaceus*, the violet tunicate, has invaded such communities in harbors around the world, including Oregon's Coos Estuary. In this study, I aim to explain the mechanisms behind the invasion and establishment of *B. violaceus* in this bay. I propose three potential factors influencing the distribution of this species in the Coos Estuary: 1) abiotic conditions (water temperature, salinity, and water current speed), 2) biotic conditions (competitive relationships with other fouling organisms), and 3) limited transportation between fouling sites. I conducted quarterly photo quadrat surveys to determine the seasonal distribution of *B. violaceus*, in addition to short-term permanent quadrat and settlement plate monitoring to document *B. violaceus* growth patterns and interactions with other fouling species. In addition, I conducted laboratory experiments to determine the temperature and salinity tolerance of *B. violaceus*. Future experiments in this study will include transplantation of *B. violaceus* colonies for evaluating survival at currently uninvaded sites. The results of this project will document the extent of and mechanisms behind the Coos Estuary *B. violaceus* invasion. Understanding the interactions between *B. violaceus* and native fouling organisms and the potential for this species to expand its distribution is important for conserving native biodiversity and improving invasive species management in the Coos Estuary.

Title: The Evolution of Law: How Medieval Peasant Disputes Shaped Legal Systems

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Caroline Doss

Faculty Mentor: Michael Peixoto, David Frank

Major: Undeclared- Anticipated: Anthropology

Abstract:

How have legal proceedings evolved throughout the centuries? In the late nineteenth century, Frederick William Maitland argued that many judicial proceedings were not derived from Roman Law or even royal laws, but from customs of the medieval peasantry and non-judicial decisions and compromises. In more recent decades, a wealth of scholarship has analyzed disputes and settlements in medieval France and England, making connections between practices that used to exist and those that have survived to create our current legal system. For example, Fredric Cheyett's article "Suum Cuique Tribuere" provides a definition for law that stresses the important of compromise in dispute settlements, an idea present in courts today. However, the legal proceedings of the nobility have also influenced the legal system present in the United States. Through an analysis of medieval disputes and settlements, as well as analyses of the different sorts of trial, primarily annulments and marriage law, my research explores the process in which court practices in divorce and marriage proceedings from both the nobility and peasantry have survived as decisions made out of court came to be a functional legal system. Texts such as Alison Weir's "Eleanor of Aquitaine" and Baldwin's "Government of Philip Augustus" will offer key insights into the marriage and annulment processes of medieval France and the evolution of such laws.

Title: Gap Detection in Auditory Cortex
Presentation Type: Poster 92
Primary Research Area: Science
Presenter: Ulysses Duckler
Faculty Mentor: Mike Wehr, Aldis Weible
Major: Biochemistry
Funding Source: OURS Summer Research Program

Abstract:

Strong evidence supports that hearing loss and difficulty with speech comprehension in noisy environments for older adults is the result of temporal processing deficits in central auditory structures such as the auditory cortex. There is a general canonical circuit model of layer by layer serial information flow through the auditory cortex from the thalamus, before information is projected back into inferior colliculus neurons. However the specific cortical circuits and cell types which regulate temporal processing though the auditory cortex are still unknown and not linked to behavior. The auditory cortex is necessary for temporal acuity in receiving auditory stimulus. Temporal acuity is necessary for brief noise gap detection and discriminating between similar phonemes, causing speech perception deficits when impaired. In this study, I tested gap detection in mice by measuring their startle response to noise gaps in white noise, gaps which were paired with a startle stimulus in repeated behavioral trials. The presence of the noise gap attenuates startle response to the stimulus, so that measuring the startle response gives a measure of temporal acuity by assessing gap detection behavior. Optogenetics allows for the gaps to be paired with a laser signal that silences auditory cortex neurons and allowed me to see how gap detection is impaired by temporally precise auditory cortex neuron suppression. By probing cortex circuit mechanisms through layer specific optogenetic silencing before and after gap, I found that layer specific silencing of auditory cortex neuron populations in layers four and five suggests behavior in accordance with the canonical model.

Title: Hook-up Culture: How the Idea of Everyone “hooking up” Influences and Continues the Cycle of Sexual Assault on College and University Campuses
Presentation Type: Poster 9
Primary Research Area: Social Science
Presenter: Kelsey Dunne
Co-Presenters: Erika Stanford, Dayna Silvani
Faculty Mentor: Julie Heffernan
Major: Educational Foundations

Abstract:

On today's college campuses, there is a sensation created around “hooking-up.” Created and enforced by mass media, the idea of everyone taking part in casual sex is commonly believed as a true practice occurring on college campuses. Through the book, *Gender: Ideas, Interactions, Institutions* (Wade & Ferree, 2015) we come to understand that those with the most influence and power, “...white, wealthy, heterosexual, conventionally attractive, able-bodied, and socially adept,” validate and perform these actions that shape the sexual culture. However, this image of sexual activity is disproportionately presented, as the majority of students do not take part. With the research of many others, the realizations of pressures to take part in these practices become apparent. This can cause a dangerous atmosphere as we regulate the sexual actions of others, ensuring that it falls within the lines of the sexual script, the guidelines that rule sexual interaction. This makes way for a dynamic in which men are assumed to initiate sexual contact and the acceptance or denial is up to the woman. However, this makes space for miscommunication or mixing of signals, producing the opportunity of unwanted sexual interaction.

Title: Collective In-form-ation: How Do Alternative Assembly-Based Collectives Function as Sites of Knowledge Production?

Presentation Type: Poster 10

Primary Research Area: Social Science

Presenter: Celia Easton Koehler

Faculty Mentor: Shaul Cohen

Major: Geography

Funding Source: UROP Undergraduate Research Grant, \$1000; Thesis Research Grant, Clark Honors College, \$1000

Abstract:

A typical structure of an organization includes a President, a Vice-President, a Chief of Financial Affairs, and other employees organized in a hierarchy. Information tends to flow vertically in a hierarchy; it would be rare for a president and a janitor to exchange messages directly, first the janitor might approach the secretary or their manager, for example. Not all organizations, however, choose this structure. Rejecting verticality, some organizations choose a less defined chain of command and adopt a horizontal structure. Assemblies are a typical, major component of a horizontally run organization. They are like meetings except instead of majority vote or authority-decides, assemblies tend to be consensus-based; that is, every participant must agree or disagree for a decision to be passed. This project seeks to understand how knowledge is produced within assembly based (or other horizontally –inclined) collectives. Analysis of alternative collectives often focuses on their characterization as sites-of-contention. An example of this framing includes press covering local occupy movements. While this is certainly part of the narrative, collective assemblies can and should be seen as spaces of education. They exist to form practices, inform citizens and often aim towards social changes. In addition, social space created from places perceived as public or open are often sites of emergent culture—conversations and narratives form there and are later formalized and institutionalized. Through observation and analysis of collectives in Andalucia, Spain, this project will demonstrate how collectives function as learning spaces. In January of 2016 individuals in Granada, Spain began planning a feminist festival, Transfemifest, for May 8-9, Individuals mounted a Wordpress and Facebook and invited anyone interested to attend weekly planning meetings run by consensus. Through looking at the processes through which individuals in Granada form collectively to plan and pull-off a festival around feminism, we can see how they work to inform community members and catalyze a broader conversation about intersectional-feminism in institutions around the city.

Title: Analysis of Early Pottery in the Southern Thai-Malay Region: The Tham Din Cave Site, Thailand

Presentation Type: Poster 11

Primary Research Area: Social Science

Presenter: Sambath Eat

Faculty Mentor: William Ayres

Major: Asian Studies

Abstract:

The late Pleistocene-early Holocene transition in Southeast Asia saw shifts from hunting-gathering towards food management and systematic food production. Archaeological discovery of the Hoabinhian-type stone tools dated to 10,000 BP in northern Vietnam, Thailand, Laos, and Burma document this early transition. Rock shelters were important sites for these early hunter-gatherers that represent crucial sites for early archaeological evidence of prehistoric occupants. I examine pot sherds that were excavated from Tham Din limestone cave near Pattani, Southern Thailand. I assess the different sherd types for patterned change in size, color, texture, design, and other characteristics. The analysis demonstrates chronological patterns pointing to a long period of stability in pottery production followed by introduction of new ideas about pottery manufacture and decoration within the last 2000 to 3000 years. Present-day local pottery production reflects the persistence of traditional methods as well as the incorporation of new ideas. Which may related to the population incursions include the movement of the Austronesian speakers some 3000 to 3500 years ago and, following that, the introduction of Hinduism and Buddhism from South Asia. It is through this close examination of pottery remains that we can demonstrate the long-term importance of trade in this area and ultimately shed light on how early multi-ethnic communities in Southeast Asia were developed.

Title: Just Mossin' Around: Factors in the Growth of Moss and Mold in Glass Staircase
Presentation Type: Poster 12
Primary Research Area: Science
Presenter: Harley Elliot
Co-Presenters: Champe Holbeck, Amanda Stanton
Faculty Mentor: Alison Kwok, Alyssa Franco
Major: Architecture

Abstract:

This case study looks at the overall air quality in the western glass stairwell of Lawrence Hall. Upon initial inspection, the air feels stagnant, humid, and uncomfortable. The stairwell is constructed of sheer glass walls on the north/south sides and concrete on the east/west sides. The glass has direct contact with the surrounding environment (i.e. trees and moisture). The materials used in the stairwell, combined with the exterior environment do have an effect on the interior climate of the stairwell. The CO₂ levels are analyzed and compared to the ASHRAE 62.1-2013 standards. The humidity, light intensity, and temperature levels are compared to ideal environments for moss and mold. The most important factor contributing to the growth of moss and mold (MEEB Table 5.1) is humidity. The growth of moss/mold contribute to the overall air quality of the staircase. Observations of the staircase led to two hypotheses:

1. The air quality of the glass stairwell in Lawrence Hall is below the ASHRAE 62.1-2013 standard.
2. The variation of materials used in the stairwell aids in the growth of moss and mold.

Through testing using a CO₂ meter, the first hypothesis was proved wrong, indicating healthy CO₂ levels in the staircase. Using HOBO dataloggers, the temperature, light intensity and relative humidity the second hypothesis was proved right, indicating the perfect environment for growth of moss and mold. Studies such as these are important in the design and construction of new buildings when considering materials and environmental factors.

Title: *Follow Your Fears: An Original Film Score*
Presentation Type: Creative Work 4 (GSH 114)
Primary Research Area: Fine/Performance Arts
Presenter: Nathan Engelmann
Faculty Mentor: Robert Kyr
Major: Music Composition

Abstract:

To risk one's life for the sake of thrill seeking takes an extraordinary type of person. The short film *Follow Your Fears* features one such person, BMX rider Brad O' Neal, as he tries to execute a motorbike stunt that has never been attempted before. The film follows O'Neal in his preparations for the stunt, the complexities of which mirror the idiosyncrasies of his own personality and past. As I composed a re-score for this film, it was my goal not only to encapsulate the literal action and images on the screen, but to delve into the psychology of O'Neal as well. In my score, I explore O' Neal's fear, sense of humor, and spirituality, focusing on how these personality traits correspond with the structure of the film. To do this, I use various musical elements. Through orchestration and instrumentation, I encapsulate the colors and images of the film. Harmony, along with orchestration, are used to emphasize the emotional weight of the narration, As the narrative of the film develops, so do the musical motives. These motives (small, musical segments) relate to the themes of the film, and metamorphose as O'Neal works toward his goal.

Title: A Screen for Novel Atypical Protein kinase C (aPKC) Substrates
Presentation Type: Poster 60
Primary Research Area: Science
Presenter: Alani Estrella
Co-Presenters: Ken Prehoda, Matt Bailey
Major: Biochemistry

Abstract:

The accurate positioning and organization of molecules within animal cells is important for cell health. In fact, failure to correctly organize cell components is a key characteristic of metastatic cancers. Atypical protein kinase C (aPKC) is an enzyme that helps to properly localize a variety of cell components through a process called phosphorylation. The proteins that aPKC phosphorylates (known as substrates) have vastly different architectures. Although the

phosphorylation of specific substrates has been researched intensely, such as Miranda (Mira) and Lethal giant larvae (Lgl), the general mechanism of aPKC substrate localization has remained elusive. Here, we sought to find a “polarity code,” or the molecular signature of substrates that aPKC organizes. To identify the polarity code, we developed a program that predicts novel aPKC substrates. Here we assessed the localization of these putative substrates to determine candidates for aPKC-regulated localization in fruit flies. We used a protein tagging technique that allows us to see protein expression and localization within brain cells. We observed the localization of three separate proteins: Alpha-Catenin, Dlp, and CG6454 to be cell-cycle dependent, suggesting possible aPKC-regulation. Future studies will focus on determining the mechanism through which these proteins are localized, whether aPKC is involved, and their roles in cell polarity. This study provides insight into how aPKC recognizes its substrates, and a further understanding of how animal cell components are organized by aPKC.

Title: Asthma as an Environmental Disease: The Hunt for Easily Accessible Biomarkers Using Monozygotic Twins

Presentation Type: Oral

Primary Research Area: Science

Presenter: Alani Estrella

Faculty Mentor: Ivana Yang

Major: Biochemistry

Funding Source: 1R25HL103286-05, National Institutes of Health, Unknown - Program through the University of Colorado-Anschutz Medical Campus, The Graduate Experience for Multicultural Scholars (GEMS); P01-ES18181, The National Institute of Health and Sciences, Unknown; R01-HL101251, The National Heart, Lung, and Blood Institute, Unknown

Abstract:

Asthma is a complicated, poorly understood, immune-related disease that disproportionately affects children and minorities across the globe. Currently, the most accurate method of diagnosing asthma is to take a section from the lungs. Thus, there is a need to determine accurate and safe biomarkers for children in order to provide more accurate diagnoses, as well as to unravel the mechanism behind the manifestation of asthma. Recent studies have suggested that environmental factors such as air pollution can cause DNA modifications (DNA methylation), which have been correlated with asthma. Here, we chose to use monozygotic twins since they share the same genetic information, thus making it easier to determine the environment's effect on DNA methylation. To see if biomarkers can be found through less invasive methods, we extracted nasal epithelia from monozygotic twins who were either concordant for asthma, discordant for asthma, or concordant for non-asthma (n=24 pairs). We recently showed that large immune-related regions within the DNA were differently methylated between asthmatics and non-asthmatics. To further validate this finding, we used a more focused method to attempt to correlate DNA methylation changes with changes in the expression of immune-related genes. We determined that, while all measured methylations validated our previous findings, few were correlated with asthma and changes in expression in this small cohort. We suspect that specific DNA methylation changes within these regions are correlated to asthma in children. Future studies will use a larger cohort of monozygotic twins discordant for asthma (n=200 pairs) to determine which methylation sites may be related to asthma.

Title: Charge Trapping in Colloidal Cadmium (II) Selenide Quantum Dots

Presentation Type: Poster 13

Primary Research Area: Science

Presenter: Samuel Estrella

Faculty Mentor: John McGuire

Major: Physics

Abstract:

Quantum Dots are widely studied in hopes of using their tunable emission and absorption for photovoltaics and solar cells. Quantum dots are very small lattices containing around ten thousand to one million atoms. Due to their small size, it is easier for an electron that is excited from the core to reach the surface. The dangling bonds on the surface reduce the quantum efficiency of the dots by trapping carriers and preventing emission while trapped. Passivating these dangling bonds so carriers don't get trapped is necessary to continue observations on more complex systems. Performing transient absorption with a 100 femtosecond laser, we were able to observe trapping in the quantum

dots. We probed Cadmium (II) Selenide quantum dots that were treated with chlorine and mercaptoundecanoic acid ligands to passivate charge trapping on the surface and to prevent aggregation. The treatments that were used to passivate the surface traps showed no significant decrease in trapping. While we were not able to observe any benefit from the treatments, our collaborators at the Korea Institute for Science and Technology are developing different treatments to use on quantum dots. Upon decrease of trapping, quantum dots will be useful for quantum computing, biological marking, optical processing and tunable absorption and emission.

Title: The Question of Divine Omnibenevolence: What Does the Hebrew Bible Reveal about Yahweh's Nature?

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Jonathan Faris

Faculty Mentor: Andrew Riley

Major: Biology, Religious Studies

Abstract:

The portrayal of God in the Bible is generally positive. However, this perception of Israel's patron deity, Yahweh, changes when the Hebrew Bible is studied apart from the New Testament and several passages appear to portray a cruel Yahweh, causing debate among interpreters. However, these questionable narratives can be explained by a rather integral thread woven into the fabric of the Ancient Israelites' history: Yahweh's covenantal relationship with his people. This unique relationship between patron god and people sets Israel apart from other ancient Near East civilizations that had moody, passionate gods, such as Egypt and Babylonia. Yahweh made several covenants with the his chosen people, and despite the Israelites' consistent, flagrant violations of the relationship as well as him being devoid of extra obligation to the group he voluntarily delivered from slavery in Egypt, maintained his side of the covenant. This faithfulness exemplifies his emotional investment in his people, which manifests itself in divine pathos. Likewise, Yahweh shows care and an interest in protecting the Israelites, often in the form of Yahweh voluntarily coming down to earth to act on behalf of Israel. When morally ambiguous passages are viewed in light of these biblical contexts, we can attain a more comprehensive view of Yahweh.

Title: High Fat Diet In Utero Exposure Disrupts Circadian Rhythms in Mice Offspring

Presentation Type: Poster 61

Primary Research Area: Science

Presenter: Mai'ana Feuerborn

Faculty Mentor: Carrie McCurdy, Byron Hetrick

Major: Human Physiology

Funding Source: University of Oregon Undergraduate Mini-grant, \$1,000

Abstract:

Maternal obesity and excessive gestational weight are linked to increased risk of obesity in offspring, suggesting that in utero exposure programs an organism's metabolism for life. Studies in mice have shown exposure to a high calorie environment in utero causes more weight gain in offspring fed a high fat diet (HFD). Circadian rhythms create an internal temporal clock that coordinates behavior and metabolism to daily cycles. Disruption of circadian cycles leads to increased weight gain, suggesting that metabolic dysregulation observed in offspring of obese mothers may be due to altered circadian cycles. We hypothesized that offspring exposed to a high fat environment in utero will be more sensitive to postnatal HFD, with dampened circadian cycles, than mice exposed to a lean maternal environment in utero. To study the effect of diet on fetal programming, mice were subjected to either a HFD or control diet during gestation. Post weaning, the offspring were fed a HFD or control diet. Insulin controlled tissues were then collected at different times of the day. We propose to measure the effect of maternal diet on offspring by measuring the expression levels of key circadian genes by quantitative PCR. Understanding the role of fetal programming in metabolic regulation of metabolism will better help us understand and combat obesity in western society, and potentially understand the diseases increasing incidence.

Title: Investigating the Function of a Novel Gene in Heart Valve Development

Presentation Type: Poster 62

Primary Research Area: Science

Presenter: Thomas Forman

Faculty Mentor: Fernanda M. Bosada, Kryn Stankunas

Major: Biology, Human Physiology

Funding Source: Huestis-McLean Memorial Scholarship Recipient, \$450; Apex Scholarship, University of Oregon, \$1000 per term

Abstract:

Congenital valve disease affects at least two percent of the world's population, a remarkable frequency that underlines the urgent need to understand the etiology of these common birth defects. These underlying abnormalities may originate from disruption of embryonic valve development. Primordial heart valves proceed through complex signaling events to form thin, elongated leaflets/cusps. However, the roles of many of these signaling pathways in valve development remain incompletely understood. Previous research indicates that Receptor Tyrosine Kinase (RTK) signaling, commonly involved in cell proliferation, is activated during valve mesenchyme expansion. We found that Lrig1, an RTK negative regulator, is dynamically expressed in the valves throughout development. We observed high expression in the endocardium of the atrioventricular canal (AVC) during the first steps of valve development. During valve mesenchyme expansion and elongation, we detected Lrig1 at the distal end of both the AVC and semilunar (SL) valves. Using a transgenic mouse line to knock out Lrig1 function, we demonstrated that homozygous Lrig1 embryos have hypertrophic AVC valves, although we observed no such defect in the SL valves. Interestingly, mutant AVC valves are not overproliferative at 13.5 days post-fertilization. We hypothesize that Lrig1 negatively regulates endocardial-to-mesenchymal transformation (EMT) in early valve development. Fate-mapping of Lrig1+ cells will further elucidate the roles of Lrig1. Our findings are the first ever to describe a function for Lrig1 in the heart valves.

Title: Effects of a Cognitive Task on Motor Output in Young Adults

Presentation Type: Poster 63

Primary Research Area: Science

Presenter: David Gallacher

Faculty Mentor: Anita Christie

Major: Human Physiology, Psychology

Funding Source: UROP mini-grant, \$1000

Abstract:

It is widely accepted that multitasking with a motor task while performing a cognitive task will decrease performance, but we do not understand the underlying physiology. The purpose of our study was to assess the effects of a cognitive task on motor cortex excitability and inhibition in young adults. Transcranial magnetic stimulation was used to evoke responses from the first dorsal interosseous muscle. Excitability was assessed through the amplitude of motor evoked potentials (MEPs) and inhibition was assessed through the duration of cortical silent periods (CSPs). These measures were obtained under three conditions: (1) no cognitive task; (2) during a simple cognitive task; (3) during a complex cognitive task. MEP amplitude was increased during both simple and complex cognitive tasks; however, this did not reach statistical significance ($p=0.06$). The duration of the CSP was unaffected by the cognitive tasks ($p=0.74$). These results suggest that a cognitive task may increase motor cortex excitability, but does not affect inhibition.

Title: Insights into Magma Ascent and Decompression from Diverse Pumice Fragments at the Onset of the Huckleberry Ridge Supereruption

Presentation Type: Poster 14

Primary Research Area: Science

Presenter: Claire Getz

Faculty Mentor: Paul Wallace, Madison Myers

Major: Geology

Funding Source: Mini Grant, UROP, \$600

Abstract:

The focus of my senior thesis is to study the gas rich volcanic glass fragments, or pumice, that were ejected from the eruption of the Yellowstone supervolcano in Wyoming. A supervolcano is a volcano of massive scale. For

Yellowstone, this means a volcano with the capacity to erupt over 6000 times more material than the 1980 eruption of Mount Saint Helens. Research suggests that the rising magma in the conduit of the Yellowstone eruption exhibited strange stop-start behavior. This means that there were breaks in the eruption in the order of months to years where magma and ash were not being ejected. To study this theory, a very important piece of information to obtain is the magma ascent rate, which is the rate at which the magma in the volcano's conduit was rising. I will be studying three members of the eleven member pumice that was ejected during the eruption to find the ascent rate of this eruption. Then, I will use computer programs and high-resolution images to study the pumice and gather data on the character of different layers of the Huckleberry Ridge Deposit. I will be able to calculate and estimate for how fast the magma rose during the eruption by looking at the range of vesicle sizes, shapes, and numerical densities. This research will contribute to a larger project in the Geology department. The goal of the project is to help understand how this supervolcano works.

Title: Quantitative Study of Beach Debris in Northern Madagascar

Presentation Type: Oral

Primary Research Area: Science

Presenter: Emma Gjerdseth

Faculty Mentor: Kathryn Lynch, Galen Martin

Major: Economics, Environmental Studies

Abstract:

Marine pollution, with the majority originating from land based sources, poses a significant threat to species depending on marine and coastal ecosystems. By understanding the make-up of the beach debris, more effective and targeted education and awareness programs can be developed to reduce marine pollution originating from land based sources. In this study beach debris was recorded, quantified and classified, on three mostly sandy beaches in the northern Diana Region of Madagascar. At the time of study there were no published reports on debris on Malagasy beaches, thus this paper provides insight to its composition and distribution in the region. The debris was observed and classified using CSIRO transect methods and charts complimented by visual observations. CSIRO has performed similar studies before and using their methods made for easier data comparisons. The abundance of debris per square metre varied between the beaches, showing, as predicted, an increasing trend with usage, whilst plastic debris density remained relatively stable. A total of 1216 pieces of debris was recorded, with 758 pieces of plastic, distributed at an average of 0.158 pieces of debris per square metre, and 0.109 pieces of plastic per square metre. The highest total quantity of debris and plastic litter was found at Ramena followed by Ampasindava, and Baïe de Sakalava.

Title: A University of Oregon Substance Use Survey: An Analysis of Substance Use among Sexual and Gender Minority Students

Presentation Type: Poster 15

Primary Research Area: Social Science

Presenter: Patrick Glang

Faculty Mentor: Jake Mahon

Major: Psychology

Abstract:

College students who identify as lesbian, gay, and bisexual are more likely to use substances (Cochran, Ackerman, Mays, & Ross, 2004). Few studies have assessed both substance use and perceived risk of substance use in specific sexual orientation and gender identity groups. This study examined (1) the rates of substance use and (2) associated perceived risk of substance use among male, female, and transgender sexual minority students. A web-based survey assessing substance use, sexual orientation, gender identity, and perceived risk of substance use was administered to students from the University of Oregon (UO). A total of 5928 students (27% of UO population) responded to the 180-item survey. Over 9% of students identified as a sexual minority (n = 536) and 2.5% of students identified as a gender minority (n = 194). Group differences are discussed across sexual orientation and gender identity subsamples, as well as correlates associated with student substance use. Implications of this study point to potential higher risk of substance use and abuse among college students who identify as sexual and gender minorities. More research is needed to isolate causal risk factors for substance use issues within student subpopulations, and to better understand the relationship between gender, sexual orientation, and substance use.

Title: Criminalizing Black Reproduction: “Crack Babies,” Black Motherhood, and State Intrusion

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Dana Glasscock

Faculty Mentor: Sharon Luk, Jamie Bufalino

Major: History, English

Abstract:

The phenomenon of “crack babies” as a public concern addressed by state policies and media focus serves as an example of how intersections between racial ideology, women’s reproductive rights, and state policies frequently functions in a way that negatively and disproportionately affects African American women. Examining the specific historical backdrop of “crack babies” highlights how the issue and state-sanctioned response disproportionately targeted African American women’s reproduction, laying the foundation for understanding how this moment functioned as a concrete effect of negative racial ideology. In the 1980s and 1990s “crack epidemic,” media focused on crack as a danger to society and the new drug of criminals. Through state campaigns including Reagan’s “War on Drugs” and Clinton’s welfare reforms, crack was constructed as the drug of poor, inner-city, predominantly black populations, contributing to the narrative of social dangers and criminality built around the existence of black Americans. The issue of “crack babies” spotlighted black motherhood, portraying their reproduction as the result and continuation of criminality and addiction, where state action was positioned as the solution. Through examining the work of historians and theorists including Dorothy Roberts, Barbara Fields, and Ruth Gilmore examining race, law, and ideology, it can be seen how the issue of “crack babies” stands as an historical example of racial ideology with real repercussions both for the population involved, and in the public’s perception and condemnation of black motherhood.

Title: The Gut Microbiota Influences Synapse Formation during Zebrafish Development

Presentation Type: Poster 64

Primary Research Area: Science

Presenter: Collette Goode

Faculty Mentor: Philip Washbourne, Alexandra Tallafuss

Major: Biology

Abstract:

The central nervous system depends on the appropriate formation of synapses between neurons to enable communication throughout neural circuits, which generates behavioral and cognitive functions. Recent studies have shown that some individuals with Autism Spectrum Disorder (ASD) have an abnormal composition of the bacterial community resident, referred to as microbiota, within their intestine. Studies in mice suggest that the microbiota can signal to the developing brain, indicating that changes in the intestinal microbiota may underlie some of the deficits seen in ASD. We began to test this hypothesis by using zebrafish as a model to learn how the microbiota affect synapse formation. We used immunohistochemistry and confocal microscopy to compare synaptic protein distribution in the brains of conventional and germ-free zebrafish. We focused on the forebrain, which is speculated to correlate with complex behavior in zebrafish. We labeled the pre-synaptic proteins SV2 and Synapsin1/2 to allow us to image and quantify synapse density in the telencephalon of germ-free and conventional zebrafish larvae at 6 days post-fertilization. We found a significant increase in the number of synapses expressing Synapsin1/2, but no difference in synapses expressing SV2 in germ-free compared to conventionalized zebrafish. Further study of synapse density, function and behavior of germ-free fish will promote our understanding of the correlation between the microbiome, synapse formation, and prevalent neurodevelopmental disorders.

Title: Targeted Aggression in a Troop of Ring-Tailed Lemurs (*Lemur catta*)

Presentation Type: Poster 16

Primary Research Area: Science

Presenter: Leslie Gotuaco

Faculty Mentor: Colin M. Brand, Frances J. White

Major: Environmental Science

Abstract:

Many lemur species are well known for exhibiting female dominance where there is a single, top-ranking female. These species are often female philopatric, thus females remain in their natal group resulting in matrilineal. Previous

research has detailed targeted aggression among females, often during birth season and between these matriline. Here, we present a case study that describes the social behavior, specifically targeted aggression, of a troop of ring-tailed lemurs following the death of the dominant female. Behavioral observations were collected during 46 hours on 7 lemurs on St. Catherine's Island, located off the coast of Georgia. Observations used all occurrence sampling and focal animal sampling of social behavior. We calculated the percentage of targeted aggression that occurred between all individuals. We found that one female received 33% of the total aggression during the observation period. A more dominant female directed 65% of her aggression toward this lower ranking female. These results highlight that targeted aggression plays a significant role in the aftermath following a dominant female's death and contribute to understanding the complexity of lemur sociality.

Title: The Academic Climate of Science, Technology, Engineering, and Math Fields: How Stereotypes Influence Perceptions

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Ruth Grenke

Faculty Mentor: Sara Hodges

Major: Psychology, Philosophy

Abstract:

Despite recent progress toward gender equality, women continue to be systematically underrepresented in STEM (science, technology, engineering, and math) fields. One reason for this disparity is found in the academic culture surrounding STEM fields. Within this culture, pervasive beliefs exist that men, more frequently than women, are born with the innate ability required to succeed in STEM fields. In the face of these stereotypes, women in STEM fields are not only told they are at a natural disadvantage, but also that the incremental improvement that may come with experience is no substitute for innate talent. In the current study, female and male undergraduate and graduate students in the same STEM field were paired and instructed to have a conversation about the undergraduate's interest in pursuing graduate school. Recruitment methods consisted primarily of emails to STEM departments and emails to STEM students on the University's honor roll. We hypothesize that participants who endorse a belief in innate models of intelligence will give lower ratings of female undergraduates' qualification for graduate school across three variables: undergraduates' self-assessments of their qualification, graduates' assessments of undergraduates' qualification, and meta-assessments in which undergraduates guess how graduates rated their qualification. We found that endorsing a belief in innate theory of intelligence was associated with lower self- and meta-assessments of female undergraduates' qualification for graduate school, but this effect was not found for graduates' assessments of female undergraduates' qualification.

Title: Examining the Feasibility of Exon Skipping as a Potential Gene Therapy for USH1F Patients

Presentation Type: Poster 65

Primary Research Area: Science

Presenter: Willem Griffiths

Faculty Mentor: Jennifer Phillips, Judy Pierce

Major: Biology

Abstract:

Usher syndrome (USH) is the most frequent cause of hereditary deaf-blindness, accounting for over 50% of the deaf-blind population. USH type 1F, one of the most severe forms of USH, is rare globally, but the Founder effect has made it the most prevalent type of USH in the Ashkenazi Jewish population. USH1F patients have profound congenital deafness and early-onset progressive vision loss due to photoreceptor degeneration. USH1F is caused by mutations in the *PCDH15* gene, which encodes a large, multidomain cell adhesion protein. The truncated *PCDH15* protein disrupts the organization of stereocilia in the inner ear and leads to dysfunction and eventual death in photoreceptor cells. Due to the size and complex alternative splicing of *PCDH15*, the straightforward gene-replacement therapies being pursued for other forms of USH are not feasible for this gene. We are testing the feasibility of using an antisense splice-inhibitor to delete Exon 8 from the *PCDH15* transcript. Although the resulting protein would be slightly shorter than normal, all downstream functional domains would remain intact, so it is possible that this modified form of *PCDH15* would maintain its functional integrity in the absence of Exon 8. Zebrafish mutants with nonsense mutations in the orthologous *pcdh15* exon have been generated via targeted mutagenesis using CRISPR/Cas9 gene editing. These loss of function mutants display phenotypes characteristic of human USH1F. The Exon 8 splice-blocking oligonucleotides will be tested on these mutants in order to determine whether the modified *pcdh15* protein can rescue the phenotype.

Title: Physical Activity and Healthy in Older Adults in Rural and Peri-urban Uganda Using Accelerometry: The Results of a SAGE Sub-study

Presentation Type: Poster 66

Primary Research Area: Science

Presenter: Eliza Hallett

Co-Presenters: Joshua Schrock, Tara Cepon-Robins, Tyler Barrett, Paul Kowal

Faculty Mentor: Josh Snodgrass

Major: Biology, Spanish

Abstract:

Accelerometers can be less expensive than other methods of measuring energy expenditure (e.g., doubly-labeled water) and are small and unobtrusive to the participant. Although the popularity of accelerometers has increased, they have not been used frequently in non-western settings and in populations of older adults. A sub-study of the World Health Organization's Study on global AGEing and adult health (SAGE) in Uganda in 2013 utilized accelerometers (ActiGraph GT3X) to assess the larger question of the relationship between physical activity and health in older adults in a developing country. Seven consecutive days of accelerometry data was combined with self-reported activity levels, socioeconomic status, health status, and measures of physical functioning in 188 older adults in rural and peri-urban Uganda.

Preliminarily, we examined sex and age differences in average daily active energy expenditure (AEE) in a small subsample (28 women, 26 men). On average, women exhibited higher AEE (431.94 kcal/day) than men (298.26 kcal/day) ($t = -1.91$, $P=0.63$). In addition, there was a negative correlation between age and AEE ($r = -0.202$, $P=0.143$). Although neither of these associations reached the threshold of $P<0.05$ for statistical significance, we are in the process of analyzing the entire $n=188$ subset and will present our findings at the symposium. With a larger sample to analyze it is likely that there will be a statistically significant relationship between physical activity and measures of health in this Ugandan population based on either age sub-category or sex differences between the male and female participants.

Title: Borges: Time, Nostalgia, and Modernity in *Evaristo Carriego*

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Felicia Hamilton

Faculty Mentor: Mayra Bottaro, Helen Southworth

Major: Romance Languages

Abstract:

What is the purpose of nostalgia in literature? How does it respond to modernity? And what is its function as a temporal tool? These are the driving questions behind my research, which will focus on *Evaristo Carriego*, an early work by Argentine author Jorge Luis Borges. This eponymous biographical work serves more to paint a picture of Buenos Aires in development than to chronicle the life of the man himself. Borges uses popular and historical mythologies to construct a mythic image of the neighborhood Palermo during the early twentieth century. Because of this, the work is often read as a "pre-text", that is, a history that the rest of Borges' writings would reference. I aim to build on this, examining how this particular work creates counternarratives to modernity. I propose the idea that nostalgia (a sentiment born of temporal or spatial distance) is a key tool in the timelines of and counter to modernity. Beyond simply reading and explaining *Carriego* as a pre-text, I hope to draw broader conclusions about the impact of various iterations of time in a modern and postmodern culture.

Title: Acute Hemodynamic Adjustments to Hot Water Immersion

Presentation Type: Poster 67

Primary Research Area: Science

Presenter: Sarianna Harris

Faculty Mentor: Christopher Minson, Brett Ely

Major: Human Physiology

Funding Source: Clark Honor's College Thesis Research Grant, \$1,000; Undergraduate Research Opportunity Program's Mini Grant Recipient, \$1,000

Abstract:

Passive heat therapy (regular hot tub or sauna use) has gained attention for its potential to improve cardiovascular

health, and recent evidence suggests that it produces beneficial vascular adaptations. However, the cardiovascular responses to a single bout of hot water immersion have not yet been characterized; therefore the mechanisms that produce long-term adaptations are not yet fully known. **PURPOSE:** To examine the acute cardiovascular hemodynamic effects of a 60min bout of hot water immersion. **METHODS:** Thirteen healthy, young (26 ± 4 yrs) subjects were immersed to heart level in 40.5°C water for 60minutes. Measurements, including heart rate, cardiac output, and skin blood flow, as well as diameter and blood velocity of carotid and brachial arteries, were taken at baseline prior to and during immersion. Peak changes were compared to baseline. **RESULTS:** Heart rate increased significantly from 60 ± 3 at baseline to a peak of 121 ± 5 bpm during immersion. Cardiac output increased significantly from baseline to peak, as did blood flow in both carotid and brachial arteries, total shear ($4^{\ast}\text{velocity/diameter}$) in both brachial and carotid arteries, and skin blood flow. **CONCLUSION:** Hot water immersion caused substantial increases in cardiac output, arterial blood flow, skin blood flow, and shear rates. These changes are similar to those seen during a single bout of exercise, suggesting that repeated hot water immersion may cause beneficial vascular adaptations through similar mechanisms.

Title: Changes in Lacustrine Sediment Lithology from ca. 45,000 to 22,000 Years Ago Reveal Glacial Environments Near Triangle Lake, OR

Presentation Type: Poster 17

Primary Research Area: Science

Presenter: Brynn Harrison

Co-Presenters: Daniel Gavin

Faculty Mentor: Daniel Gavin

Major: Geography

Abstract:

The Pacific Northwest has experienced many changes in climate during the most recent glacial period. In order to understand how these changes are documented in the climate record, changes in sediment characteristics were examined in a 60-meter sediment core from a location near Triangle Lake, Oregon. This study focused on using loss-on-ignition to measure organic content, carbon and nitrogen percentages, texture and color analysis, and carbon and nitrogen isotope analysis. Based on the changes in sediment characteristics, the record could be broken down into two sections. The first section of the core, spanning 48,500 to 37,200 cal. yr BP (calibrated years before present), mainly consisted of clays with few visible erosional events (noted by sand layers) spread throughout the section. These sediments were compared with pollen-derived climate descriptions (described by Laurie D. Grigg and Cathy Whitlock) and were found to be consistent with a wet climate that fluctuated between cool and warm temperatures. The second section of the core, spanning 36.9 to 23.4 cal. yr BP, had abundant sand layers. This is consistent with rapid erosion and higher sedimentation rates, and corresponds to a cold and wet climate. Overall, the sediment characteristics correspond well to the pollen-inferred vegetation and provide additional inferences on the erosion as well as terrestrial and aquatic productivity during the period preceding glaciation.

Title: The Effect of a Patent Foramen Ovale on Thermoregulatory and Ventilatory Responses During Passive Heating and Cooling

Presentation Type: Poster 68

Primary Research Area: Science

Presenter: Madeline Hay

Faculty Mentor: Andrew Lovering, Louise Bishop

Major: Human Physiology

Abstract:

A patent foramen ovale (PFO) is an intracardiac shunt present in $\sim 1/3$ of the population that allows blood flow to bypass pulmonary circulation which may reduce respiratory cooling. During passive heating, ventilation increases to dissipate heat from the lungs. Because individuals with a PFO (PFO+) have a higher core temperature (T_{core}), it was hypothesized that PFO+ subjects would increase ventilation at a higher T_{core} than subjects without a PFO (PFO-) during passive heating and would shiver at a higher T_{core} during passive cooling. 22 males (11 PFO+, 11 PFO-) completed a passive heating and passive cooling trial. For passive heating, individuals were immersed in a 40°C water bath until 1) 30 minutes elapsed, 2) T_{core} reached 39.5°C , 3) they felt lightheaded or 4) they requested to exit. For passive cooling, individuals were immersed in a 20°C water bath until 1) 60 minutes elapsed, 2) T_{core} reached 35.5°C , 3) sustained shivering occurred or 4) they requested to exit. In both trials, PFO+ had a higher T_{core} . During passive heating, PFO+ had a lower ventilation than PFO-. Additionally, PFO+ shivered at a higher T_{core} than the PFO-

subjects during passive cooling. The results suggest that PFO+ have a higher T_{core} and that this greater temperature is defended in both hot and cold environments. A PFO may be beneficial by preventing hypothermia but detrimental by facilitating heat stroke.

Title: Development of a Pull-down Procedure for Isolating Platinated Cellular Molecules

Presentation Type: Poster 69

Primary Research Area: Science

Presenter: Anna Hickey

Faculty Mentor: Victoria DeRose, Geri Richmond

Major: Biochemistry

Funding Source: Presidential Undergraduate Research Scholars Program, University of Oregon, \$5,000.00 research stipend; Scholarships for Oregon Scientists, University of Oregon and National Science Foundation, \$2,000.00 research stipend

Abstract:

Cisplatin is a commonly used anti-cancer therapeutic; however, its mechanism of inducing cell death is not well understood. In order to identify and isolate cisplatin's cellular targets for characterization, our lab utilizes the "click" reaction (a physiologically stable and high yielding reaction that produces no harmful byproducts) to attach fluorescent compounds or other small molecules to platinated cellular targets such as DNA, RNA, and proteins. In this project, I optimized an in vitro pull-down procedure using streptavidin-coated magnetic beads to separate platinated cellular targets from unplatinated molecules. I first treated target DNA with a click-functionalized platinum reagent, then clicked that compound to a double-stranded DNA linker. The opposite end of this linker contains a biotin molecule, which interacts strongly with the streptavidin-coated magnetic beads through the streptavidin-biotin interaction. Using a powerful magnet, I separated platinated and clicked DNA attached to the beads from unreacted DNA, then confirmed the desired species of DNA was pulled down using polyacrylamide gel electrophoresis (PAGE), a method by which DNA or proteins can be separated by size. I determined that increasing the incubation time of the beads with the platinated DNA increased elution yields. Furthermore, elution temperatures above 90° C also increase the elution yield. Optimizing this pull-down technology will allow us to better characterize platinated molecules, and will ultimately improve our understanding of cisplatin's cell-death inducing mechanisms.

Title: The Role of Post-Translational Modifications in Regulating Distinct Heterochromatin Protein One Functions

Presentation Type: Oral

Primary Research Area: Science

Presenter: Collin Hickmann

Faculty Mentor: Tereza Ormsby, Eric Selker

Major: Biochemistry

Funding Source: Presidential Undergraduate Research Scholars Program (PURS), Undergraduate Research Opportunity Program (UROP), \$5,000; Oregon Undergraduate Researchers in SPUR (OURS), National Institute of Child Health and Human Development (NICHD), \$5,000

Abstract:

Heterochromatin is a minimally transcribed, densely bundled complex of DNA and associated factors comprising large regions of the eukaryotic genome. It is essential for chromosome stability, genome integrity, gene regulation, and the silencing of transposons. The filamentous fungus *Neurospora crassa* is often employed as a model organism to study the epigenetic regulation of heterochromatin. In *Neurospora*, the conserved scaffolding protein heterochromatin protein 1 (HP1) binds H3 histones marked by lysine nine trimethylation (H3K9me3) and recruits other proteins to form at least three distinct complexes. HP1 recruits the DIM-2 DNA methyltransferase, which catalyzes DNA methylation. HP1 is also an essential component of both the HCHC histone deacetylation complex, which facilitates centromeric silencing, and the DMM complex, which limits aberrant heterochromatin spreading. However, it's unclear how these disparate functions are coordinated. We hypothesized that they are modulated by post-translational modifications (PTMs) of HP1. Previously, we used mass spectrometry to identify HP1 sites harboring methylation, acetylation, formylation, and phosphorylation. I used amino acid substitutions at a subset of these sites to prevent individual PTMs in vivo. Substitutions at multiple sites were found to cause a substantial decrease in centromeric silencing independent of DNA methylation. These results suggest that the recruitment of HCHC to incipient heterochromatin may be selectively mediated by specific PTMs.

Title: Reducing Stigmatizing Attitudes toward Veterans with PTSD: The Impact of Empathic Engagement with Fictional Literature

Presentation Type: Oral

Primary Research Area: Science

Presenter: Rebecca Howard

Faculty Mentor: Brianna Delker, Sara Hodges

Major: Psychology, English

Abstract:

Combat-related post-traumatic stress disorder (PTSD) diagnoses are becoming more prevalent, but fewer than half of veterans diagnosed with PTSD seek treatment. Stigmatizing attitudes toward military veterans with combat-related PTSD prevents veterans from seeking treatment. Fictional literature may serve as an efficient, accessible way to increase personal experience with, and empathy toward, individuals diagnosed with a mental health disorder. In prior research, increased levels of empathic engagement with fictional literature (i.e., “transportation” into the text) has been associated with increased reports of empathy for others. In this study, undergraduate participants (N=450) were randomly assigned to read one of three passages: a fictional literature passage about PTSD, a nonfiction passage about PTSD, or a fiction control passage (i.e., not about PTSD). Afterwards, self-report surveys assessed stigmatizing attitudes toward people with PTSD, empathic concern for the character in the vignette, and transportation into the text. We hypothesized that the fictional PTSD (vs. nonfiction PTSD) passage would decrease stigmatizing attitudes toward people with PTSD. We also hypothesized that the fictional PTSD (vs. fiction control) passage would increase empathic concern toward the character in the vignette and that this effect would be mediated by increased transportation into the text. Analysis of covariance revealed that the fictional PTSD passage was associated with more pity toward people with PTSD than the nonfiction PTSD passage, $F(1, 243) = 5.16, p = .024$. Empathic concern for the character was greater with the fictional PTSD passage than the fictional control passage, $F(1, 211) = 77.45, p < .001$. Transportation into the text partially mediated the effect of the fictional passages on empathic concern, $B = .15, SE = .03, 95\% CI [.10, .22]$.

Title: Microbial Inheritance in Seed Saving Networks: An Investigation into the Drivers of Fusarium Abundance and Transmission in Multiple Varieties of Corn Seeds

Presentation Type: Poster 70

Primary Research Area: Science

Presenter: Catherine Jaffe

Faculty Mentor: Brendan Bohannon, Lucas Nebert

Major: Biology, Environmental Science

Funding Source: UROP Mini-grant, University of Oregon UROP, \$700

Abstract:

Seedborne pathogenic fungi in the genus *Fusarium* are prevalent in corn populations and pose human health risks due to their production of carcinogenic mycotoxins. Although much is known about the effects of domestication on the genetics of corn populations, less is understood about the impacts of agricultural management on the inheritance of microbes like *Fusarium* that live in and around these plants. Our research aims to better understand how networks of seed saving and crop management affect the abundance and transmission of *Fusarium* in corn seeds. Using preliminary datasets from a Community Research Network of farmers established by University of Oregon PhD student Lucas Nebert, we investigate how efficiently *Fusarium* is transmitted through seed saving networks and whether certain varieties of corn are prone to higher abundances of seedborne *Fusarium*. Additionally, we examine which agricultural practices affect the transmission of *Fusarium* from parent to offspring. We also gather and analyze new data using an interdisciplinary mix of interviews with farmers, in-lab DNA analysis techniques, and multivariate statistical tests. Since *Fusarium* population dynamics are a product of both the microbial ecology within the seed and human agricultural practices, this interdisciplinary approach provides a clearer window onto how agricultural methods influence microbial inheritance in seeds. Although our results are preliminary, we expect to see *Fusarium* abundance vary according to corn species, as previous studies have shown that microbial communities tend to be more similar between closely related plant varieties. The results of our research may have wide reaching implications due to the ubiquity of *Fusarium* and their potential to impact methods of sustainable agriculture.

Title: Slavery, Captivity, and the Fate of Northern Paiutes after the “Snake” War: A Case Study of the Expedition of 1871 and William McKay: Exterminator and Emancipator

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Catherine Jaffe

Faculty Mentor: Kevin Hatfield, Jennifer O’Neal

Major: Biology, Environmental Science

Abstract:

Lasting from 1855 until 1868, the “Snake” War was a devastating conflict during which many individuals from the Northern Paiute tribe were taken captive and inducted into an inter-tribal slave trade. In 1871, the U.S. government commissioned Dr. William McKay, a leader of the violent “Snake” war expeditions, to locate and liberate these displaced Paiutes. The fundamentally dehumanizing effects of enslavement and captivity have led to the near erasure of these captured Paiutes and their experiences from historical narratives. As a result, the events of McKay’s expedition and the fates of Northern Paiutes captured and enslaved in the war have been largely un-researched. Given the scarcity of secondary literature on this topic I draw on extensive primary sources from the McKay Papers: a collection of letters and government documents relating to Dr. William McKay housed in the University of Oregon microfilm collection. Using the unusual 1871 expedition as a case study, I argue that the effects of slavery, captivity, acculturation, and oppression were still vividly present during this “liberation expedition” and strongly informed the objectives of William McKay and the U.S. federal government. I further argue that primary documentation of this expedition reveals that government policies served to reinforce pre-existing perceptions of the Northern Paiute as less-than human and so undermined the sovereignty of these independent and complex peoples. Unearthing hidden histories like that of the 1871 expedition can help build a new understanding of these historical narratives that takes into account the sovereignty of the Northern Paiute people. The combined repercussions of intertribal slavery and government driven acculturation still linger with the Northern Paiute people, yet most significant is the fact that these peoples have survived such oppressive forces to continue their culture today.

Title: Identification of Genes Required for Nuclear Exclusion of Prospero during Neural Stem Cell Self-renewal

Presentation Type: Oral

Primary Research Area: Science

Presenter: Patrick Johnson

Faculty Mentor: Sen-Lin Lai, Chris Q. Doe

Major: Math, Biology

Funding Source: HHMI; SPUR

Abstract:

Proper neural development requires a fine balance between neural stem cell self-renewal and quiescence. Tumorigenesis occurs when stem cells over-proliferate, and early onset of quiescence leads to insufficient progeny and impaired brain development. Prospero, a conserved transcription factor, is expressed in neuroblasts (neural stem cells in Drosophila), but must be excluded from the nucleus to permit self-renewal. Transient import of low-level Prospero into the neuroblast nucleus results in termination of the cell cycle and induces quiescence. The cellular components aiding in nuclear exclusion of Prospero, and thereby preventing premature quiescence, have not been identified. We found that the nucleolus gene nucleostemin 3 (NS3) is required for neuroblast self-renewal. The knock down of NS3 does not change the number of neuroblasts in the brain, but significantly reduces the number of neuroblasts in the cell cycle. Additionally, Prospero was localized in the nucleus and the proliferating neuroblast marker Worniu was suppressed. These phenotypes (cell cycle arrest, nuclear Prospero, and suppression of Worniu) are the features of quiescent neuroblasts; we thus conclude that NS3 is required for neuroblast self-renewal and the loss of NS3 results in premature quiescence. Further characterization has similarly identified specific nuclear transport genes as being necessary for neuroblast self-renewal. Together, these findings help identify a necessary pathway through which neural stem cells regulate the balance between quiescence and self-renewal.

Title: The Threshold of the Sublime: Standing in Awe and Fear in José María Heredia's "En el Teocalli de Cholula"

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Briauna Jones

Faculty Mentor: Justine Parkin

Major: Spanish, Comparative Literature

Abstract:

My research explores the interactions between humans and nature as they appear in Cuban writer José María Heredia's prose poem "En el Teocalli de Cholula." I argue that María Heredia engages with the sublime by presenting a simultaneous awe and fear of nature. This analysis centers on a close reading of the selected poem and draws from Edmund Burke and Immanuel Kant's conceptualizations of the sublime and contemporary, eco-critical approaches of Allen Carlson and Noël Carroll. Burke distinguishes between the beautiful and the sublime in *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*, but Kant provides a more critical and complex definition of the sublime in *Observations on the Feeling of the Beautiful and Sublime*, a more acute definition I use in my reading of María Heredia's poem. In "Appreciation and the Natural Environment" Carlson offers three, near-emotionless, ways of viewing the aesthetics of nature while Carroll adds the importance of emotion to Carlson's preferred model of appreciation in *Beyond Aesthetics: Philosophical Essays*. From this paper, readers will come to recognize that if they were to stand and look onto el Teocalli de Cholula, they too would be in the presence of the sublime. This research is significant as it crosses temporal and geographical boundaries to better understand the unique human experience of the sublime.

Title: Anthelmintic Drug Sensitivity in Male and Female *Panagrellus redivivus* Nematodes

Presentation Type: Oral

Primary Research Area: Science

Presenter: Wanjiru Karanja-Senge

Faculty Mentor: Janis Weeks

Major: Biology

Abstract:

Caenorhabditis elegans is a well-studied model species of nematode worm that has been widely used for anthelmintic (anti-nematode) drug development as drug resistance has increased. The nematode *P. redivivus* presents itself as an alternative nematode to *C. elegans* that is easy to rear, making it useful for research in Africa. In collaboration with the Gabon-Oregon Center, our laboratory aims to develop a *P. redivivus* screening system for natural products. EPG recordings are similar to electrocardiograms of the human heart. In nematodes, EPG recordings show the electrical signals produced by rhythmic contractions of the pharynx. Pharyngeal contractions are used as a readout for electrical activity of neurons and muscles in nematodes. *C. elegans* is a hermaphroditic species, but *P. redivivus* is a gonochoristic species with males and females. My study tested the hypothesis that adult male and female *P. redivivus* have different sensitivity to anthelmintic drugs. I used EPG recordings to test this hypothesis, while applying Ivermectin, an anthelmintic drug. DMSO was the Ivermectin solvent, and was used as a control. EPG recordings from male and female *P. redivivus* were analyzed using IGOR Pro software. My results suggest that there is no sex difference in the sensitivity of *P. redivivus* to Ivermectin, supporting the idea that mixed cultures containing both sexes can be used for drug screening experiments.

Title: The Plow in a Land of Sand and Sagebrush: Agrarian Ideology as an Agent of Assimilation on the Warm Spring Indian Reservation, 1850-1870

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Kiara Kashuba

Co-Presenters: Faculty Mentor: Kevin Hatfield, Jennifer O'Neal

Major: Planning, Public Policy, and Management

Abstract:

This paper examines how Euro-American agrarian ideology was an agent of oppressive assimilation and acculturation of the Confederated Tribes of Warm Springs in central Oregon. My research establishes agriculture at center stage, reexamining it as a paramount assimilation tactic rather than an afterthought. My secondary sources discuss agrarian

ideologies such as Jeffersonian Agrarianism, the Yeoman and the Free-Soil Empire, and Manifest Destiny, and my primary research draws from treaties, annual reports, diary entries, letters between government officials, and interviews with tribal elders. Most interestingly, throughout the course of my research I discovered a great deal of documentations of the failure of agriculture on the Warm Springs Reservation. Soil quality and weather deemed the region almost entirely unfit for agriculture, and yet, fully aware of the land's inability to produce crops, the government relentlessly forced the indigenous tribes to adopt an agrarian lifestyle. Thus my research reveals that agriculture on the reservation was about more than just growing food, it was about assimilation and fulfilling Jeffersonian Agrarian ideals.

Title: Elucidating the Active Domain of a Novel Anti-inflammatory Protein Produced by Intestinal Bacteria

Presentation Type: Poster 71

Primary Research Area: Science

Presenter: Lila Kaye

Faculty Mentor: Karen Guillemin, Annah Rolig

Major: Biology

Abstract:

Bacteria play an important role in the health of their host organism; pathogenic lines signal danger, which induces a host immune response, while commensal, or resident, bacteria signal to reduce or prevent such an immune response. The ability of a resident organism to communicate with its host to alter immune system function is a burgeoning topic in the molecular biology field, offering a potentially rich source of biotherapeutics to treat illnesses. Researchers in the Guillemin laboratory identified a novel bacterial protein, produced by resident bacteria, which reduces intestinal innate immune responses in zebrafish hosts. Zebrafish are a good model organism for humans because of high replicability, easy gnotobiology, and their translucent larvae allow easily monitoring of host cells. I aim to carry out a structure-function analysis of this protein. I will determine which domain has the anti-inflammatory activity using systematic deletions of the gene sequence. The protein has one region with homology to a human anti-inflammatory cytokine, a protein that controls neutrophil behavior as part of the immune system. We hypothesize that this domain will be important in the bacterial protein's function. This would suggest that this bacterial resident mimics a host protein to control the host immune response. This anti-inflammatory protein could be a fresh tool to fight chronic inflammatory diseases in humans, ones often caused by disunion between gut microbes and their host.

Title: The Implementation of Organic, Industrial-Scale Fertilizer Production

Presentation Type: Poster 18

Primary Research Area: Social Science

Presenter: Josephine Kinney

Faculty Mentor: Galen Martin

Major: Environmental Studies, Spanish

Abstract:

Large-scale industrial mono-cropping is currently the primary form of agriculture to feed our growing global population of 7.4 billion people. Nonetheless, over 25% of the world population is undernourished and 48.1 million Americans live in food-insecure households. My research began with the goal of creating a more sustainable agricultural system that can reduce global hunger and improve environmental and human health by switching from synthetic fertilizer to organic fertilizer application. Synthetic fertilizers are more commonly used but are petroleum-based and are associated with a variety of long-term problems such as soil erosion, acidification, and animal and human health effects. Furthermore, there is a 93.6% correlation between oil and food prices, signifying that rising oil prices drive food prices higher and will increase food insecurity. In this study I found that organic fertilizer can actually produce higher crop yields than synthetic fertilizer, both immediately and long-term, and are not affiliated with oil prices. The primary challenge to implementing organic fertilizer on an industrial scale is simply the lack of infrastructure, planning, and demand, not level of productivity. Although I did not conduct field research myself, I looked at a case study by Edwards et. al conducted in 2010 which compared crop yields from harvests treated with compost, synthetic fertilizer, and a control group treated with nothing. My research shows how transforming our agricultural system into an organic farming operation would actually be cheaper for farmers and consumers, be more efficient, and improve human, animal, and environmental health.

Title: Effect of Pyomelanin Production on Oxidative Stress in an *Aeromonas* Zebrafish Gut Isolate
Presentation Type: Poster 72
Primary Research Area: Science
Presenter: Helena Klein
Faculty Mentor: Karen Guillemain, Cathy Robinson
Major: Biology

Abstract:

Bacteria have rapid growth rates, which allow us to study their adaptive evolution in the lab to selected environments. By studying the genetic changes that occur during the evolutionary process, we can learn about selective pressures experienced by bacteria when evolved in selected conditions. Through passaging of a strain of a natural zebrafish gut isolate, *Aeromonas ZOR0001*, we isolated one strain that has increased pigmentation compared to the wildtype. This pigmentation is a result of accumulation of pyomelanin in the extracellular environment. We confirmed through genetic sequencing a mutation in the isolate's metabolic pathway known to be involved in pyomelanin production. Pyomelanin production has been shown in other organisms to be linked to increased resilience to oxidative stress. Therefore, we hypothesized this mutation confers a fitness advantage to this evolved isolate compared to the ancestral strain. Therefore we generated a genetic knockout of the mutated gene in the ancestral strain and used hydrogen peroxide to simulate oxidative stress *in vitro*. We found that the knockout strain did better than the wild type strain. This demonstrates that pyomelanin production confers resistance to oxidative stress in *Aeromonas ZOR0001* which suggests an adaptive advantage for *in vivo* growth. Knowledge of genes that increase fitness in bacterial strains in the gut can ultimately allow for better probiotics to be developed with wide repercussions for human health.

Title: Creative Exploration of Making an Effective Performance
Presentation Type: Creative Work 5 (GSH Art Gallery)
Primary Research Area: Fine/Performance Arts
Presenter: Evan Kline
Faculty Mentor: Chet Udell
Major: Music Technology

Abstract:

The problem that a lot of electronic musicians face is that their performance isn't always intuitive to their audiences; the devices and gestures used don't always translate into an understanding to the reactions of the performers actions. I created a thermal wand as a way to explore an alternative way to interact with sound. The motivation wasn't to solve or collect data, it was to creatively explore the problem. The thermal wand is an aluminum rod with three temperature sensors (spaced evenly across the rod) along with an accelerometer. A computer receives data from the sensors, interprets it, and generates the sound. To play this instrument it is submerged in different temperature water baths, presenting two issues: Making it waterproof, and make it conduct heat efficiently. Waterproofing was solved by coating sensitive areas in plasti-dip, heat conductivity was solved through material choice and thermal grease. My performance will be the presentation of my work. Because of the design of the instrument I had to come up with a way to make an engaging performance. To do this I used a central metaphor (summer and winter) to enforce the connection between my actions and the musical reactions. I am continuing work on this instrument by creating a more approachable performance as well as finding new ways to use the temperature sensors.

Title: A County Divided: An Investigation of Race Re-segregation in Lane County Oregon Public Schools
Presentation Type: Creative Work 6 (GSH Great Room)
Primary Research Area: Social Science
Presenter: Anne Kloos
Faculty Mentor: Laura Smithers
Major: Education Foundations

Abstract:

Schools have become more segregated now than before Brown v. Board of Education in 1954. That groundbreaking decision, which initiated the end of school segregation and helped to launch the Civil Rights Movement, was followed by policies and political actions that eroded the rights set forth by this legal action. A shift from federal to state oversight further diluted the progress of desegregation. This research investigates the issue of how and why our school system has become segregated again, specifically looking at Lane County schools. Through the use of

primary literature this study looks at the nation as a whole and the historical context of segregation, then explores the history of Oregon's racist laws and policies that have detrimentally affected the lives of non-whites within the state. Additionally, current demographics of public schools in Lane County are reviewed for race, class, and school achievement levels. Based on this information, schools in Lane County are currently segregated based on race and class levels; Schools that score high for achievement score low on diversity. Segregation is an issue that continues to impact the lives of individuals in Lane County and beyond.

Title: Gendered Perceptions and Emotions of Intercourse and Trauma

Presentation Type: Poster 19

Primary Research Area: Social Science

Presenter: Adriane Knorr

Faculty Mentor: Erin McKenna

Major: Philosophy

Abstract:

By interweaving philosophy of the mind, the anatomical body as well as feministic theories given by Charlotte Perkins Gilman, we can see how perceptions and emotions relating to trauma and sex are often considered to differ along gender lines. Sex and trauma are very closely linked in the human brain regarding the emotional and physical ties that remain after the acts. This presentation is a combination of a literary review of Gilman's work and a scientific study of whether or not emotions can be gendered due to social constructs and anatomy. Gilman's argument shows how she believes that male brains have gotten the opportunity to grow physically as well as mentally over time. This has led to gendered primality of the emotions and perceptions from our everyday lives. The neurological studies suggest an argument that neurological differences between the sexes have been linked with greater impulsivity and aggression in males. According to this argument, men are able to build metaphorical webs within their lives that lack the plethora of emotions that women often tie to their worlds. This can have a possible hindering effect on women when they try to move on after traumatic events due to denser connections to emotions that come tied to their memories. These three arguments derive an answer to the gendered emotions and perceptions that are prevalent in trauma and sex. Combining male and female brain discrepancies with the differences in cognitive understanding of sex and trauma we can see that the perceptions and emotions are heavily gendered based on social constructs as well as the scientific understandings of male and female anatomy.

Title: Sensations of Pain: Real or Imaginary?

Presentation Type: Oral

Primary Research Area: Science

Presenter: Adriane Knorr

Faculty Mentor:

Major: Philosophy

Abstract:

Sensations of pain are based on perception, tolerance and outside environment (Robertson, 2002); this makes it diverse between each individual as well as also very difficult to describe or define. A symptom of pain is the brain's way of interpreting a sensation that is being sent via nerve pathways straight to the brain. If pain cannot be pinpointed to a specific disorder or sensation due to its humanistic subjectivity, then we must conclude that it is solely a sensation of the mind. Pain is a collection of neural signals being sent from the brain in order to protect the body. It is not a physical limitation as it is alterable and controllable with the right knowledge and techniques. Sensations of pain stem from all areas of the body and one's response to that pain depends on the emotional and physical strength to overcome hardships throughout life. Using experience from stimulus reactions, altering pain, post-reparative pain, and issues with our health care system; one can see how the sensations of pain, that of which humans feel, is strictly symptoms of an overactive brain attempting to protect itself from potential harm. Pain is just as adaptable and governable as our thoughts.

Title: The Artist's Marketplace
Presentation Type: Creative Work 7 (GSH Great Room)
Primary Research Area: Social Science
Presenter: Haruka Komiyama
Faculty Mentor: Kassia Dellabough
Major: Product Design

Abstract:

The story behind a piece of art can be the defining factor that determines if the piece will sell. For student artists, getting their story out and making connections with potential buyers or hiring companies can be difficult. We have developed a physical platform that allows student artists to create and sell their work. Unlike existing online platforms, we promote interaction; with every piece, a story behind the work of art is shared, and a new connection is made. Companies will also have to the platform, making it easier for them to find new hires. Student artists can also make some cash as The Artist's Marketplace takes in a commission for service.

Title: The Effects of Red and Green Colored Word Stimuli on Neural Processing and Behavior during an Emotional Stroop Task: An Event-Related Potential Investigation

Presentation Type: Poster 73
Primary Research Area: Science
Presenter: Katia Krane
Faculty Mentor: Don Tucker, Anita Christie
Major: Human Physiology, Psychology

Abstract:

Western associations of colors, especially of red and green, influence how individuals consciously perceive the meanings of these colors. However, very little research has investigated the underlying neural processes of localized colors presented as meaningful stimuli, like words, and the possible effects these colors have on behavior. The aim of this study was to investigate initial neural responses to red and green colored word stimuli and the effects of these colors on behavior, including working memory and response time. Using dense-array EEG, event-related potentials (ERPs) were recorded following presentation of word stimuli in red and green ink. ERPs represent measurements of post-synaptic potentials following a response evoking stimulus, in this case red and green colored words, to show real time neural processing of stimuli immediately after presentation. Additionally, memory recall and average response times for each color category were recorded. Participants recalled more red colored words than green, however, did not show significant differences in average response times during the emotional Stroop task, indicating that color may impact working memory but not response performance during the Stroop task. ERP waveform amplitude differences between color categories in components known to be involved in visual processing and discrimination, such as the C1, P1 and N1, suggest that differences in color perception occur quickly post stimulus presentation. These results suggest a bottom-up cognitive mechanism of color perception that may influence behaviors, such as working memory. Associations of the colors red and green may not simply be arbitrary, but linked to underlying differences in neural processing which may imply biases in previous research in which an emotional Stroop task was used to investigate behavioral and neural responses.

Title: Determining the Location of Connections Among Top Internet Service Providers in the United States

Presentation Type: Poster 20
Primary Research Area: Science
Presenter: Phillip Kriegel
Faculty Mentor: Reza Rejaie
Major: Computer Science, Mathematics
Funding Source: Research Experiences for Undergraduates (NSF), \$1500 a month

Abstract:

The Internet is a network of networks. There are more than 40,000 networks that create what we understand as the Internet today. Understanding where and how these networks interconnect is important for the purpose of meaningfully investigating a wide range of critical Internet-related problems, such as the vulnerability of the Internet to physical damage, such as earthquakes or power surges. Published work on Internet topology and structure focus primarily on finding the existence of these interconnections, and characterize the structure of the Internet based solely on these connections. By using RIPE Atlas, a distributed traceroute software, in addition to other methods, it

is possible to estimate which networks exchange traffic in which cities. The purpose of this thesis is to gain a better understanding of the geographic nature of the Internet by pinpointing exactly where these interconnections occur on a physical level. This project is able to provide a city level understanding of the autonomous systems present in each city, as well as which of those systems connect. This serves as a resource for further research.

Title: Do You Know Where Your Research Is Being Used? An Exploration of the National Science Foundation's Databases Using Natural Language Processing

Presentation Type: Poster 21

Primary Research Area: Science

Presenter: Theodore LaGrow

Co-Presenters: Jacob Bieker

Faculty Mentor: Boyana Norris

Major: Computer and Information Science, Mathematics

Abstract:

We have developed software to decipher the uses of previously funded technology used and cited in other scholars' research. In such a complex and dynamic field as computer science, it is of interest to understand what resources are available, how much the resources are used, and for what purposes the resources are used. We demonstrated the feasibility of automatically identifying resource names on a large-scale from scientific literature in the National Science Foundation's database and showed that the generated data can be used for exploration of software usage. While scholarly literature surveys can provide some insights, large-scale computer-based approaches to identify mentions of previously funded technology from primary literature is needed to automate systematic cataloguing and facilitate the monitoring of usage in a more effective method. We developed a pdf parser to extract text from articles in the database that we then trained using Natural Language Processing to evaluate if the article relates to the technology in question. The articles were given scores based on tokenization of nouns, titles, mentions, "strong" clues, "weak" clues, and references compared to a dictionary composed of important items related to the technology. From the articles' scores, we were then able to evaluate a trend of when and where the funded technology is being used. As we continue to expand this software, we will analyze the researchers' sentiment about the technology.

Title: The Effects of Exogenous Testosterone on Cardiovascular Stress

Presentation Type: Poster 74

Primary Research Area: Science

Presenter: Kevin Lai

Faculty Mentor: Pranjal Mehta, Erik Knight

Major: Biology

Abstract:

Although testosterone has recently been discovered to play a role in the biological stress response, its exact function is unclear. With the increased number of annual deaths around the world being attributed to heart disease, it is important to discern how hormones like testosterone influence the magnitude of the cardiovascular stress response. It is also critical to acknowledge the possibility of biological and psychological factors that may moderate these differences, such as anxiety: a state of inner worry or uneasiness that may be present prior to stressor exposure. This experiment examined cardiovascular and autonomic responses to psychosocial stress in healthy males aged 18-45 (n = 120) that were either given exogenous testosterone or placebo before being subjected to a social-evaluative stressor. Individual levels of trait anxiety were used as a moderator of testosterone's effects to the stress response. Results showed no significant effects of exogenous testosterone on heart rate and heart rate variability, suggesting that testosterone does not play a direct role in modulating the cardiovascular response to stress.

Title: Feminine Hygiene in America: What Problems America Has Socially, Economically, and Environmentally With Current Products and How to Solve Them

Presentation Type: Oral

Primary Research Area: Design

Presenter: Brittany Lang

Faculty Mentor: Trygve Faste, Susan Sokolowski

Major: Product Design

Abstract:

Feminine Hygiene is often a taboo topic in America. Feminine hygiene is and will continue to be an integral part of a woman's life for years to come. Most Americans do not have much knowledge of hygiene care products and education. In this study, articles were summarized and placed into three categories of menstrual care: social, economical, and environmental. Eighty women were also interviewed and surveyed to discover other problems within their hygiene care methods and menstrual cycle experiences. This information then helped form, from a design perspective, what is missing in hygiene care. Current priorities for users are that products be cheap, accessible, and easy to use. Environmental priorities are: producing less waste, less chemical use, and increased use of natural materials. The current hygiene market has sustainable options called menstrual cups, which are the least harmful, most economical, and most sustainable form of care even though they are not as popular as tampons. This study hypothesizes that because of a lack of education, cultural acceptance, and product presence in the United States; menstrual cups are not making their way into American stores. There is also not a current menstrual cup product on the market geared towards the modern American woman. American women need a product that empowers them, educates them about their body, is convenient, and creates minimal environmental impact.

Title: Stable Oxygen Isotope Analyses and Proxy Validation for Shellfish Foraging and Paleoenvironmental Reconstructions from Chelechol ra Orrak, Palau, Microesia

Presentation Type: Poster 22

Primary Research Area: Science

Presenter: Mila Lassuy

Co-Presenters: Taylor N. Dodrill, Nicholas P. Jew, Scott M. Fitzpatrick

Faculty Mentor: Nicholas Jew, Scott Fitzpatrick

Major: Archaeology, Public Relations

Funding Source: National Science Foundation; Sasakawa Peace Foundation; Sigma Xi

Abstract:

In Palau, Micronesia, marine resources such as shellfish played a vital role in subsistence for millennia. At the Chelechol ra Orrak site, nearly 100 shellfish species have been identified in archaeological assemblages, but there is a dearth of data on nearshore paleoecology or prehistoric shellfish foraging practices. To address these issues, we employed stable oxygen isotopes ($\delta^{18}O$) on select shellfish species, which has been successfully applied in many coastal regions to reconstruct paleoenvironments and sea-surface temperature (SST). In this study, modern shellfish samples were collected from intertidal zones near the site and ambient SST recorded. We then used X-ray diffraction on the samples to identify the skeletal biomineralogical composition, which provides the necessary information to select the proper isotope-to-SST conversion formula. Calcium carbonate samples were milled from modern shells and the $\delta^{18}O$ results paired with ambient water temperatures using several $\delta^{18}O$ -SST conversion equations. Using the most appropriate formula, these equations were then applied to $\delta^{18}O$ samples from several prehistoric shells to reconstruct a high-resolution SST. Results provide useful baselines for examining a host of issues related to prehistoric subsistence strategies in Palau and how environmental changes may have influenced the availability and productivity of various molluscan taxa through time.

Title: "Thinking Inside the Box": Comparative Analysis of Post-consumer Cardboard Building Insulation
Presentation Type: Poster 23
Primary Research Area: Design
Presenter: Nathaniel Leigh
Co-Presenters: Gianna Prather, Alexa Thornton
Faculty Mentor: Alison Kwok,
Major: Architecture

Abstract:

In an age where efforts to conserve natural resources and limit greenhouse gas emissions are more critical than ever before, it is vital to reduce waste and use already harvested resources as effectively as possible. Creating products from post-consumer material is one way to greatly reduce the amount of waste making it into landfills. The authors of this study explore the use of post-consumer corrugated cardboard as building insulation. Two methods for insulating with cardboard were assessed – stacked and shredded. The authors hypothesized shredded cardboard would be a better insulator than stacked cardboard. A second hypothesis was tested; fiberglass batt insulation would be a better insulator than stacked and shredded cardboard. R-13 fiberglass batt insulation was used to represent the minimum insulation requirement for a residential building located in the United State Zone 4 climate as defined by ASHRAE standard 90.1. Three identical boxes were constructed, each with a different insulation. Interior and exterior temperature data from each box was collected using HOBO Pendant 001 data loggers. Differences in interior and exterior temperature were compared across each box in order to determine effectiveness. Comparative analysis was used to assess the performance of the cardboard insulation types against each other and the fiberglass batt. All hypotheses were proven incorrect; the findings show that both types of cardboard insulation perform comparatively to R-13 fiberglass batt insulation.

Title: Restoring Connections: Eugene Youth to the Great Outdoors
Presentation Type: Oral
Primary Research Area: Science
Presenter: Phoebe Lett
Co-Presenters: Kiley Graham, Quinn Haaga, Meagan Hamilton, Rachel Rechtman, Miranda Taylor-Weiss, Lillian Thomas
Faculty Mentor: Kathryn Lynch
Major: Environmental Studies
Funding Source: Luvaas Family Fund of the Oregon Community Foundation

Abstract:

Many children today have lost their connection to the environment, which is having a detrimental effect on their quality of life and sense of place. The alarming result is that they don't develop the awareness, concern, or motivation to protect our natural heritage. The Environmental Leadership Program's Restoring Connections team, working in collaboration with Adams Elementary School and Mt. Pisgah Arboretum, seeks to address this. Our team developed and implemented a place-based, experiential environmental education project with nearly 200 kindergarteners and first graders during spring 2016. Using the UN "Awareness-to-Action" framework for environmental education, our goal was to cultivate a lasting connection to the land and to inspire awareness, caring, and respect for the world around us. In particular we wanted to reach those who may not thrive in a classroom setting so that we can address multiple learning styles and inspire a curiosity for nature and learning. The participating children will explore, journal, and participate in various hands-on activities at Mt. Pisgah every season from kinder through fifth grade. Students will gain direct knowledge and insight into ecological processes, making textbook concepts such as seasonality and predation come alive. This will strengthen their connection to the beautiful place they live, and will hopefully inspire a lifetime of stewardship and conservation of the natural world that sustains us all.

Title: Understanding Gender-biased Government Control
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Xiaoran Li
Co-Presenters: Jessica Hawe, Chris Wilson
Faculty Mentor: Julie Heffernan
Major: Education
Funding Source: Population press; The Washington Post

Abstract:

China published one-child policy in 1979. That works well in those years. However, the rate of abortion sharply increased in China. Therefore, in 2001, government published a new law to prohibit using B ultrasound to examine infants' gender. Until 2005, Chinese government decided to abolish one-child policy. Another section that we are hoping to look into is how women hold less than 20% of the political power in Congress. A shocking statistic when over half of the population is made up of women. This is determined by many factors, one being how girls are almost invisibility put into tracks towards non-feminine professions, and pushed away from college majors like Business and Law. We hope to express how these tracks are formed, and how the politician decisions about gender made in the government is from a very unbalanced gender system. Branching off the idea that structures of government benefit from gender-biased population control, our group will allot a portion of our project to highlight and critique how young people fit within those power structures. The feature example of gender-biased government (school) control will be the existence and policing of dress code. We will go into detail the history of gender-biased body policing in schools and the radical idea that young people, particularly young women, can be politically charged against normative culture.

Title: Trends of Female Representation in Disney Princess Movies
Presentation Type: Poster 24
Primary Research Area: Design
Presenter: Anna Lind
Faculty Mentor: John Park, Barbara Mossberg
Major: Digital Arts

Abstract:

The Disney Princess franchise, since its formation in 2000, has become a staple of American girlhood. The princess phenomenon has caused many to question the impact that Disney Princesses have on American culture. Since the release of Snow White and the Seven Dwarfs in 1937, Disney Princess films have steadily become more progressive in the ways they portray their heroines. However, because Walt Disney Studios takes a corporate approach to storytelling that prioritizes profitability, Disney Princesses still conform to trends of female misrepresentation in popular media.

For my honors college thesis project I decided to track how the fairy tale heroine is depicted over time. Looking at a total of nine films that span from Snow White to Tangled, I created my own set of criteria to quantify the main character's agency in her own story. These categories include total percentage of screen time, number of Progressive Actions, and how many times the protagonist rescues other characters or herself. Female representation in Disney's animated princess movies did get better over time, however, the trends that have persisted correlate to the broader struggles of female representation in the media. The princesses still conform to a very rigid standard of beauty and are out spoken by the male characters in their films. To respond to this lack of positive representation I will be responding to my research with concept art for a Disney-esque animated fairy tale adaption. Fairy tale adaptations have the power to reinforce cultural conventions or break them down, and my retelling will challenge current conventions by showing an example of female representation I would like to see in future of Disney films and popular media.

Title: Gradient Estimation Algorithm for the ATLAS Level-1 Calorimeter Trigger Upgrades
Presentation Type: Poster 25
Primary Research Area: Science
Presenter: Luc Lisi
Faculty Mentor: Stephanie Majewski
Major: Physics

Abstract:

The Large Hadron Collider (LHC) is a proton-proton particle collider that at the present (2016) is the most powerful particle accelerator in the world. At peak operation, there can be as many as 600 million proton-proton collisions per second and as a result, deciding which events are useful to analysis and which events are not, in real time, is paramount to data collection. To accomplish this, accurate calorimeter object reconstruction and suppression of multiple interactions per bunch crossing (pileup) in the ATLAS detector at the Large Hadron Collider plays a key role in triggering on important proton-proton collision events. In particular, we aim to improve the performance of the jet and missing transverse energy triggers. We present simulation studies of a novel algorithm for the Level-1 Calorimeter trigger in the Phase-I and Phase-II upgrades of the trigger electronics that aims to improve this trigger efficiency. Inspired by image processing techniques, we use gradient estimation to extract areas of topological interest in the 0.2×0.2 (in η - ϕ) towers of the global feature extractor (gFEX), a component of the Level-1 trigger system for the Phase-I upgrade. Our preliminary results have found that these techniques are capable of suppressing pileup and reconstructing calorimeter objects in simulated events. However, further studies must be conducted to understand the algorithm's speed, efficiency, and other factors critical to implementation in the final trigger.

Title: Speed Dating Lady Justice
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Samantha Lowery
Faculty Mentor: Patricia Gwartney, CJ Pascoe
Major: Sociology

Abstract:

Speed Dating Lady Justice, this thesis examines the predictive devices attorneys use to remove jurors due to shortened selection process in petit trials. This study examines how weight, age, and class are used alongside the master traits of gender and race to select individuals to be excluded from serving as jurors. The ideal jury is a randomly selected cross section of community members. Their role is to judge the accused, fairly and without bias. The extent to which attorneys remove jurors out of their own biases not the biases of the jurors. A multi-method approach was used, ethnographic research and in-depth interviews. Juries who are selected by using predictive devices can cause bias jurors and faulty convictions.

Title: The Role of Self Doubt and Empathic Accuracy in STEM Fields
Presentation Type: Poster 26
Primary Research Area: Social Science
Presenter: Kristina Lowney
Faculty Mentor: Sara Hodges, Gail Unruh
Major: Psychology
Funding Source: McNair Scholarship, McNair Scholarship Program

Abstract:

In their daily interactions, people demonstrate varying levels of empathic accuracy, a construct that refers to people's ability to accurately infer the thoughts and feelings of others. This study examines whether feelings of self-doubt impact empathic accuracy, particularly in women, when they are interpreting feedback in STEM fields (science, technology, engineering, and mathematics). Women are underrepresented in the STEM fields as they choose not to continue their studies or not even pursue STEM fields at all. One reason for this trend might be attributed to how they interpret feedback in the domain. Seventy-two dyads composed of graduate and undergraduate students in STEM fields were recruited and held recorded conversations to discuss graduate school. Graduate students provided feedback to undergraduates interested in attending graduate school in a related field. Undergraduate students were asked about their feelings of self doubt, and they were also asked to infer the graduate student's thoughts regarding

the undergraduate's future prospects in graduate school. Results indicated that there was no significant difference between male and female undergraduates for self doubt or empathic accuracy. These findings are considered in terms of other possible underlying factors contributing to women's underrepresentation in STEM.

Title: The Anthropocene and the Reinvention of the Human

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Maxfield Lydum

Faculty Mentor: Parker Krieg

Major: English

Abstract:

The project approaches the relationship between the Anthropocene, the proposed name for a new geologic time period in which humans are the primary force of change, and narrative. The project sets out to discover the ways in which the Anthropocene can change the way we tell stories about ourselves. The project introduces Roy Scranton's claim that the Anthropocene means the end of human life as we know it and argues that this creates a new challenge for authors: to create narrative that arises out of an Anthropocene consciousness. With Don DeLillo's *Point Omega* as a focal point, the essay describes what this consciousness can look like. It is characterized by an understanding of the human's presence in space and time, a development that might signal an essential change in human identity. Our entering into the Anthropocene is also an entering into the realm of space-time. The document itself claims that the Anthropocene will indeed force us to reimagine the possibilities of narrative because it has already forced us to rethink identity. Narrative has the possibility of giving this Anthropocene-consciousness a body and allowing it to press its feet into the sands of geologic time.

Title: Photoluminescence and Electronic Energy Structures of Exfoliated and CVD-Grown Single-Layer Molybdenum Disulfide

Presentation Type: Poster 27

Primary Research Area: Science

Presenter: Josiah Makinster

Faculty Mentor: Hailin Wang

Major: Physics

Funding Source: UROP Mini-Grant, University of Oregon, \$1000

Abstract:

The electronic energy structures of exfoliated and chemical vapor deposition (CVD) grown single-layer Molybdenum Disulfide (MoS₂) are investigated via photoluminescent spectroscopy to illuminate its potential in future semiconductor technology. Single-layer direct bandgap materials like MoS₂ have applications in numerous areas, including light-emitting-diodes, flexible electronics, and solar cells, all of which will further advance through an understanding of its novel properties. Recently, it has been discovered that MoS₂ is a material that can be cleaved into a microscopic sheet that is a single molecular layer thick, and shows novel physical properties that bulk MoS₂ does not, including a strong photoluminescence (PL) that only emerges in the single-layer material due to a change in the electronic energy structure from an indirect bandgap to a direct bandgap. Here, PL spectra of exfoliated MoS₂ and CVD-grown MoS₂ are compared to assess the quality of the CVD-grown material, which tends to have a lower quality than exfoliated MoS₂. Also, the PL spectrum of single-layer MoS₂ is measured at cryogenic temperatures, because higher temperatures cause an increase in non-radiative recombination of excitons, which can potentially obscure important spectral features. We find that another PL peak emerges in the spectrum, indicating a high dependence of the electronic energy structure on temperature. All in all, theoretical results from literature that propose that single-layer MoS₂ is a direct bandgap material are confirmed.

Title: The Reliability of Ultrasound Imaging as a Tool with Which to Evaluate Muscular Activation in Patients with Impingement Syndrome
Presentation Type: Poster 75
Primary Research Area: Science
Presenter: Lauren Maloney
Faculty Mentor: Andy Karduna
Major: Human Physiology

Abstract:

Differences in muscular activation in the context of dysfunctional muscles has been a field of particular interest in diagnosing disorders and determining possible causes of musculoskeletal pathologies. Electromyography (EMG) is a technique that measures the electrical activity of muscles via electrodes, and is the most commonly used technique for assessing muscular activation. However, EMG is invasive and difficult to carry out easily in clinical settings. In this study, we evaluated ultrasound images of symptomatic and asymptomatic limbs of 30 patients with unilateral shoulder pain in comparison to a “gold standard” technique and found that ultrasound is a reliable and valid tool for determining muscular width of the supraspinatus. Using this data, we compared differences in muscular activation between symptomatic and asymptomatic limbs of patients.

Title: Temporal Variation in Atmospheric Fungal Community Composition
Presentation Type: Oral
Primary Research Area: Science
Presenter: Kyla Martichuski
Faculty Mentor: Jessica Green, Ann Klein
Major: Biology
Funding Source: UO Scientific Mentorship and Research Training (SMART) in Biology Scholar, University of Oregon Biology Department, \$1000; Undergraduate Summer Research Award, UOWGS, \$500

Abstract:

Characterizing the different types of fungi in the atmosphere and their abundance is of great importance when considering atmospheric processes and dispersal of organisms. Studying the flow of microbes from one place to another is particularly important because agricultural and human fungal pathogens are transported in the atmosphere. The purpose of my research is to determine the composition, diversity, and temporal patterns of fungal communities in the atmosphere in order to provide a better understanding about the dispersal patterns of fungal types. I am using advanced culture-independent, high-throughput DNA sequencing techniques to analyze fungal community composition in air samples collected at the Mt. Bachelor Observatory, a high-elevation research station. Previous research suggests that bacterial community composition on the summit of Mt. Bachelor varies diurnally and community diversity changes significantly across days. Bioinformatic analyses revealed that fungal community composition significantly varied by day and by time of day. Diurnal variation is likely due to the influence of local sources on community assembly whereas variation across many days could be due to the influence of long distance sources. Understanding the dispersal patterns of fungi from source environments could provide insight about the importance of dispersal related to agricultural and human pathogens.

Title: High Energy Particle Studies for the Improvement of Missing Transverse Energy Calculations using a High Granularity Timing Detector
Presentation Type: Poster 28
Primary Research Area: Science
Presenter: Elizabeth Maynard
Faculty Mentor: Stephanie Majewski
Major: Physics
Funding Source: UROP Mini-grant, University of Oregon, \$734.96

Abstract:

The purpose of this study is to discover if using a high granularity timing detector, which is a proposed upgrade for the ATLAS particle detection chamber, could improve missing transverse energy calculations. Missing transverse energy is a sign of the presence of particles that we cannot yet detect, and finding these particles could be proof of new physics. The hypothesis is that this detector could be used to identify, and thereby exclude, uninteresting particles (“pileup”) from the calculation of missing transverse energy.

To perform the study, particle collisions were simulated with a variety of parameters using the specialized computer programs ROOT and FastJet. Then, missing transverse energy was calculated after ‘cutting out’ particles based on their timing parameter, to simulate the addition of the timing detector. Currently, only the most basic particle collision types (QCD jets) have been studied. In this case, we expect the missing transverse energy to be close to zero for all events. Without the detector, 42% of events had an energy calculation greater than eighty giga-electron volts in the large pileup case, but with the timing detector this was reduced to 21%. Similarly, in the low pileup case, the percent above eighty GeV was reduced from 26% to 4%.

In conclusion, my study shows that for QCD type particle collisions, the addition of a high granularity timing detector improves missing transverse energy calculations by about 20%, which is a substantial improvement.

Title: What is Past is Prologue: The History of the Breakdown of Economic Models Before and During the 2008 Financial Crisis

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Ethan McCormac

Faculty Mentor: George Sheridan, Gerald Berk

Major: History, Political Science

Abstract:

In order to produce a complex financial meltdown caused by nuanced economic models replete with moral hazard, the United States and the rest of the world first had to build a complex financial system driven by nuanced economic models replete with moral hazard. What had caused the miscalculated risk-taking and undercapitalization at the core of the system? Part of the answer lies in the economic models adopted by policy makers and investment bankers and the actions they took licensed by the assumptions of these economic models. The result was a risk heavy, undercapitalized, financial system primed for crisis. The spark that ignited this unstable core lay in the pattern of lending. The amount of credit available to homeowners increased while lending standards were reduced in a myopic and ultimately counterproductive credit extension scheme. The result was a Housing Bubble that quickly turned into a derivatives boom of epic proportions. This paper will address both sides of this issue, that of the Federal Reserve policy that licensed risk taking and that of the derivative models that licensed undercapitalization, in an effort to grasp the rationale and motivations of the respective actions of key financial market participants.

Title: Genetic Architecture of Local Adaptation and Reproductive Isolation in *Mimulus aurantiacus*

Presentation Type: Poster 76

Primary Research Area: Science

Presenter: Hanna McIntosh

Faculty Mentor: Matt Streisfeld, Sean Stankowski

Major: Environmental Science

Funding Source: UROP Mini-Grant, University of Oregon, \$1000

Abstract:

A major goal of speciation research is to understand the genetic architecture of isolating barriers. Theoretical studies predict that isolating barriers are most effective if they have a simple genetic basis and are controlled by loci in the same genomic regions. To test this hypothesis, we used Quantitative Trait Locus (QTL) mapping to determine the genetic architecture of floral trait divergence between red and yellow ecotypes of the monkeyflower *Mimulus aurantiacus*. These ecotypes are closely related, but partially isolated due to preferences of different pollinators for contrasting floral traits. We phenotyped an F2 mapping population (n=226) and used RADseq to generate a high-density genetic map to investigate two floral traits—color and size—thought to underlie preference. Using a multi-QTL model, we identified 2 QTLs for flower color and 3 QTLs for flower size. For size, the total phenotypic variation explained by the 3 QTLs was 36%, indicating that this trait is controlled by many genes of small effect. In contrast, a single QTL explained over 65% of variation in flower color. While recent studies have shown that multiple isolating traits are controlled by the same genomic region, we observed no QTL overlap for color and size. In addition to revealing the genetic basis of adaptation in *M. aurantiacus*, our results show that complex, simple, and genetically-independent traits can contribute to reproductive isolation early in speciation.

Title: Are Allometric Growth Patterns Consistent Throughout Development in Lower Jaw Bones of Chinook Salmon (*Oncorhynchus tshawytscha*)?

Presentation Type: Poster 77

Primary Research Area: Science

Presenter: Natasha Mckibben

Faculty Mentor: Charles Kimmel, Saywer Watson

Major: Human Physiology

Abstract:

In vertebrate species, bone morphology directly affects the function of the individual bone and the way it works within the skeletal system as a whole. Over the course of development, a variety of growth patterns are crucial in coordinating changes in bone morphology. Studying these changes in Chinook salmon, we hypothesized that the lower jaw bones, dentary and angular articular, grow allometrically, meaning that shape changes as a function of size. This study characterizes the growth pattern by quantitatively comparing bone shape of juvenile salmon using geometric morphometrics. We used two groups of juveniles at different ages, the first with an average length (fork length) of 48.5 mm and 85 mm for the second. We found that as the fish grows in length, the dentary becomes broader, while the posterior aspect of the angular articular rotates in a clockwise direction. These results show that growth between the two stages is allometric, supporting our hypothesis. We now can inquire whether the same allometric rules dictate the shape changes during other life history stages. To address this question we are examining both earlier and later time points of Chinook development. Studying such growth patterns across development can be used to evaluate how early growth patterns can impact the overall development of the individual and influence functionality, together resulting in constraints on evolution.

Title: The *Brokeback Mountain* Controversy: Converging Identities of Queer Masculinity in the American West

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Dorothea Mosman

Faculty Mentor: Kevin Hatfield

Major: English, Political Science

Abstract:

"If John Wayne were alive, he'd be rolling over in his grave!" Thus came veteran actor Ernest Borgnine's assessment of *Brokeback Mountain* at the height of the 2005 media frenzy it spurred. So declared hordes of conservative pundits, liberal film critics, and American viewers: "that gay cowboy movie" was, at worst, an abomination, and at best, an outlandish fiction with no grounds in the reality of the Wild West. The de-heterosexualization of the mythic cowboy, essentially the age-old archetype of American masculinity, threw audiences into a tizzy. But are "the homosexual" and "the cowboy" as incongruous as mainstream American thought would indicate? Serious investigation into historical subcultures of the American West, underscored in cowboy poetry, records, and folklore, reveals a thriving—if enigmatic—gay community. Even those like early twentieth century Wyoming poet laureate Charles Badger Clark who outwardly fulfill the stereotypes of the classic masculine cowboy may simultaneously display queer undertones in their poetry and verse. *Brokeback Mountain* seems, then, not a condemnable bastardization of the "real" Wild West, but a convincing modern Western with a prescient message: that homosexuality and the West can and do mix, and that queerness does not, as Ernest Borgnine would maintain, negate the masculinity of the cowboy.

Title: No More Plastic Water Bottles: A Inquiry into Sustainable Packaging Design

Presentation Type: Poster 29

Primary Research Area: Design

Presenter: Cara Murray

Faculty Mentor: Jessica Swanson

Major: Product Design, Clark Honors College

Abstract:

Packaging design is the discipline of creating the container, graphics and visible exterior of a product. While extensive time, energy, and billions of dollars are devoted to this field each year, virtually all packaging ends up in the trash. While the field of packaging design has traditionally maintained a "throwaway" mindset, the past decades have introduced a more sustainable trend. Given the extreme waste associated with packaging it is important to consider how it can be made more environmentally friendly.

Beyond the fundamental functions of product protection, transport, and identification, I examine the greater purpose of packaging design: who does it serve, what purpose does it serve, and who/what does it impact? Using these questions as a initial framework, this research explores the related materials, processes and applications, as well as the cultural relevance, of sustainable packaging design.

After investigating the past, present and future trends related to sustainable packaging, my research then touches on some more theoretical examinations of how packaging design can be used to encourage sustainable consumer habits. I address here how packaging can remain attractive, functional, and cost-effective, but also incorporate increased environmental consciousness.

Research methods include examination of primary and secondary sources from expert designers in the packaging design field, as well as personal exploration of existing packaging, user interviews, and survey based data collection. Ultimately, my research aims to provide a comprehensive examination of the current field of sustainable packaging, identify cultural relevance of these products, and raise theoretical questions regarding the ethics of our existing consumption habits and waste cycles.

Title: A Diversity of Endophytic Fungi Can Transfer from Host-Leaf Tissue Directly into Woody Substrates

Presentation Type: Poster 78

Primary Research Area: Science

Presenter: Aaron Nelson

Faculty Mentor: Roo Vandergrift, Bitty Roy

Major: Biology

Funding Source: UROP mini-grant \$1000; UnderGrEBES award, GrEBES (Graduate Evolutionary Biology and Ecology Students) \$500

Abstract:

Endophytes are defined as fungi that grow within plant tissues without causing disease symptoms. Virtually all terrestrial plants on earth possess endophytic fungi, and while some benefits for the plant hosts have been observed, the benefits for many of the fungal partners are still unknown. One hypothesis is that endophytic fungi within leaves gain enhanced dispersal abilities to other substrates when the leaves fall. This would require that endophytes have the ability to transfer from leaf-tissues into other substrates such as woody litter. We set out to test the presence of this ability and to gain an initial glimpse of how widespread this ability may be among fungal endophytes. We accomplished this by surface-sterilizing leaves from an evergreen tree (*Nectandra lineatifolia*) and placing leaf fragments onto pieces of sterilized birch wood, giving endophytes an opportunity to colonize the wood. Fungal cultures were then grown out of the wood onto agar plates and isolated, resulting in 477 fungal isolates, 64 of which we determined to be morphologically distinct from one another. The DNA from each morphotype was extracted and amplified and is currently being analyzed. Our finding that a multitude of fungal endophytes can readily transfer to a woody substrates suggests that endophytism may play a major roles both in the dispersal of fungi and in the ecology of decomposition in forests in general.

Title: Vascular Endothelial Growth Factor (VEGF) Signaling Contributions to Heart Ventricle Development

Presentation Type: Poster 79

Primary Research Area: Science

Presenter: Justine Nguyen

Faculty Mentor: Kryn Stankunas, Kate Karfilis

Major: Human Physiology

Abstract:

Cardiomyopathies are congenital heart diseases that affect the heart musculature, which could cause the heart to become weaker and pump less blood efficiently. The purpose of my research is to study the developmental programs that underlie ventricular trabeculation and the role vascular endothelial growth factor (VEGF) plays in regulating this process. VEGF plays a distinct role in direct signaling of angiogenesis along with the cardiac muscle formation and trabeculation in the ventricles. If the gene pathways for the development of trabeculation in the heart are understood, then in a disease state, appropriate remedies could be determined based on where the genes are expressed incorrectly. Currently, two possible hypotheses could explain VEGF signaling and its role in trabecular development. One hypothesis is that VEGF signaling is directly turning on a gene that directs VEGF signaling while the other hypothesis is that the two cell types (endocardial and myocardial cells) are directly interacting with each other due to VEGF signaling.

In order to study trabecular development, pregnant mice are dissected when the embryos are developing the trabeculations. Embryos are processed so that their hearts are examined through various cellular biology techniques. A specific small molecule inhibitor, Cabozantinib is used in order to inhibit VEGF signaling, disrupting the formation of the trabeculae. A VEGF inhibited sample can be compared to an untreated wildtype sample to compare the differences in the trabeculation development.

Title: Poetry as a Portal and the Spaces Left Blank by Modern Settler-Colonial Education: A Native Feminist Reading of Joy Harjo's "Perhaps the World Ends Here"

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: McKenna O'Dougherty

Faculty Mentor: Lani Teves

Major: Women and Gender Studies

Abstract:

White, settler-colonial narratives control the legitimization of formal and informal knowledge in modern America, rendering most Americans ignorant of the state of Native communities today. Similar oppressive, heteropatriarchal forces withhold legitimization of the arts as forms of knowledge, especially if the art piece threatens white control. Native feminisms confront both of these "invisible" injustices (among many others), proving that knowledge is planted and grown in relationships between people, and therefore powerfully represented through art. A close reading of Joy Harjo's poem "Perhaps the World Ends Here" offers evidence that resistance against capitalism, heteropatriarchy and settler-colonialism are displayed in the arts in ways that the "white reader," usually uneducated in the many modes of resistances, can easily dismiss as apolitical. This dismissal perpetuates the silencing of Native realities and strengthens the historical and present performance of ignorance by the American population regarding ongoing white violence against Native communities. By countering convention and counting artistic works like Harjo's poem as knowledgeable and resistant, individual readers and the white academy in general can begin to fill in the previously taught-as-blank sections of the Indigenous story with the creative, enduring resistances of Native communities.

Title: How Dress Codes Perpetuate Gender Policing

Presentation Type: Poster 30

Primary Research Area: Social Science

Presenter: Kara Orsolini

Co-Presenters: Lexie Gordo, Georgeana Gutierrez

Faculty Mentor: Julie Heffernan

Major: Educational Foundations

Abstract:

Whether it was a school uniform of slacks and a polo with the option for a skirt/dress, or a dress code that requires girls' shoulders to be completely covered, these regulations on what students wear work to further police the way they believe they must look based on their gender. Dress codes reinforce the norms we have about gender and force students to conform to their assigned biological sex. Additionally, dress codes tend to target girls unfairly. Dress codes show students whose bodies are being sexualized that the education of those who may be distracted by these random body parts is more important than the education of that girl. This work examines how the dress codes placed within schools work to police gender, specifically looking at the ways it increases bullying, the implications for gender nonconforming students, and the ways in which students have pushed back against dress codes.

Title: Insights into the Development of Gastrointestinal Brunner's Glands: Critical Stem Cells and Differentiation Factors

Presentation Type: Oral

Primary Research Area: Science

Presenter: Michael Parappilly

Co-Presenters: Yuan-Hung Lo, Tyler Lantz, Taeko Noah, Noah Shroyer, Anne Powell

Faculty Mentor: Anne Powell

Major: Human Physiology

Funding Source: NIH - National Institute of Diabetes and Digestive and Kidney Diseases; American Gastroenterological Association

Abstract:

Brunner's Glands (BG) are secretory glands located at the junction of the stomach and small intestine that secrete sodium bicarbonate, mucous, and other factors to neutralize stomach acid and prevent damage to the intestinal epithelium. BG develop after humans and mice are born, but little is known about the molecular mechanisms that control their development. Tumors arising from BG are known to occur in humans, and understanding BG development may assist in understanding how cancer in this gland could arise. The aim of this study is to evaluate the stem cells that contribute to the development of the gland using mice as our model organism. A stem cell marker known as Lrig1 is a regulator of intestinal stem cell development and by using a technique known as "developmental lineage tracing," we can show that Lrig1-expressing stem cells contribute to the development of BG. In addition, since BG are secretory glands, we hypothesized that a transcription factor called SPDEF, a factor important in secretory gland formation, is critical for proper development. By analyzing the intestines of mice with SPDEF mutations, we found that BG were largely deformed and underdeveloped. In summary, our study provides insight into the specific progenitor cells that contribute developmentally to the gland, and shed light on molecular mechanisms important for proper BG formation.

Title: Diagnosing Stress: The Acoustic Correlates of Stress in Warm Springs Ičiškiin

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Brittany Parham

Faculty Mentor: Melissa Baese-Berk, Spike Gildea

Major: Linguistics

Abstract:

This thesis will investigate the phonetic cues by which speakers produce and identify stressed syllables in the Ičiškiin Sahaptin language, still spoken in three distinct dialect regions: the Yakima valley in Washington, and both Warm Springs and Umatilla in Oregon, all of whom collectively have no more than 40 first language speakers. There have been no detailed phonetic studies of Warm Springs Ičiškiin, but dictionaries and teaching materials from the dialects suggest that Warm Springs shows a distinctly different placing of syllable stress than those of the Yakima and Umatilla dialect. Accurate phonetic analysis of prosody (the patterns of stress and intonation in a language) can only be done by recording speakers, who utter words and sentences following specific elicitation protocols; these recordings can then be analyzed to figure out what parts of the acoustic signal tell speakers that a syllable is stressed. Doing this for two different dialects allows us to compare them, to see if the same phonetic properties have just shifted to different syllables in the different dialects, or whether perhaps stress is signaled by different phonetic properties in the different dialects. I will also do a short comparison to their sister language Nez Perce to add to the knowledge and understanding of the historical familial relationship these languages share, and in turn perhaps find an explanation to why Yakima and Warm Springs languages might pattern stress differently.

Title: Pileup Suppression in the ATLAS Detector
Presentation Type: Poster 31
Primary Research Area: Science
Presenter: Elliot Parrish
Faculty Mentor: Stephanie Majewski
Major: Physics

Abstract:

The ATLAS experiment at the Large Hadron Collider at CERN is looking to improve on their previous discovery of the Higgs boson in 2012 with the discovery of new particles. To ensure the continued success of ATLAS, there are a series of planned upgrades to the detector. After the Phase II upgrade, scheduled for 2026, the ATLAS detector will receive collisions of proton bunches every 25 ns with an average of 140 interactions per collision. Most of these interactions are not energetic enough to produce interesting physics (high energy events). The uninteresting interactions are referred to as pileup. These pileup interactions happen simultaneously with the interesting events, leading to a masking of the signal beneath the pileup. In order to sift through the large amounts of data, a firm understanding of pileup is needed. The focus of this study is to measure the energy deposited in the detector due to pileup and use it as a discriminating factor in reducing the data flow to a rate that can be written out in the time allotted.

Title: Anthropogenic Effects on *Procyon lotor*: Detecting a Secular Trend
Presentation Type: Poster 32
Primary Research Area: Science
Presenter: Carly M. Pate
Faculty Mentor: Frances J. White, Andrea R. Eller
Major: Anthropology, General Science

Abstract:

The Common Raccoon (*Procyon lotor*) is an ecologically flexible mammal that occupies many N. American suburban environments. Their dietary range, dexterous hands, and plastic phenotype allows them to navigate human landscapes. Due to the food availability of human N. American areas, we hypothesize that raccoons will experience increased body size through time. We compiled body masses over a 70 year period, and report results on the use of cranial data to predict body size.

To document body size in *Procyon lotor*, we include published body masses, museum data (records and new metrics; n=26), whole body measures (n=2), and cranial measures (n=21). Whole body measures were retrieved through museum records, or obtained in necropsy. Cranial measures (n=24) were based on published protocols. We used cranial and external measurements as a proxy for body weight. Of 25 measurements, 36% (n=9) had less than a 20% error (2.47-17.71); four of these measures had an R² above 0.40. Combining data to chart size over time, we plotted the masses by year collected. Our results show a slight negative slope between log-transformed body weight and time, ($m=-0.0023$, n=51) between 1940 and 2016; we believe this result is influenced by small sample size. *Procyon lotor* provides a model for understanding anthropogenic ecologies, and potentially other areas of population and health.

Title: School House Blues: How the Bureau of Indian Affairs used the Burns Indian School to Limit Responsibility to the Northern Paiute Indians of the Burns Colony
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Madeleine Pears
Faculty Mentor: Kevin Hatfield, Jennifer O'Neal
Major: Spanish

Abstract:

The role of the Burns Indian School in the Burns Paiute community was greatly impacted by Burn's status as a colony rather than a reservation. The Bureau of Indian Affairs (BIA) considered the Burns Paiutes "landless" and as a result, denied financial assistance on the grounds of ineligibility. My research addresses the role of the Indian school in Burns given this unusual status; questions: what was the role of the Indian School in the Burns community during the early 1930s, and did its status as a colony affect its responsibilities? What were the goals of the school administrators and

Indian agents in the school's establishment? To what end did the school promote Western culture? In addressing questions, I analyze general correspondence, a survey conducted by a visiting teacher, governmental records and depositions. I argue that for the BIA, the school acted as the arm of the federal government in Burns and the creation of the Burns Indian School was a step in the process of relinquishing responsibility for the funding and provision of education for Paiute children, which included Americanization of the children so that they would be acceptable to the public school. My research is salient because it tells a different story than the predominant narrative about Indian education, and focuses on a community who are underrepresented and misrepresented in historical research.

Title: Masculinist or Humanist? An Analysis of Rhetoric in College Debate

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Amanda Perkins

Faculty Mentor: Trond Jacobsen

Major: History, French

Funding Source: HURF, \$2,500

Abstract:

The National Parliamentary Debate Association (NPDA) tends to be male dominated and those who do not identify as men are a definitive minority. As a representative of the University of Oregon in collegiate debate, I have consistently observed a culture of masculinity. It is my perception that the most successful teams competitively are generally those who engage in debate in a masculine way by using aggressive techniques in their logic and language.

I have researched feminist theories of argumentation and rhetoric and using these works, I have formulated ideas about what types of argumentation and rhetoric are gendered masculine. At the David Frank Tournament of Scholars in February 2016, I facilitated a focus group with debaters on the NPDA circuit to diversify my perspective of how masculinity presents itself in the debate space. My theoretical research coupled with the focus groups have allowed me to create a unique inventory of recognizable ways masculinity presents itself in rhetoric and argumentation.

With this information, I have watched various debate rounds and recorded specific observations about performances of masculinity within them using ethnographic research methods. This project culminates in a specific analysis of how masculinity exists within this space and how it correlates to competitive success.

Title: Food and Power at Malheur: Examining the Nexus of Food Systems Implemented on the Malheur Reservation

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Anna Karvina Pidong

Faculty Mentor: Kevin Hatfield, Jennifer O'Neal

Major: Accounting

Abstract:

The late nineteenth century was marked by movements towards a more moral and perfect society: abolishing slavery, prohibiting alcohol, and Christianizing Indians. The message of these movements were disseminated in several different ways. In this paper, I argue that food systems on the Malheur Reservation were a source of power for the two Indian agents who served there, Samuel Parrish and William Rinehart, to manifest their thoughts on what made a more moral and perfect society. Research from government correspondence and Appointment Papers of the State of Oregon show how Parrish and Rinehart cultivated and distributed food on the reservation asserted their power. Parrish utilized farming activities on the reservation to change policies in favor of the Northern Paiutes while Rinehart used food as a means of exerting control over the Northern Paiutes. Food and farming also affected how the Parrish and Rinehart interacted with the pressures from settlers around Malheur.

Title: Water Flux in a Mangrove Forest
Presentation Type: Poster 48
Primary Research Area: Science
Presenter: Katalin Plummer
Co-Presenters: Alyssa Bjorkquist
Faculty Mentor: Richard Emlet, Jan Hodder
Major: Marine Biology, Spanish

Abstract:

Water flux plays an important role in structuring and maintaining biodiversity in aquatic environments, such as tropical mangrove forests where lower water flux could reduce organic carbon outflow so that critical nutrients are more available for regulating organismal trophic processes. In the present study, we used two dissolution methods to estimate water flux at two mangrove sites within Bocas del Toro, Panama. We investigated how water flux differs with respect to mobility of a substratum (mobile versus stationary) as well as its position within a mangrove forest (exterior versus interior). We also examined organic carbon content of the sediment of each site in relation to water flux activity to ascertain the existence of a correlation between water flux and nutrient cycling in these environments.

Water flux differed significantly between sites for both the long-term and short-term ($p < 0.001$, both) dissolution trials. Additionally, we found a significant difference in sediment carbon content between sites ($p < 0.01$). While the two sites differed significantly from one another overall, these results do not suggest that water flux alone significantly affects marine community composition within a mangrove forest. We speculate that outside abiotic or geographic factors also influence physical conditions of these communities. Studying the intersection of biological and physical factors within mangrove forests may inform future research and conservation efforts pertaining to these environmentally sensitive habitats.

Title: Canopy Connections 2016: Nurturing Connections in H.J. Andrews Experimental Forest.
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Kennedy Potts
Co-Presenters: Paige Book, Garrett Davidson, Artesia Hubbard, Allison Humphrey, Skyland Worman
Faculty Mentor: Kathryn Lynch, Cassandra Hishida
Major: Environmental Science

Abstract:

Children in the United States are becoming increasingly detached from nature, which has the potential to lead to a future in which the citizens of the U.S. are less environmentally literate than ever. Aside from the undeniable role of nature in our survival as a species, building children's connection with nature has been shown to improve focus and enhance academic performance. These outcomes motivate our program, which works to build a connection between young people and the environment. The 2016 Canopy Connections Team is part of the Environmental Leadership Program at the University of Oregon, which engages students in collaborative, interdisciplinary service-learning projects addressing environmental education needs in our community. Together, we created a curriculum that will reach over 250 local middle-school students through 9 day long field trips. The field trip takes place in an old-growth ecosystem at the H.J. Andrews Experimental Forest (HJA) in Blue River, OR. It introduces middle-school students to several long-term ecological research projects being conducted at HJA. Using hands-on, place-based activities, we aim to empower students to gain awareness about the environment and take action to protect it. In addition, through our partnership with the Pacific Tree Climbing Institute, participants will ascend 90-feet up a Douglas-fir tree. By immersing students in an old-growth forest, we hope to strengthen their connection to the magnificent place we call home as well as inspire future environmental stewardship.

Title: "Then Brynhild Laughed": Female Heroism and Changing Tradition in Volsunga Saga
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Basil Price
Faculty Mentor: Gantt Gurley, Michael Peixoto
Major: Art, Medieval Studies

Abstract:

The legend of Sigurd the Dragonslayer is one of the most long-lived heroic tales in the European imagination, and

the characters of Sigurd Fafnisbane, Gudrun, and Brynhild are legendary. Nonetheless, the character of Brynhild, described by Theodore Andersson as “the most complete psychological portrait, male or female in Icelandic literature” saw constant evolution and change. Her place within the legend is dependent upon missing sources, such as the hypothetical Lay of Brynhild, and the lost Meiri text. Her role is further complicated by changes in the narrative due to Christianization and regional variation between Icelandic and Germanic versions. The Icelandic narrative emphasizes her heroic traits, her self-determination, and her magical properties. But the Germanic variations are not nearly as positive, reducing her character to an eroticized prize for Sigurd to win. Although there are incongruities between Icelandic *The Saga of the Volsungs* and *The Poetic Edda*, by analyzing specific, shared motifs in conjunction with the Germanic *Thidrek’s* saga, it is possible to evaluate Brynhild’s role in the lost Meiri manuscript. Her virginity, her reaction to Sigurd’s death, and her relationship with Gudrun throughout the texts indicate that, just as Andersson claimed, Brynhild’s role in the Meiri is one of complex psychology, heroic self-agency, and laughter.

Title: “Neat, Clean, Shaved, and Sober”: Philip Marlowe as the Modern Knight in Raymond Chandler’s *The Big Sleep*

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Braden Prillwitz

Faculty Mentor: Mai-Lin Cheng

Major: Environmental Science, Clark Honors College

Abstract:

The Big Sleep by Raymond Chandler is the epitomic hardboiled detective novel of the 1930s, with the primary character, Phillip Marlowe, as the modern iteration of the chivalrous knight. The knight is a literary character that has long represented idealized masculine values and behavior. This research project investigates the factors that informed Chandler’s depiction of masculinity through use of various primary sources, such as newspaper reviews of Chandler’s novel, in conjunction with secondary sources, such as biographical information on Chandler and scholarly articles examining *The Big Sleep*. This study found that other scholars of literature corroborate Marlowe’s similarity to the chivalrous knight figure, and that Chandler’s boyhood family situation and his time spent living in the population-dense city of Los Angeles as a young man seem to have informed his decision to center his novel on a morally-correct detective. *The Big Sleep* was Chandler’s opportunity to define his idea of masculinity for the readers of his generation.

Title: Obstacle Crossing Toe Clearance Following Concussion in Adolescents

Presentation Type: Poster 81

Primary Research Area: Science

Presenter: Maisie Rapp

Faculty Mentor: Quinn Peterson, Li-Shan Chou

Major: Human Physiology

Abstract:

Sustaining a mild traumatic brain injury (mTBI) can lead to physical and cognitive deficits; however, it has not been determined how long these deficits last. Previous research concluded that after a month post-concussion young adults still have deficiencies with toe-clearance during split attention obstacle crossing. Another study found that adolescents have greater gait balance control deficits two months post-injury compared to young adults. To determine how these deficiencies affect obstacle crossing during gait after two month, obstacle toe clearance was measured in adolescents following concussion and healthy matched controls. Data was collected using a 10-camera motion capture system which recorded the positions of twenty-nine retroflective markers that were placed on bony landmarks of the each subject. Concussion subjects came to the lab 72 hours, one week, two weeks, one month, and two months after the date of their injury. The purpose of this study is to determine the effect of navigating obstacles during gait in adolescents following concussion.

Title: Design and Synthesis of a Nitrogen Binding Molecule for Natural Gas Purification

Presentation Type: Oral

Primary Research Area: Science

Presenter: Nicholas Rinehart

Faculty Mentor: Dave Tyler, Justin Barry

Major: Chemistry

Funding Source: Presidential Undergraduate Research Scholarship, UROP, 5000; SAACS Scholarship, SAACS, 500

Abstract:

Natural gas provided 28% of total energy consumption during 2014 in the United States. Nearly 20% of domestic natural gas wells are contaminated with nitrogen gas, making them unsuitable for use in natural gas burning equipment. Current methods of purification have a large cost, so they are often infeasible. A more feasible purification method is necessary to reduce the cost of purifying contaminated natural gas reserves and dependence on expensive imported natural gas. The Tyler Lab has demonstrated that a certain type of molecule called a coordination complex, which in this case contains phosphine ligands and a central iron atom, can serve as a nitrogen gas sorbent. Since the previous coordination complex bound nitrogen, but degraded too quickly to be applied in industry, current work is focused on creating a longer lived version of this molecule by redesigning the ligands bound to the central iron atom. Progress on the synthesis of this new coordination complex will be presented.

Title: Shedding Snakeskin: The Hidden History of the Northern Paiutes

Presentation Type: Creative Work 8 (GSH 115)

Primary Research Area: Social Science

Presenter: Jordyn Roach

Faculty Mentor: Kevin Hatfield, Jennifer O'Neal

Major: Cinema Studies, Applied Physics

Abstract:

The Northern Paiutes are a First Nations People who used to claim a third of Oregon as their homeland until the mid-nineteenth century. In older and even recent texts, white historians have represented the Northern Paiutes as a demonic and destitute People, or as "Snakes," who were responsible for baseless acts of savagery against the white settlers of Oregon. This documentary film intends to uproot this injurious "Snake" image to reveal the lost history of a tremendous struggle between the Paiutes, encroaching rival tribes, white settlers and the US government. Combining an array of visual, scholarly, oral and archeological evidence, this film strives to transform the negative historical image of the Paiutes to that of a people who put up an astounding fight to protect their homeland as invaders depleted their resources and threatened their ancient way of life. The time period of 1855-1868 would come to shape the perception and fate of the Northern Paiutes for over a century. By reevaluating the events of this time period concerning territorial claims, the origins of the Snake War, the demonized Chief Paulina and unacknowledged acts of genocide, a new Northern Paiute image may be achieved that will aid in revitalizing the Paiutes' contemporary cultural identity.

Title: Hyenas through Space and Time: Using Teeth to Study Changing Ecological Niches

Presentation Type: Oral

Primary Research Area: Science

Presenter: Selina Robson

Faculty Mentor: Samantha Hopkins, Win McLaughling

Major: Geology, Psychology

Funding Source: Presidential Undergraduate Research Scholarship, University of Oregon \$5,000; UROP Mini-grant, University of Oregon \$1,000; Walter Youngquist Scholarship, Department of Geology at the University of Oregon, \$1,500

Abstract:

The four modern hyena species are some of the most specialized carnivores on the planet. Three hyena species are bone-crushers—the only living mammals that are specialized for this—and one species is an insect eater, feeding on social insects such as termites. Hyenas are uniquely adapted for both of these diets. However, little is known about how hyenas evolved these capabilities. Unlike their modern relatives, the earliest hyenas were small omnivores that consumed plant material as well as meat. Some of these ancestral hyenas developed more carnivorous traits and

eventually became the bone crushers we are familiar with today. We can study the evolution of hyena diets, and by extension hyena ecological niches, by examining the shape and proportions of their teeth. I have applied this method to a hyena species recently discovered in Kyrgyzstan. The new hyena, currently designated as *Hyaenictitherium sp. nov.*, has transitional dentition indicating an omnivorous but meat-dominated diet. The hyena was alive approximately 7 million years ago, making it a relatively young species. I am examining the ecological niche of this new hyena and determining how the specimen enhances our understanding of hyena evolution. Then, I am looking at other hyena species to determine if hyenas are following previously hypothesized patterns of dietary and ecological change.

Title: James Baldwin Across Literary Forms

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Samuel Rodgers

Faculty Mentor: Courtney Thorsson, Mark Whalan

Major: English, Economics

Funding Source: Humanities Undergraduate Research Fellowship, Oregon Humanities Center, \$2500

Abstract:

My research focuses on the work of 20th-century American author and activist James Baldwin. Fifty years after his career started, our country is still facing a deeply troubling racial divide, and we consistently turn to Baldwin's words to reconcile this divide, rather than the words of his contemporaries. Broadly, I wanted to know why. Specifically, I posit that this lasting political utility and cultural relevance stems from Baldwin's adaptability to the various literary forms he uses to address these complex ideas around race and identity. I highlight three forms throughout my project, and analyze the ways in which Baldwin adapts the same general arguments to each.

The first section, on Baldwin's *Another Country*, argues that the novel's central metaphor of indebtedness is crucial for understanding Baldwin's enduring approach to racial hatred. In the second section, I read two films that Baldwin appears in as extensions of his written work, and explicate the ways that these public appearances reiterate the underlying political element of his writing. The final section is on non-fiction, and here I draw comparisons between *The Fire Next Time* and Ta-Nahisi Coates' 2015 book *Between the World and Me*. The collective goal of these three sections is to illustrate Baldwin's rhetorical versatility, account for his current political utility, and redirect his value back into the literary context in which it originated.

Title: Understanding the Intersection of Twitter Advocacy Subcultures and Corporate Social Responsibility

Presentation Type: Poster 33

Primary Research Area: Social Science

Presenter: Andrew Rogers

Faculty Mentor: Dean Mundy, Kim Sheehan

Major: Journalism: Public Relations

Abstract:

Abstract: As social media activism continues to gain influence in today's social, cultural, and political spheres, it has become relevant for public relations professionals and social media strategists to better understand the values, motivations, and attitudes of these activist users. This study examines how Twitter users who post, engage with, and participate in conversations regarding political and social issues (i.e. Twitter advocacy subcultures) interpret tweets sent by corporate Twitter accounts that contain activist-like messages. This study asks, "How do users in Twitter advocacy subcultures interpret and respond to corporate social responsibility messages?" and "How can brands better reach and engage Twitter advocacy subcultures?" To answer these questions, a survey concerning interpretation of corporate advocacy tweets was sent to students, student groups, staff, and faculty at the University of Oregon. This survey asked participants to examine screenshots of advocacy tweets posted by corporations and brands and answer questions about the tweet's core message, intended goal, and overall effectiveness. The initial results of this survey show that message intentionality, co-option of social movements, and tangible actions by a corporation or brand are primary concerns to survey participants who assessed the tweets. The findings of this study serve to elucidate the intersection of Twitter advocacy subcultures and corporate social responsibility.

Title: Gender and Inequalities in the Workplace
Presentation Type: Poster 34
Primary Research Area: Social Science
Presenter: Jessica Romeo
Co-Presenters: Belicia Castellano, Bailey Davenport
Faculty Mentor: Julia Heffernan
Major: Educational Foundations

Abstract:

Gender inequalities and instances of patriarchy in the workplace are creating limitations for individuals and overall affecting their lives. The focus of our research is predominantly on women in the workplace and how these factors affect them in a negative manner. Through the use of *Gender: Ideas, Interactions, Institutions*, and other resources, we will examine topics such as sexual harassment, job segregation by sex and gender, and wage gaps. Within these topics, we have determined that these support the idea that gender inequality in the workforce is typically aimed toward women. Such instances are apparent in pay, as the average woman makes \$0.78 to the average male. This is also apparent by the fact that depending on sex and gender, women and men are stereotyped to fit into a specific and particular career, therefore establishing job segregation. A significant amount of women report leaving their job due to sexual harassment, which is yet another example of how these topics are apparent in the workplace. These factors, and our research, suggest that women do not have equal opportunities in the workplace, which reestablishes gender binaries and devalues the work of women.

Title: 630 ka Lava Creek Tuff Exchange with Isotopically Labeled Water: Testing the Stability of D/H Paleoenvironmental Signals
Presentation Type: Poster 35
Primary Research Area: Science
Presenter: Abigail Ross
Faculty Mentor: Angela Seligman, Ilya Bindeman
Major: Geology
Funding Source: UROP Mini-Grant Recipient, \$1000; Department of Geological Sciences

Abstract:

Studies focused on paleoenvironments are becoming increasingly popular and relevant as we begin to understand future climatic patterns through studying those of the past. Isotopic ratios of hydrogen and oxygen of volcanic glass that has been hydrated by surrounding environmental waters have been used as paleoclimate indicators through inferring the isotopic values of past meteoric waters. By testing the exchange of hydrogen and oxygen isotopes of hydrated volcanic glass with surrounding water, we analyze the validity of this method. This project focuses specifically on the element of age, evaluating if a significant difference in deposition time makes a difference in the isotope's ability to re-equilibrate, as was suggested by Cassel et al. (2014).

Nolan and Bindeman (2013) placed hydrated ash from the 7.7 ka eruption of Mt. Mazama in isotopically labeled water and observed that the H₂O and d₁₈O values remained constant, but the dD values of ash increased with the surrounding water, INDICATING THAT XXX. My research expands on this work by conducting the same experiment, but with ash from the 630 ka Lava Creek Tuff eruption of Yellowstone to see if significantly older glass produces similar results. Preliminary data show that exchange of hydrogen isotopes of hydrated glass is not limited by the age of the glass, and that the use of hydrogen isotopes of secondarily hydrated glass may not be a reliable paleoclimate indicator.

Title: Revolutionary Theatricality: Dramatized American Protest, 1967–1968
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Angela Rothman
Faculty Mentor: Ellen Herman
Major: History, Political Science

Abstract:

Protests against established power in the United States grew between the years 1967 and 1968 because dramatic aspects of political and cultural rebellion manifested in theatrical methods. Prominent examples include the San

Francisco Mime Troupe, the production of *Paradise Now* by the Living Theatre, the Broadway cast production of the musical *Hair*, and the Festival of Life by the Yippie movement outside the Chicago Democratic National Convention. During this intense period of domestic conflict, these activists embraced radical theater as a visible form of protest. I use the scripts of plays, the writings of the movement's leaders, and secondary analysis of the conflicts in which these groups participated to argue that each borrowed tactics from one another to bolster the effectiveness of "revolutionary theatricality." Because of such reactionary tactics, the United States in the late 1960s was a domestic theater of war: the home front of the Vietnam War was almost as turbulent a society in its own way as was the conflict in Vietnam itself. Theater in the late 1960s used group participation as a dramatic and popular form of socio-political collective action.

Title: St. Michael the Archangel: his Role in Early Christianity

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Madeline Salzman

Faculty Mentor: Dianne Dugaw, Maile Hutterer

Major: English Literature, Art History

Abstract:

St. Michael the Archangel occupies a unique place in early Christian art and literature, especially when compared with the other angels present in biblical material. Due to his specialized role in these narratives, St. Michael represents a powerfully-syncretic link for early Christian communities, where local traditions were adapted to new Christians ones, as well as a protector and advocate for new followers of a mysterious God. By analyzing his characteristics with those of other angels, such as St. Gabriel's, we see with greater clarity St. Michael's dynamic role as warrior, judicator, and protector, and how early Christians further developed and expanded his role in their faith and beliefs. Through this, we can see the creation and adaptation of legends tied to physical locations, such as the legend surrounding Mont St. Michel. His popularity spans much of the former Roman Empire, and he often seen as a figure that substitutes for God and Heaven in Byzantine art. By analyzing biblical sources, legendary materials, and art historical examples, we recognize the evolution of St. Michael's iconography and impact, and the far-reaching effects of his role in shaping early Christian art and literature.

Title: Women and Femininities in Relation to Sports

Presentation Type: Poster 36

Primary Research Area: Humanities

Presenter: Megan Schucht

Co-Presenters: Megan Davis, Amy Lee

Faculty Mentor: Julie Heffernan

Major: Educational Foundations

Abstract:

In what ways has gender roles and stereotypes affected women's relationship to sports? There is a need to improve the quality of women's athletic experience. With Title IX, there has been an increase in sport participation but a significant decrease in women coaching the sport. However, female athletes are rarely included in the media and are often sexually objectified when they do receive media attention. Female athletes who are able to display the balance of masculinity and femininity receive the most attention and positive outputs by the media whereas those who are not able to show that balance are not shown or interviewed by the media. In order to be a successful female athlete, one must be able to provide that impossible balance of femininity and amazing skill. Our society has created an invisible line between what is too feminine and what is too masculine. This balance between masculine and feminine traits is known as the feminine apologetic where masculine power roles must be counter balanced with feminine qualities. This project has helped us gain an in depth understanding of the women's role in sports and how it has made a significant impact today and will continue to make a change in the future.

Title: The UO Veterans Oral History Project

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Leonie Schulze

Co-Presenters: Jennifer Esparza

Faculty Mentor: Alexander Dracobly

Major: English, History

Funding Source: Tom and Carol Williams Fund for Undergraduate Education; Department of History; Kira Homo and James Fox at Special Collections; Kirstin Hierholzer and her staff at the Center for Media and Educational Technologies

Abstract:

Every person has a story to tell and everyone's story deserves to be told. These stories can be recorded and stored in archives to be read and possibly used for research in the future. This is exactly what students of the UO Veterans Oral History Project have been doing for the past five years and will continue to do for however long there are veterans out there willing to tell their story. For students, the project is an opportunity to learn about how to prepare and successfully conduct interviews, as well as how to transcribe them in a way that lets the interviewee's character shine through black letters on white paper. For the veterans who are interviewed, the project is an opportunity to reflect on their military past in a safe environment, to perhaps tell a story they have not told before and to know that their names will not be forgotten. For future researchers this project will hopefully be useful in various ways. During the past five years that this project has been pursued, UO students have collected enough material for researchers to ask a wide variety of questions. Why did people decide to join? How did one individual's experiences in Iraq or Afghanistan differ from those of another soldier? What did the service mean for the members' families? Our project will hopefully serve as a public record and as a tool for future researches and historians to find answers to their questions.

Title: Rpb1 Mutations and Interactions with Backtracked RNA in RNA Polymerase II in Yeast

Presentation Type: Poster 82

Primary Research Area: Science

Presenter: Mandi Severson

Faculty Mentor: Diane Hawley

Major: Biology, Human Physiology

Funding Source: NICHD Summer Research Program, National Institutes of Health, \$3800

Abstract:

RNA Polymerase II (RNAP II) is an enzyme that catalyzes the synthesis of all mRNA in eukaryotic cells. The Rpb1 subunit participates in RNA elongation in the active site of the enzyme. However, residues in Rpb1 have also been identified as having a potential role in backtracking and arrest. Backtracking occurs when RNAP II moves backward along the DNA, causing the 3' end of the RNA to dislodge from the active site and bind to nearby RNAP II residues. If the polymerase has not backtracked extensively, RNAP II can spontaneously resume transcription; however, if the polymerase has backtracked too much, elongation stops and RNAP II arrests. This study focuses on creating mutations in Rpb1 residues that interact with backtracked RNA. The point mutations being investigated change nucleophilic amino acid residues into residues that theoretically should have reduced ability to bind to backtracked RNA. If RNAP II residues and backtracked RNA are interacting this way, it may induce less extensive backtracking and decreased incidence of arrest. Currently we are using site-directed mutagenesis to create and isolate mutants, which are then tested in transcription assays to observe the effects on speed and incidence of arrest of RNAP II. Mutants are still being isolated and tested at this time. Results from this study will contribute to our knowledge about backtracking and its function in the transcription cycle, which could help us combat viral proliferation and genetic disease.

Title: Room for Thought: A Transformation of the Values of Emerson and Einstein
Presentation Type: Oral
Primary Research Area: Design
Presenter: Zachary Sherrod
Faculty Mentor: Barbara Mossberg, Terry Hunt
Major: Architecture

Abstract:

Ralph Waldo Emerson, a poetic individualist, and Albert Einstein, a spiritual physicist, both sought meaning and discovery within their minds. Consider a room that transforms the values of Emerson and Einstein into a space designed to evoke genius. Contemporary architectural rooms like the study, library, and office perform rudimentary functions but often inadequately house the intellect and spirit. My concept of a “room for thought” would function as a home for the mind—a space that symbolizes the imaginative process like a kitchen symbolizes the preparation of food. I explored this possibility with diagrams and modeled a stand-alone gazebo encased in a dodecahedron. This twelve-sided Platonic solid has symbolized the universe for millennia and bespeaks self-reliance with its centralized form. Moreover, its multifaceted surface empowers the spirit of imagination, for each side frames a view into an aspect of reality. While this form effectively captures the spirit of Emerson and Einstein, the “room for thought” is most meaningful as a cultural symbol, which could take any number of forms. Whether a separate structure, a bridge between spaces, or a jewel breaking through a conventional façade, this concept defines a sacred space in accordance with the philosophies of Emerson and Einstein.

Title: The Evolution of the Comic Panel in Japanese Manga: An Exploration of the Comic Panel from Ancient Times to Modern Day
Presentation Type: Oral
Primary Research Area: Humanities
Presenter: Grace Shum
Faculty Mentor: Elizabeth Wheeler, Akiko Walley
Major: English, Digital Arts, Advertising

Abstract:

Manga, the Japanese comic form has a style distinct from that of American superhero comics, European comics, and more. But how did manga form stylistically? I am exploring the answer to this question visually. By examining the evolution of Japanese narrative comic form, beginning from narrative picture scrolls to present day dojinshi fan art, I look to examine the basic construct of comics – the panel – to contemplate the evolution of manga today. Of course, since manga is a visual form, what better way to explain its evolution but through a comic itself? The end goal of my ongoing creative thesis is to have a comic book that tells a story itself, one that reflects the panel evolution in Japanese manga. Comics have only recently been taken seriously as a subject of academia and manga is a huge, as yet not widely touched, section of comic history. In this way, my own narrative will endeavor to illustrate how manga’s evolution is really a narrative itself and how distinct this comic form is from its global counterparts due to its heritage, cultural nuances, geographical and political isolation in the past, and language.

Title: Dust Microbial Communities Have Dosage-Dependent Responses to Daylight
Presentation Type: Oral
Primary Research Area: Science
Presenter: Andrew Siemens
Faculty Mentor: Jessica Green, Erica Hartmann
Major: Biology
Funding Source: UO UnderGrEBES Research Grant, University of Oregon Institute of Ecology and Evolution, \$500; UO Undergraduate Research Opportunity Grant, UO Undergraduate Research Opportunity Program, \$1000

Abstract:

Different light treatments affect the growth of certain bacterial strains in the built environment, however little is known about the effect of light on an entire bacterial community. The goal of this study is to investigate the impact of daylighting, specifically UV vs. visible light, on the viability of the dust microbiome. We collected dust samples and treated them with varying doses of broad-spectrum light. Using a method we developed to quantify the viability of microbes in dust, we determined the amount of DNA from live vs. dead cells by comparing 16S ribosomal gene copy

numbers in each sample. The results from broad-spectrum light exposure revealed a decrease in dust viability as the amount of total light exposure increases. Subsequently, the relationship between different wavelengths of light and bacterial viability was tested by subjecting dust samples to sunlight with UV wavelengths removed, sunlight with visible and infrared wavelengths removed, and dark conditions. We achieved a gradient of lighting conditions that will help us determine whether the effect of daylighting on viability is impacted by UV light as compared to visible light. The results from this research could influence the choice of light filtering in windows for buildings such as hospitals where the elimination of pathogens is extremely important.

Title: Gender Socialization of Masculinity

Presentation Type: Poster 37

Primary Research Area: Humanities

Presenter: Alexis Skaw

Co-Presenters: April Wheeler, Brent Koekkoek

Faculty Mentor: Julie Heffernan

Major: Education

Abstract:

As soon as a child is born in the United States, they are assigned a sex in the male/female gender binary and gender socialization automatically begins. For boys, this means they will be taught to be tough, strong and control their emotions in order to enact masculinity. While much of this socialization occurs in the child's home, it is also strongly enforced throughout social institutions. Sometimes this socialization is explicitly taught while other times the lessons are implicitly engrained into traditions and practices. Schools, as social institutions, contribute to student's socialization regarding gender, race and class. Our focus is on how gender socialization of masculinity, which can intersect with race and class, affects boys at different stages of their development. Hyper-masculinity, the exaggeration of masculinity which emphasizes aggressive and impulsive behavior, is associated with a breadth of emotional and physical ramifications. By pointing out the negative effects of hyper-masculinity, we hope to inspire teachers to enact pedagogy which encourages boys to explore non-gender conforming hobbies, sports, studies and careers among other activities. By fostering an environment where students do not feel pressured to enact masculinity, boys will feel less burdened to become hyper-masculine and in turn, they can avoid situations which have negative effects on their mental and physical well-being.

Title: Center of Mass Displacement with a Rigid Ankle-Foot Orthotic in Healthy Individuals

Presentation Type: Poster 83

Primary Research Area: Science

Presenter: Spencer Smith

Co-Presenters: Therese Wichmann, Shannon Pomeroy, Michael Hahn,

Faculty Mentor: Shannon Pomeroy, Michael Hahn

Major: Human Physiology

Abstract:

Ankle arthritis is inflammation of the articular cartilage, resulting in pain, stiffness and diminished quality of life. Ankle arthritis is often treated with a complete artificial fusion of the affected bones and removal of the damaged cartilage, which can lead to significantly altered gait and further long-term complications. Rigid ankle-foot orthotics (AFOs) have been used in similar clinical populations to stabilize the joint; however, they have been shown to retain many gait characteristics and improve stability despite limiting ankle range of motion (ROM). In order to better understand how the body adapts to such a sudden and severe limitation of ankle ROM, we performed a gait analysis on 16 healthy individuals within the lab. Each subject went through a normal baseline walking trial on the treadmill followed by a 30 minute walking trial in which they were equipped with a rigid AFO. We used motion capture cameras to collect the 3D motion of strategically placed reflective markers. Subsequently, whole-body marker position data was used to calculate and observe the subjects' center of mass between walking without an AFO and with an AFO over time. Preliminary data analysis indicates that a rigid AFO may result in increased COM displacement with a range less than baseline following 30 minutes of AFO acclimation, suggesting that an AFO leads to return to more normal gait given an acclimation period.

Title: Investigating Iron Oxide Nanoparticle Growth via Slow Injection Synthesis

Presentation Type: Oral

Primary Research Area: Science

Presenter: Alexia Smith

Co-Presenters: Susan Cooper, Jim Hutchison, Darren Johnson

Faculty Mentor: Darren Johnson, Susan Cooper

Major: Chemistry

Funding Source: Presidential Undergraduate Research Scholarship, University of Oregon, \$5000

Abstract:

Nanoparticles have been studied for decades due to their optical, chemical, and magnetic properties, leading to a vast array of applications from nanocatalysts to contrast agents in magnetic resonance imaging. Nanoparticles are simply small-scale particles ranging from 1-100 nm in size, roughly the size of the tip of a sewing needle. The given size of nanoparticle plays an important role in their application, as many nanoparticles have size-dependent properties. In particular, magnetic iron oxide nanoparticles offer promise in technological applications such as magnetic inks or precursors for magnetic media devices. In order to effectively synthesize selectively-sized, monodisperse iron oxide nanoparticles, an understanding of their growth mechanisms is necessary. Currently, the parameters to produce selective iron oxide nanoparticles are extensive and each approach has its complications. The synthesis of nanoparticles has been studied extensively in the Hutchison lab in order to understand how to optimize their chemistry, size, and structure. Recent work has shown that a slow-injection synthesis versus a hot injection synthesis produces more monodisperse particles and is a greener method of synthesis. Additionally, particle size is directly related to synthesis temperature, and increases linearly as temperature increases. Many other conditions have been tested to see how the growth of particles is affected: air flow, environment, glassware, precursor used, and volume. Understanding these specific parameters enables synthesis selectivity in order to optimize the nanoparticle size desired for a given application.

Title: Relieving Ukrainian Energy Reliance on Russia: Working with Wind for Prosperity to Encourage Energy Reform and Support New Relations with Western Europe

Presentation Type: Poster 38

Primary Research Area: Social Science

Presenter: Priscilla Sol

Faculty Mentor: Patricia Curtin

Major: English, French

Abstract:

The ongoing conflict between Ukraine and Russia following the 2014 invasion of Crimea and other eastern Ukrainian territories has garnered attention and interest throughout the world. This project utilizes tenets of Public Diplomacy to strategically target problems of Ukrainian energy supply and dependence, and to help the country continue its gradual divestment from Russian resources. Through cooperation between Wind for Prosperity—a program which connects with investors and builds wind turbine mini-grids in rural locations—the US State Department, and federal and local governments in Ukraine, citizens will have access to reliable renewable energy and economic ties with Western Europe will be strengthened.

The first section of this project is a white paper establishing political, social, and economic history in Ukraine and clarifying the context for a renewable energy project. The second section is the strategic plan for the project which includes: overall goals, analyses of audience reception, long term objectives, strategies for garnering attention and support, and actual on-the-ground tactics to be implemented.

Ukraine is struggling to maintain its sovereignty over its people and territory. This project intends to support the movement towards economic independence from Russia, foster citizen involvement in developing renewable resources, and provide for energy needs in rural regions of Southern Ukraine.

Title: Seeds of Peace: Visible Cooperation Between Jews and Muslims in Morocco

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Namratha Somayajula

Faculty Mentor: Shaul Cohen

Major: International Studies

Abstract:

Situated at multiple crossroads, Morocco is unique due to the historical presence of Judaism in a region that, over the years, became a Muslim-majority Islamic kingdom. Muslim and Jewish Moroccans coexisted for centuries, albeit with minor hurdles, as did the Muslims and Jews of Palestine. However, political events around the world in the twentieth century led to the rapid departure of Jews from their Moroccan homeland. Today, with so few remaining in Morocco, “Jew” often becomes synonymous with “Israeli,” and relations between Moroccan Muslims and their Jewish compatriots have become increasingly tense. In spite of this, there are still many people in Morocco who hope for everyday relations between Muslims and Jews there to remain cooperative, unhindered by the political tensions often affiliated with their identities. This study examines current efforts to counter and prevent recent tensions between Muslims and Jews in Morocco. It concludes that in order to encourage cooperation, several current peace-building movements in Morocco seek to raise awareness about Morocco’s cultural plurality, and to bring this awareness from the private to the public sphere. The success of these efforts highlights the fact that present-day Muslim-Jewish relations in Morocco are not solely defined by tension and that the historical cohabitation still exists, though on a smaller scale. I hope that the information gathered through this study, from members of the Moroccan Jewish community and leaders of local interfaith organizations, can help us more broadly re-conceptualize some ways in which local peace-building movements can impact a culturally diverse society such as Morocco.

Title: Missing Transverse Momentum Trigger Performance Studies for the ATLAS Calorimeter Trigger Upgrades

Presentation Type: Oral

Primary Research Area: Science

Presenter: Brianna Stamas

Faculty Mentor: Stephanie Majewski, Geraldine Richmond

Major: Physics

Funding Source: Presidential Undergraduate Research Scholars Program, UO Undergraduate Research Opportunity Program, \$5,000

Abstract:

A basic question about our universe remains unanswered: what is everything fundamentally made of? Everything we know of only makes up 4% of the universe; a significant fraction of the remaining 96% is made of an unknown fundamental particle referred to as dark matter. In an attempt to identify the dark particle, the Large Hadron Collider (LHC) at CERN in Geneva, Switzerland is recreating the conditions of the Big Bang. The ATLAS Experiment is one of two general purpose detectors at the LHC. In anticipation of discovering new physics, the ATLAS detector will undergo numerous hardware upgrades in the coming years, one of which will be an improvement to the existing trigger system which is a 3-level hardware and software based system. This study focuses on the upgrades to the level-1 trigger. The LHC collides bunches of protons every 25 ns, which amounts to a lot of data in an extremely short period of time. Specifically, the missing transverse energy (ETmiss) trigger is crucial in being able to detect a previously undetectable particle. Therefore, we propose implementing a topological clustering inspired algorithm on the level-1 ETmiss trigger. The algorithm will be employed on the gFEX (global feature extractor) with 0.2x0.2 eta-phi granularity to be installed in 2019. This study analyzes the performance the algorithm for future implementation.

Title: Synthesis of Diindenoanthracene Derivatives for use in Organic Field-Effect Transistors
Presentation Type: Poster 39
Primary Research Area: Science
Presenter: Victoria Stanfill
Faculty Mentor: Michael Haley, Geri Richmond
Major: Chemistry
Funding Source: Presidential Undergraduate Research Scholars Program, \$5000

Abstract:

Organic field-effect transistors (OFETs) are a type of organic electronic device that determine how and where charge flows throughout a system. They are important to the electronic industry because they are longer lasting and cheaper to synthesize than traditional silicon field-effect transistors. OFETs are ranked on their charge mobility, the speed and quality of the charge transfer. Diindenoanthracenes are a type of organic small molecule with potential to be used in OFETs because of their biradical character, giving them the ability to transport charge. Our research focuses on synthesizing a variety of diindenoanthracene derivatives so we have a large range of molecules with different electronic properties to test in devices. The ultimate goal is to increase the charge mobility of these molecules so that these electronic devices are comparable to traditional inorganic electronics. So far we have created one new diindenoanthracene which has yet to be tested in devices, but we are working towards creating a more generalized synthesis method to make it possible to add a variety of substituents to the general diindenoanthracene scaffold.

Title: Early Identity Building in the Boy Scouts of America 1910–1912
Presentation Type: Poster 92
Primary Research Area: Humanities
Presenter: Charles Steenkolk
Faculty Mentor: Michael Peixoto, Jamie Bufalino
Major: History, Spanish

Abstract:

The Boy Scouts of America is one of the most popular, largest, and longest running youth organizations in the United States. Created in 1910, the organization competed with other youth organizations that started around the same time. This article looks at the incorporating documents, the letters and correspondence, and the minutes of the first national meetings, in order to identify and track the initial conceptualizations of the BSA as it asserted itself in the American society. The documents span from 1910 to 1912, the first two years of the BSA. The documents show that the future of the organization was not clear at the time, and that there were significant issues presented to the organization as it formed. The documents also show that the BSA was a composition of the individual people that founded it, and the consensus on a course of action was not present at first. The individual decisions of the leaders of the organization led to a more clear definition of the organization's niche in society, and its identity as a youth organization.

Title: The Inequality in Families: Institutional Pressure and Gender Diverse between Family Members
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Dongxue Su
Co-Presenters: Yaoying Zhang
Faculty Mentor: Julia Heffernan
Major: Educational Foundations

Abstract:

Authors: Lisa Wade (An associate professor of sociology at Occidental College in Los Angeles); Myra Marx Ferree (the Alice H. Cook Professor of Sociology at the University of Wisconsin-Madison.)

During the development of families, there are lots of inequalities between genders. In this project, we will focus on how institutional pressure influence both men and women in different ways, and the relationship between children and parents. Normally, men spend more time on breadwinner and women focus on housework and parenting in pop culture and conversation. For single parents and families with two working parents, that work is second shift, work that greets us when we come home from work (P248). Childcare and housework still carry the gendered meaning they did when breadwinner/housewife family were considered ideal. We need to think about social construction of

children care and housework and look at the actual and the ideal division of labor in family today. Women are less happy than men in marriage, then, because it is an institution that systematically presses them into doing the low-status domestic work of our society. On the other hand, we also need to focus on children and family's relationship. For example, if the child always stay with their mom that this child will love their mom more than their dad. And parent's relationship also can affect their children thinking about the family relationship.

Title: What Do We Say Now: An Analysis of Mass Communication and Advertising for the Prevention of Sexual Assault

Presentation Type: Poster 40

Primary Research Area: Social Science

Presenter: Jesse Summers

Faculty Mentor: Kim Sheehan, Heather Shoenberger

Major: Journalism: Advertising, Journalism

Abstract:

Sexual assault has become a prevalent issue in recent years. From university campuses to the White House, the issue is being discussed and addressed in many different ways. This thesis specifically discusses the It's On Us and No More campaigns as well as two pieces of popular media used to spread awareness of the issue of sexual assault. The Transtheoretical Model of Change, a social health model for understanding an individual's willingness to change their behavior, is used as a basis for analyzing the videos produced for these campaigns and categorizing them based on their potential to influence a viewer's behavior. Semiotic analysis is used to analyze specific content in each video and associate the videos with stages of the Transtheoretical Model of Change. Initial results show that many of the current videos focus on creating awareness and are associated with the pre-contemplation or contemplation stages. However, analyzing specific links between these videos and other content such as websites creates the potential for viewers to move beyond these stages with the inclusion of additional information and action steps. This research and the areas outlined for further research are critical for expanding communication literature applying theory to media content and expanding research done in the intersection of social health and mass communication.

Title: Electron Vortex Beaks With Magnetic Diffraction Gratings

Presentation Type: Poster 41

Primary Research Area: Science

Presenter: Simon Swifter

Faculty Mentor: Benjamin McMorran

Major: Physics, Mathematics

Abstract:

The purpose of this study is to produce and characterize electron vortex beams created by a diffraction grating formed by a magnetization texture. In the past, electrons vortex beams have been produced using nano-fabricated physical diffraction gratings placed in a Transmission Electron Microscope. Professor Benjamin McMorran (University of Oregon) is an expert in the production of these electron beams with a spiraling wave front, or vortex beams. Our objective is to achieve the same vortex beams by instead utilizing magnetic materials as a diffraction grating. In thin samples, Iron Gadolinium (FeGd) has sinusoidal varying magnetic domains with regularly occurring fork defects that make it ideal for use in creating electron vortex beams. Our plan is to find an area where the domains in a sample of FeGd are forked appropriately, and to observe and image the diffraction patterns caused when electrons are transmitted through those points.

Title: The People's Music: Rhetoric and Musical Symbolism in the German Democratic Republic's 1954 *Musikfest des VDK*

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Colin Takeo

Faculty Mentor: Loren Kajikawa

Major: Music History, History

Funding Source: HURF, OU Humanities Center, UROP, 3500; CHC Study Abroad Grant, Clark Honors College, \$1000

Abstract:

After World War II, Germany had to be rebuilt. The artificial division of the country in 1949 made an already difficult task even more complicated. Although the Cold War period remains a dark memory for many, it also offers a glimpse into the process of constructing national and socialist cultural identity. The German Democratic Republic (GDR) began in earnest to promote a new societal consciousness in the 1950s, and redoubled their efforts after the 1953 Worker's Uprising. In 1954, the GDR government and composers allied with the socialist cause began a new cultural campaign using musical events and the socialist-realist aesthetic to establish authority over the East German population. By promoting their own socialist aesthetic and combining it with German cultural traditions, they created a hybrid culture that co-opted patriotic prestige from German cultural icons while also promoting a revolutionary, anti-capitalist consciousness. To explore this campaign, I performed original research at state archives in Berlin and Leipzig. My primary sources were programs, internal documents, and musical works related to the *Musikfest des VDK*, a state-sponsored music festival held in Leipzig in 1954. The research has revealed that the *Musikfest's* socialist-realist pieces heavily relied on rhetorical, extra-musical framing and cultural appropriation.

Title: Hip Joint Moment during Obstacle Crossing Following Concussion in Adolescents

Presentation Type: Poster 84

Primary Research Area: Science

Presenter: Austin Thompson

Co-Presenters: Quinn Peterson, David Howell, Li-Shan Chou

Faculty Mentor: Li-Shan Chou, Quinn Peterson

Major: Human Physiology

Abstract:

Patients with concussion often complain of instability while walking. Previous studies have shown that subjects with concussion have altered gait under normal conditions, dual-task walking, and obstacle crossing. While other studies have looked at joint moments in healthy adolescents and the geriatric population and found that older adults have increased hip moment compared to young adults, there has not been a study looking at the changes in joint moment during obstacle crossing in subjects with concussion. The purpose of this study was to determine the effect of concussion on hip joint moment during obstacle crossing in adolescents. It was hypothesized that peak hip joint moment of the leading and trailing limbs would be increased in patients with concussion. Nine patients with concussion diagnosed by health professionals were matched with eight control subjects by age, height, mass, sex, and sport. Subjects were tested five subsequent times: 72hrs, 1wk, 2wks, 1mo, and 2mo. Twenty-nine retro-reflective markers were placed on bony landmarks, and motion analysis was performed using a 10 camera, 60 Hz system. The subjects stepped over an obstacle 10% of body height during steady state gait, and data was analyzed using Orthotrakä. The neurometabolic cascade of concussion causes changes to motor control, which could lead to unnecessary strain and a mechanism of further injury while providing further insight into how concussions affect gait.

Title: Force Matching Sense: An Ipsilateral Shoulder Study Investigating the Effect of Torque and Elevation Angle

Presentation Type: Poster 85

Primary Research Area: Science

Presenter: Katya Trouset

Faculty Mentor: Andrew Karduna, David Phillips

Major: Human Physiology

Abstract:

Force matching sense (FMS), or the ability to reproduce a desired force one or more times, is one of three

subdivisions that define proprioception. Unlike the other two, joint position sense (JPS) and kinesthesia, FMS is not associated with joint motion (Riemann & Lephart, 2002a). Previous research has found that JPS becomes more accurate as shoulder elevation and external load increases (D. Suprak, Osternig, & Karduna, 2005). The goal of the present study was to investigate how torque and shoulder abduction angle contribute to accuracy of FMS in an ipsilateral remembered force matching task. FMS was tested on the dominant arm of 12 subjects (6 males, 6 females) at three angles (50, 70, and 90 degrees of elevation in the scapular plane), and at 20, 40, and 60 percent above subject baseline torque. It was found that there was no significant change in error due to abduction angle ($p > 0.05$), but force reproduction error decreased as torque load increased ($p < 0.05$). From these findings, it appears that FMS does not follow the same pattern as JPS when reproducing a target at different angles, suggesting that these two components must be considered separately when assessing proprioception.

Title: From *Hoplion* to *Scutum*: The Evolution of the Roman Military's Shield

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: John Tuttle

Faculty Mentor: Mary Jaeger, Stephanie Budin

Major: History, Classical Civilizations

Abstract:

The Roman legion built one of the largest empires in the world but it was not the original structure of the Roman military. The Romans adopted this system after it utilized the hoplite phalanx from Greece. The most fundamental difference between these tactical systems boils down to the shields that each soldier carried. The earlier *hoplon* is much heavier than the *scutum* and each were used for different advantages. The reason this change occurred was not only for the advantages that the *scutum* offers a legionary model but because of economic and population constraints the Romans faced after the Gallic sack of Rome in c.a. 390 BCE. Livy reports that the Romans lost much of their wealth in the raid and this would have resulted in a lack of important military resources such as bronze as well as the death of a substantial amount of the population. The lack of wealth as well as a lack of tin or copper deposits within the sphere of influence meant that the Roman citizenry could not afford to trade for enough bronze to make the *hoplon*. The loss of so many people also made phalanx tactics impractical as well as the use of the *hoplon*. This forced the Romans to adopt the *scutum* and change its military into the dominant force of the Mediterranean.

Title: The Increased Danger of High Drivers: Evidence from the Fatal Accident Reporting System

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Mitchell VanVuren

Co-Presenters: Daniel Palau

Faculty Mentor: Benjamin Hansen, Bill Harbaugh

Major: Economics, Mathematics

Abstract:

As recreational marijuana legalization grows increasingly prominent, one possible externality of its use concerns its impact on driving; motorists under the influence of marijuana may have increased risk of being involved in a fatal accident. We use national-level data from the Fatal Accident Reporting System to estimate the increased risk due to high drivers. Using a multinomial model of car accidents, we estimate that a high driver is at least 2.8 times more likely to be involved in a fatal car accident than a sober driver. Ours is the first study to estimate this parameter while accounting for changes in driving patterns across geography and time over nine years.

Title: Sociolinguistic Awareness through Cultural Spaces
Presentation Type: Oral
Primary Research Area: Social Science
Presenter: Nayelli Velazquez
Co-Presenters: Corinna Soriano
Faculty Mentor: Claudia Holguin, Heather Quarles
Major: Human Physiology

Abstract:

Even though some states, such as Arizona and Texas are pushing for monolingual, English-only policies, it is important that cultural spaces such as Mexican markets exist in every community. Through interviews with several people at a Mexican market and grocery store in Hillsboro, Oregon about their experiences with Spanish in the area and about what draws them to shop in the market, we found a consistent message about the importance of these types of places. Many of the people interviewed expressed comfort in having a space to visit that reminds them of their home cultures and as a place where the North American and Latin American cultures are fused into one hybrid identity. We documented many examples of Spanglish, proposed by several scholars as an entire way of life rather than just as a new language. Over the course of this project we have come to realize the benefits of these cultural spaces and we propose community-level creation of cultural havens apart from the politics and social discrimination of our current society. These spaces should be established by the local Latino communities, in order to best accommodate their identities. Ultimately, they would serve as places of cultural expression, and appreciation.

Title: Art Makes Science: Making Visible the Invisible
Presentation Type: Creative Work 9 (GSH 117 Corridor)
Primary Research Area: Fine/Performance Arts
Presenters: Jacob Armas, Mara Elise Peasley, Cortelle Pletcher, Morgan Janes
Faculty Mentor: Robert Voelker-Morris, Julie Voelker-Morris

Abstract:

Twelve students participated in a First-Year Program seminar, Art Meets Science: Making Visible the Invisible, during Winter 2016. Throughout the seminar, students examined ways in which images, whether of the human body or the universe, are visually and artistically represented in public spaces. They further explored how such imagery tells us stories about our lives related to science. Students came to understand that, when placed within artistic contexts, scientific images change meaning over time and become part of our visual culture. Each student researched and analyzed a specific artist and area of scientific influence in that artist's work. From this research, a final paper and online formal visual presentation was developed. Overarching findings and conclusions from this creative research process included the students discovering the implications of their individual research bias in the presentation of both scientific data as well as larger scientific and artistic philosophical arguments. Specifically, they better understood the abstraction of articulating physical, biological, astronomical and technological phenomena. Select research and artistic presentation of student work will be presented during this open session.

Title: Vestibular Modulation of the abductor hallucis and abductor digiti minimi Muscles in Response to Changes in Head Position and Visual Cues
Presentation Type: Oral
Primary Research Area: Science
Presenter: Jonathan Wallace
Faculty Mentor: Brain Dalton, Marjorie Woollacott
Major: Human Physiology

Abstract:

Maintaining standing balance involves processing of vestibular, visual, and somatosensory information to produce dynamic motor responses. The purpose of this experiment was to determine if intrinsic foot muscles are modulated by vestibular activity and if the medium-latency responses are altered by changes in head position and visual cues. Indwelling electromyography (EMG) of the abductor hallucis (AH) and abductor digiti minimi (ADM) were sampled while bilateral electrical vestibular stimulation (EVS) was administered to quietly standing participants. Vestibular stimulation delivered on the mastoid processes is interpreted as a true head acceleration which creates a medium-latency vestibular-evoked balance response. A cumulant density function (i.e. cross-correlation) was used to analyze EVS input and the muscle activity (output). When the head was positioned 90° to the left with the eyes closed, the

medium-latency response amplitude was -0.122 ± 0.027 in the AH and 0.130 ± 0.048 in the ADM. Visual cues reduced the medium-latency amplitude by 14 and 23% in the AH and ADM, respectively ($p < 0.05$). When the head was oriented 90° to the right, the medium-latency response was opposite for the AH (0.101 ± 0.042) and ADM (0.065 ± 0.026 , $p < 0.05$). The inversion and reduction of the medium-latency response with changes to head position and visual input indicate that the vestibular system is modulating activity in the ADM and AH. These results may suggest that the ADM and AH muscles are important contributors to standing balance control.

Title: The Ups and Downs of the Mammal World: How Mammal Diversity Has Changed in the United States throughout the 20th Century

Presentation Type: Oral

Primary Research Area: Science

Presenter: Kendra Walters

Faculty Mentor: Edward Davis, Samantha Hopkins

Major: Geology, Biology

Funding Source: Presidential Undergraduate Research Scholar, Undergraduate Research Opportunity Program, \$5,000

Abstract:

Biodiversity loss is recognized as a global crisis. Current research strives to create models that predict regions that are at high risk for a significant drop in biodiversity levels. These models must be scaled by analyses of historic changes in biodiversity. However, no study has yet to analyze the changes in mammal richness in the United States at a high enough spatial and temporal resolution to produce a predictive model of mammal diversity. Our research is a high-resolution analysis of the changes in mammal richness in the contiguous United States from 1906 to 1995. We collected mammal occurrence data from the online database VertNet and BISON and individual museum collections, divided it into ten year increments, and used scripts in R to produce sampling-standardized patterns of mammal richness for each decade. We then analyzed the geographic distribution of change in richness over the 20th century. From our results, we were able to determine which regions experienced a significant rise in diversity levels and which experienced a significant drop. We also identified regions where sampling intensities remain too low to conclusively determine how mammal diversity has changed. Regions experiencing the most severe biodiversity changes, as well as those without adequate data, should be focal areas for continued research in conservation efforts.

Title: Women Working in the Public Relations Industry in Hong Kong

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Tiffany Wan Hoi Nga

Faculty Mentor: Kathryn Kuttis, David Remund

Major: Journalism: Public Relations

Abstract:

In the 21st century, public relations plays an important role in the business world. The majority of people who work in the public relations industry are female. This pattern leads to a significant question "Why are there many women working in the public relations industry in Hong Kong?" Is it only because women tend to have a better communication skill? Indeed, it is more than this reason. This research focused on women working in public relations industry in Hong Kong. In this study, I used qualitative and quantitative methods to examine and explain why there is a pattern of feminization in the public relations industry in Hong Kong. Results showed that Hong Kong's unbalanced gender ratio issue can become an impact in the public relations industry. Moreover, education is another crucial factor that lead to many women working in the public relations industry. Besides the unbalanced gender ratio and education factors, the most significant finding in this study is that the majority of public relations leaders in Hong Kong are men not women.

Title: Calibration of the MFR Device
Presentation Type: Poster 87
Primary Research Area: Science
Presenter: Minyuan Wang
Faculty Mentor: Josh Peterson, Frank Vignola
Major: Biochemistry, Human Physiology

Abstract:

Accurate measurements of solar radiation are important for climate modeling, efficient building design, and in the development of solar electric systems. These measurements are performed using instruments that must be calibrated and maintained at the highest quality level. The Multi-Filter Rotating Shadowband Spectroradiometer (MFR) measures three components of incoming solar radiation: light directly from the sun (Direct Irradiance), light coming from everywhere but the sun (Diffuse Irradiance), and light incident from everywhere (Global Irradiance). The MFR device is a unique instrument in that it can make all three of these measurements and does so at six discrete wavelengths. The purpose of this project was to accurately calibrate the MFR device and determine the corresponding uncertainty. To do this, solar radiation data was collected and analyzed from various reference instruments and the MFR in Eugene, Oregon, from June through September 2015 at all times of day throughout the 4-month period. The irradiance measured by the MFR was compared to the reference instruments and the calibration factor of the MFR device was determined. Our results were within 2.5% of the calibration performed in 2013 for each of the six wavelengths the MFR measures with an uncertainty of $\pm 5\%$ at the 95 percent confidence level.

Title: Land-Seizing Language: Rhetoric's Claim to Territory in Colonial Travel Writing of the New World
Presentation Type: Poster 88
Primary Research Area: Humanities
Presenter: Erin Weaver
Faculty Mentor: Elizabeth Bohls, Brent Dawson
Major: English

Abstract:

England sends its first party of settlers to New World Virginia in 1585, but it isn't until 1607 that the empire founds Jamestown – the first lasting colony on the continent, following 22 years of failure to occupy the territory. In absence of physical ownership of the land, how do the narratives that emerge out of the New World during this period attempt to assert a rhetorical claim to it? To answer this question, my research analyzes the writing of New World authors Smith, White, Lane, and Harriot. Thus far, it has investigated the existence of the following through close reading analysis in order to pinpoint rhetorical strategies that assert possession: a) the binding of space in the New World into definable (and therefore claimable) place through rhetorical cartography and the theory of space and place; b) Edenic tropes to assert a God-given right to cultivate the landscape and mark it as claimed; c) syntactical structures that infantilize native improvements and project English structures (or signs of ownership) onto the land. The rhetoric of travel writing has been well studied; the rhetoric of claim within these texts is lacking. In combining the studies of travel writing's rhetoric and language's ability to bound space, I will discern ways in which English colonists are able to claim the territory solely through their use of narrative.

Title: The Effect of Rigid Ankle-Foot Orthotics on Joint Range of Motion and Temporospacial Parameters
Presentation Type: Oral
Primary Research Area: Science
Presenter: Therese Wichmann
Faculty Mentor: Shannon Pomeroy, Michael Hahn
Major: Human Physiology

Abstract:

Ankle arthritis is the debilitating deterioration of the joint cartilage, resulting in pain and diminished quality of life. A surgical fusion of the affected bones can be performed on the ankle to alleviate pain and remove damaged cartilage, but ankle range of motion (ROM) becomes severely limited. Rigid ankle-foot orthotics (AFOs) have had positive outcomes regarding ankle mobility, stability, and pain relief in clinical populations, however, much is unknown about how externally limiting motion affects gait function. This preliminary work will help determine how wearing AFOs affect ROM and temporospacial parameters. We performed standard gait analysis on 16 healthy adult subjects

during a baseline walking test without wearing an AFO and throughout thirty minutes of wearing an AFO on a treadmill. Reflective markers were placed on anatomical landmarks to capture segment motion and calculate lower extremity joint angles. Changes in ROM and stride length were analyzed and compared from baseline to minute one, minute fifteen, and minute thirty within the AFO test. Initial results reveal noticeable changes compared to baseline. Continued collections and analysis will be utilized to observe how these acute changes form overtime with AFO use. These data will assist in determining how rigid AFOs maintain normal mobility despite restricting the ankle, potentially giving support to the usage of rigid AFOs in some ankle arthritis cases rather than invasive surgery.

Title: Not Just a Pretty Face: 19th Century Japanese Courtesans and their Influence in Art Exportation

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Brandi Wilkens

Faculty Mentor: Akiko Walley

Major: Art History

Funding Source: HURF, UO, \$2500

Abstract:

19th century Japan was a time of momentous changes. The Edo period ended shortly after the country was opened to the West. The Meiji period, beginning in 1868, shows a society grappling with many changes. By examining 19th century woodblock prints and souvenir photography, I will examine Japanese courtesans, their reinvention in the 1870s as geisha, and their influence over art exportation. I will argue that these women were far more than common prostitutes, by exploring their rigorous training, and indicating in what ways they used their minds and business acumen to further their careers. These women were linked with Europeans due to their relationships with Dutch traders since the 16th century; courtesans provided the buffer between foreigners and the native Japanese population. Due to these close associations, courtesans were able to influence Japanese art exportation, both through woodblock prints and later through souvenir photography.

The complications of time period differences, and the difficulties in acquiring the necessary language skills (both Japanese and European languages are required), has created an unfortunate lack of scholarship on this vibrant time of change and cultural exchange between Japan and the West. It is my goal to shed more light on the changing dynamics of these tumultuous interactions, while bringing these marginalized women to the forefront, where there is evidence of their involvement with Westerners.

Title: Evolving a Healthier Worm: Microfluidics, Pharyngeal Pumping, and Experimental Evolution in *C. elegans*

Presentation Type: Poster 89

Primary Research Area: Science

Presenter: Kelley Williams

Faculty Mentor: Stephen Banse, Patrick Phillips

Major: Biochemistry

Abstract:

Although *C. elegans* is a popular model for lifespan research, study of genetic and pharmacological interventions that specifically alter healthspan, the length of time an animal stays healthy, is less thorough. We therefore propose to study nematode healthspan using the decline in rhythmic activity of the feeding organ (pharynx) as a selection metric for experimental evolution. To facilitate this project, we are developing three assay platforms based on three microfluidic chips. The first two assay platforms are lower throughput, higher resolution measures of pharyngeal health, while the third is a higher-throughput assay designed for experimental evolution. The first microfluidic device, the “electropharyngeogram chip”, allows us to quantify age-related declines in pharyngeal electrical activity. This approach shows the expected changes in pump frequency and prolonged health of known longevity mutants, as well as shows novel changes in pump patterning. The second device, the “feeding chip”, is designed to provide tight temporal control of food exposure while imaging feeding animals. It also will enable measurements of grinder (chewing) and peristalsis (swallowing) efficiency. The third device, the higher-throughput “sorter chip”, was designed for separating males from females, but now allows automated and programmable selection of high performing individuals from ~2000 animals per hour as measured by ingestion rates. We will present the developmental work for all three devices and for the methods with which we use them, as well as the intellectual framework in which we are using these devices to evolve a worm that stays healthier, longer.

Title: Examining Inefficiencies in NBA Player Development and Potential Solutions

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Connor Williamson

Co-Presenters: Gregory Bothun, Joshua Gordon, Daniel Rosenberg

Faculty Mentor: Josh Gordon, Greg Bothun

Major: Business Administration

Abstract:

Though the United States has maintained an impressive performance record in international athletic competition, its amateur sport infrastructure has become less efficient than that in many other countries. For late-development sports like basketball, in which early athletic training should be varied and specialized late, training these inefficiencies have led to a lower skill level among players in the highest league, the NBA. Basketball-specific factors, like the preps-to-pros era coinciding with the post-Jordan generation, have severely affected the training methods in American basketball. The NBA has taken note of this change, as the San Antonio Spurs make headlines with a roster of imports, the percentage of foreign players in the NBA has never been higher. As rule changes in the NBA have made for a faster game predicated on skill and savvy, the American pipeline of players has never been less prepared. This thesis will define problems with the current system in areas of physical, athletic, and mental athlete development and examining player development models through a holistic lens which digs into the underlying causes of skill deficiencies in the NBA player pool. After doing this, it will attempt to solve some of the major issues facing American basketball player development, like transitioning players into the NBA. Systems like Canada's Long Term Athlete Development and the youth academy system in German club football provide an extensive list of alternatives to assess. By taking the best aspects of each and adjusting them to the American environment, a better system can be designed. The results of this research point to unstructured nature of youth basketball, which is the root cause of issues like lack of coaching educational standards, as well as many other pervading the NBA player development pipeline.

Title: Characterization of a Pro-Proliferative Microbiota in Transgenic Drosophila

Presentation Type: Oral

Primary Research Area: Science

Presenter: Zoë Wong

Faculty Mentor: Karen Guillemin, Tiffani Jones

Major: Biology, Psychology

Abstract:

Gastric adenocarcinoma, or stomach cancer, is responsible for the second highest number of cancer-related mortalities. Infection with *Helicobacter pylori*, a human pathogen, is the strongest risk factor and results in clinical responses that vary from no symptoms, to ulcers, to gastric cancer. One major determinant of disease expression is the presence of a bacterial virulence factor, CagA. Transgenic *Drosophila* that express the CagA gene were generated in the Guillemin laboratory and can be used to genetically disentangle *H. pylori* infection from cagA expression. A simple microbial community, short generation time, easily manipulated genome, and the ability to be raised germ-free make *Drosophila* an ideal model organism.

The goal of my research is to determine the effect of dysbiotic, or altered microbiota of CagA transgenic flies. The dysbiotic microbial community of CagA transgenic flies consists of *Lactobacillus brevis* and *Acetobacter pomorum*. To address this, I reared control and CagA lines germ-free. I inoculated flies with either *L. brevis*, *A. pomorum*, or the combined CagA community. Adult flies were dissected after 7 days and gut contents were plated to quantify the abundance of each strain within the gut. Overall, CagA transgenic flies harbored a greater amount of total microbes within their gut, and interestingly flies that received the combined CagA community showed an increased total abundance of microbes regardless of fly genotype.

Title: Indian Beauty Pageants: Performing Indigeneity or Celebrating It?

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Cholena Wright

Faculty Mentor: Stephanie Teves

Major: Political Science

Abstract:

Beauty pageants get a bad rap. Since their inception they have had a precarious and convoluted relationship with feminism. Beauty pageants have been targeted for criticism and protest by feminists who claim they perpetuate the objectification and sexualization of women, present unrealistic models of femininity, and perpetuate harmful images of white/middle-class beauty standards. But what about Indian beauty pageants? Does this harmful culture cross-over into the indigenous model of beauty pageantry? Much like the conversation surrounding mainstream beauty pageants, the answer is complicated and nuanced. Indian beauty pageants were originally instituted as a colonizing mechanism, but over time they have evolved into cultural celebrations of indigenous traditions and beauty. Indian beauty pageants today are merely a shadow of their white supremacist history. Tracing the history through personal accounts of these pageants showcases the persistence and continued resistance of indigenous culture. Beauty pageants can be mechanisms for empowerment and an acknowledgement of female achievement, leadership, and talent. This is also true for Indigenous pageants. Throughout the Americas and the Pacific, these beauty pageants celebrate indigeneity and provide a space for indigenous queer locality. In spite of its flawed history, indigenous pageants are an indigenous feminist act that should not be underestimated as a tool for resistance and cultural revitalization.

Title: Shoalwater Bay Indian Tribe: Combatting a Stolen Generation through Environmental Regeneration

Presentation Type: Oral

Primary Research Area: Humanities

Presenter: Cholena Wright

Faculty Mentor: Brian Klopotek

Major: Political Science

Abstract:

Throughout the 1990s and early 2000s, the Shoalwater Bay Indian Tribe located in western Washington state fell victim to a mysterious run of reproductive challenges. Over the span of more than a decade the majority of pregnancies in the community resulted in miscarriage, still born, and infant mortality. This tragic and overwhelming loss of pregnancies went largely ignored for years and remains unexplained to this day. The paper will attempt to offer insight into the potential for environmental pollution and contamination due to nearby fishing, cranberry, and forestry industries. The industries were negligent in their use of endocrine disrupting toxins and pesticides. Thus, the paper will argue that these industries were the perpetrators of environmental racism against the Shoalwater, and directly involved in causing this reproductive tragedy. Environmental degradation has prevented countless tribes from practicing their traditional ways, encroached on their traditional territory, and had adverse effect on the health of these nations. The Shoalwater are a very extreme example of how environmental racism, harmful stereotypes, and wanton disregard practiced by industries can reify intergenerational trauma and perpetuate the stolen generation practices of colonialism.

Title: Umbrella Stand

Presentation Type: Poster 90

Primary Research Area: Design

Presenter: Daisy Yen

Faculty Mentor: Jessica Swanson, John Arndt

Major: Product Design

Abstract:

Douglas Fir trees are usually used as the material for furniture, poles, and flooring in some buildings, which usually consume a large quantity of wood. Since people are now more aware of environmental issues and how long it takes for a tree to grow a certain size, the wood industry has begun designing and producing smaller home-goods products. The umbrella stand represents the smaller furniture and home accessories that are made out of Douglas Fir. The top and bottom pieces are each made from three layers of thin slices of fir, which were soaked in hot water

for thirty minutes, then bent individually around a mold to achieve the round shape. They are then glued together after shaping and drying them individually. The four sides are also each made out of three thin slices of fir, which were placed on top of the mold and formed their shape in a vacuum bag for up to ten hours. Through bending the fir, I found out that certain density and colors of grains are easier to bend in certain directions, so choosing the right part of the wood for a specific part is essential and can affect whether the slices are able to bend successfully. Learning how to work with fir requires first getting to know its characteristics so as to be able to work around those instead of forcing the wood to conform to shapes that are not suitable.

Title: Eyewitness Memory: How Stress and Situational Factors Affect Eyewitness Recall

Presentation Type: Oral

Primary Research Area: Social Science

Presenter: Anne Yilmaz

Faculty Mentor: Robert Mauro

Major: Psychology

Abstract:

As eyewitness memory and its current admissibility as evidence in courts have come under scrutiny, thousands of studies have been conducted examining variables that affect the accuracy of eyewitness memory. These variables are typically broken up as system and estimator variables—the first being factors affecting memory that are controllable after the event and the latter being uncontrollable situational factors that took place during the event. Decades of research has concluded that stress can both inhibit and enhance memory; this literature review will focus on the tie between stress, memory and various estimator variables such as seriousness, group eyewitness memory, weapon-focus, and victim vs bystander observation of a crime. Both field and lab studies will be examined. Despite the breadth of research in both eyewitness memory and stress's effect on memory, there has been no comprehensive review in recent years combining stress and memory research with eyewitness data. This literature review will serve to bridge that gap and provide resources for those looking to continue research in the field of stress, situational psychology and eyewitness memory.

Title: *Reflections on Water*, a Photographic Narrative of the McKenzie Watershed from Top to Tap

Presentation Type: Poster 91

Primary Research Area: Fine/Performance Arts

Presenter: Nicole Zavoshy

Co-Presenters: Anya Vollstedt, Chancee Stumpf, Riley Fortier, Sulley Schuster

Faculty Mentor: Katie Lynch, Peg Boulay

Major: Biology, Environmental Science

Funding Source: Anonymous Donor

Abstract:

Reflections on Water is a team of nine students who were inspired by the beauty of the McKenzie River Watershed. This interdisciplinary project of the Environmental Leadership Program at the University of Oregon showed an interest of photographing and encouraging people to reflect upon their relationship with their water source. Did you know Eugene gets its drinking water from the McKenzie River? Beginning at the headwaters of the McKenzie River at Great Spring and Clear Lake, the Reflections Team captured the journey of the McKenzie as it traveled underground, over cliffs, past dams, and through an intensive filtration process before being distributed throughout the city of Eugene. With cameras in hand, the Reflections on Water Team sought to illuminate the beauty, recreational opportunities, and resources that these waters provide. We hope to inspire personal connections, instill understanding, and encourage people to experience the river for themselves.

Undergraduate Symposium 2016 Presenters

Sabrina Abdulla	Alyssa Dawson	Artesia Hubbard	Joe Nickless	Chancee Stumpf
Anisha Adke	Cassidy DeBlois	Alyssa Humphrey	McKenna O'Dougherty	Dongxue Su
Courtney Adler	Daniel Derrick	Jacob Hyman	Kara Orsolini	Jesse Summers
Daisy Ahlstone	Karly DeWees	Catherine Jaffe	Daniel Palau	Colin Takeo
Sophia Albanis	Taylor Dodrill	Morgan Janes	Michael Parappilly	Austin Thompson
Sharon Alitema	Sandra Dorning	Patrick Johnson	Brittany Parham	Alexa Thornton
Maryam Alnemer	Caroline Doss	Briauna Jones	Elliot Parrish	Lucille Travis
Brigette Amidon	Ulysses Duckler	Wanjiru Karanja-Senge	Carly Pate	Katya Trousset
Jacob Armas	Kelsey Dunne	Kiara Kashuba	Madeleine Pears	John Tuttle
Sarah Arnell	Celia Easton Koehler	Lila Kaye	Mara Elise Peasley	Mitchell VanVuren
Shelby Arnson	Sambath Eat	Josephine Kinney	Amanda Perkins	Nayelli Velazquez
Claire Aubin	Harley Elliott	Helena Klein	Anna Karvina Pidong	Julie Voelker-Morris
Jonathan Bach	Nathan Engelmann	Evan Kline	Cortelle Pletcher	Anya Vollstedt
Benjamin Bachman	Jennifer Esparza	Anne Kloos	Katalin Plummer	Jonathan Wallace
Manju Bangalore	Alani Estrella	Adriane Knorr	Kennedy Potts	Kendra Walters
Alexander Bean	Samuel Estrella	Brent Koekkoek	Gianna Prather	Hoi Nga Wan
Augustine Beard	Jonathan Faris	Haruka Komiyama	Basil Price	Minyuan Wang
Josie Beavers	Mai'ana Feuerborn	Katia Krane	Braden Prillwitz	Erin Weaver
Eva Biedron	Thomas Forman	Phillip Kriegel	Maisie Rapp	April Wheeler
Jacob Bieker	Riley Fortier	Theodore LaGrow	Rachel Rechtman	Therese Wichmann
Cesare Bisbocci	David Gallacher	Kevin Lai	Nicholas Rinehart	Brandi Wilkens
Alyssa Bjorkquist	Claire Getz	Brittany Lang	Jordyn Roach	Kelley Williams
Chelsey Boguslawski	Malin Anett A Gjerdseth	Mila Lassuy	Selina Robson	Connor Williamson
Varneet Brar	Patrick Glang	Amy Lee	Samuel Rodgers	Christopher Wilson
Korinne Breed	Dana Glasscock	Nathaniel Leigh	Andrew Rogers	Nathan Wolk
Shannon Brown	Enrique Gomez	Phoebe Lett	Jessica Romeo	Zoÿ Wong
Adam Buchanan	Collette Goode	Xiaoran Li	Abigail Ross	Skyland Worman
Sarah Buck	Lexie Gordo	Anna Lind	Angela Maya Rothman	Cholena Wright
Emma Burke	Leslie Gotuaco	Luc Lisi	Madeline Salzman	Tai Ju Yen
Erik Burlingame	Kiley Graham	Scarley Liu	Megan Schucht	Anne Yilmaz
Carly Bushman	Ruth Grenke	Kaitlin Loomis	Leonie Schulze	Nicole Zavoshy
Benjamin Camel	Willem Griffiths	Samantha Lowery	Sulley Schuster	Yaoying Zhang
Eryn Cang	Yue Gu	Kristina Lowney	Mandi Severson	
Sarah Carey	Georgeana Gutierrez	Maxfield Lydum	Zachary Sherrod	
Taylor Carlson	Quinn Haaga	Josiah Makinster	Grace Shum	
Victoria Carroll	Eliza Hallett	Lauren Maloney	Andrew Siemens	
Belicia Castellano	Felicia Hamilton	Kyla Martichuski	Dayna Silvani	
Katelyn Castro	Meagan Hamilton	Ashley Maton	Alexis Skaw	
Roshan Chikarmane	Sarianne Harris	Elizabeth Maynard	Spencer Smith	
Joshua Coon	Brynn Harrison	Ethan McCormac	Alexia Smith	
Brady Cox	Alyssa Harry	Hanna McIntosh	Priscilla Sol	
William Crowley	Jessica Hawe	Kassandra McIntyre	Namratha Somayajula	
Andrea Cueva	Madeline Hay	Natasha Mckibben	Olivia Somhegyi	
Justin Culman	Katrina Henderson	Dorothea Mosman	Brianna Stamas	
Thomas Dasso	Anna Hickey	Cara Murray	Victoria Stanfill	
Bailey Davenport	Collin Hickmann	Aaron Nelson	Erika Stanford	
Garrett Davidson	Champe Holbeck	Justine Nguyen	Amanda Stanton	
Megan Davis	Rebecca Howard	AJ Nichols	Charles Steenkolk	

Undergraduate Symposium

2016 Faculty Mentors

Daniel Abrams	Stephen Frost	Peter Laufer	Jimena Santillan
John Arndt	Daniel Gavin	Andrew Lovering	Robert Schofield
Daniel Avesar	Spike Gildea	Sharon Luk	Kristen Seaman
William Ayres	Josh Gordon	Kathryn Lynch	Angela Seligman
Melissa Baese-Berk	Jessica Green	Jake Mahon	Eric Selker
Matt Bailey	Annie Greenaway	Stephanie Majewski	Autumn Shafer
Barbara Baird	Karen Guillemin	Galen Martin	Kim Sheehan
Stephen Banse	Gantt Gurley	Robert Mauro	George Sheridan
Justin Barry	Patricia Gwartney	Carrie McCurdy	Heather Shoenberger
John Baumann	Michael Hahn	John McGuire	Carol Silverman
Gerald Berk	Michael Haley	Erin McKenna	Laura Smithers
Vincent Bicocca	Jennifer Hampton	Win McLaughling	Josh Snodgrass
Ilya Bindeman	JJ Hannigan	Jeffrey Measell	Susan Sokolowski
Louise Bishop	Benjamin Hansen	Pranjal Mehta	Helen Southworth
Shannon Boettcher	Bill Harbaugh	Christopher Minson	Carol Stabile
Brendan Bohannon	Erica Hartmann	Dan Morrison	Sean Stankowski
Elizabeth Bohls	Kevin Hatfield	Barbara Mossberg	Kryn Stankunas
Fern Bosada	Diane Hawley	Reza Motamedi	Matt Streisfeld
Greg Bothun	Julie Heffernan	Dean Mundy	Kelly Sutherland
Mayra Bottaro	Lauren Hendricks	Madison Myers	Jessica Swanson
Peg Boulay	Ellen Herman	George Nazin	Ben Taber
Colin Brand	Julie Hessler	Lucas Nebert	Alexandra Tallafuss
Rachel Branson	Byron Hetrick	Greg Nelson	Stephanie Teves
Steven Brence	Kassandra Hishida	Helen Neville	Courtney Thorsson
Stephanie Budin	Jan Hodder	Boyana Norris	Don Tucker
Jamie Bufalino	Sara Hodges	Jennifer O'Neal	Dave Tyler
Mark Carey	Claudia Holguin	Tereza Ormsby	Chet Udell
Mai-Lin Cheng	Samantha Hopkins	John Park	Gail Unruh
Li-Shan Chou	Terry Hunt	Justine Parkin	Sebastian Urioste
Anita Christie	Maile Hutterer	CJ Pascoe	Roo Vandegrift
Shaul Cohen	Jenni Hyunh	Michael Peixoto	Frank Vignola
Susan Cooper	James Imamura	Quinn Peterson	Robert Voelker-Morris
Eric Corwin	Trond Jacobsen	Josh Peterson	Julie Voelker-Morris
Patricia Curtin	Mary Jaeger	Jennifer Phillips	Peter von Hippel
Simone Da Silva	Nicholas Jew	David Phillips	Paul Wallace
Brain Dalton	Darren Johnson	Patrick Phillips	Akiko Walley
Edward Davis	Tiffani Jones	Judy Pierce	Hailin Wang
Brent Dawson	Davis Jose	Shannon Pomeroy	Philip Washbourne
Brianna Delker	Loren Kajikawa	Anne Powell	Saywer Watson
kassia dellabough	Andy Karduna	Roxanne Prazniak	Laura Wayte
Victoria DeRose	Kate Karfilis	Ken Prehoda	Janis Weeks
Chris Doe	Tyler Kendall	Heather Quarles	Mike Wehr
Alexander Dracobly	Geoff Kennedy	Sheila Rabun	Aldis Weible
Dianne Dugaw	Charles Kimmel	Reza Rejaie	Mark Whalan
Andrea Eller	Ann Klein	David Remund	Elizabeth Wheeler
Brett Ely	Brian Klopotek	Geri Richmond	Frances White
Richard Emlet	Erik Knight	Andrew Riley	Marjorie Woollacott
Charlie Farrington	Parker Krieg	Cathy Robinson	Ivana Yang
Trygve Faste	Kathryn Kuttis	Stephen Rodgers	Craig Young
Scott Fitzpatrick	Alison Kwok	Annah Rolig	Dasa Zeithamova-Demircan
Alyssa Franco	Robert Kyr	Leslie Roos	
David Frank	Sen-Lin Lai	Bitty Roy	

Undergraduate Symposium 2016 Presenter Statistics

Total presentations: 186

Total presenters and co-presenters: 236
(179 presenters and 57 co-presenters)

Total faculty mentors: 213

Total majors: 57

Multi-term projects: 117 (63%)

Single-term projects: 61 (33%)

Study abroad/international research projects: 6 (3%)

Service learning projects: 2 (1%)

Poster presentations: 97 (52%)

Oral presentations: 80 (43%)

Creative work projects: 9 (5%)

Science projects: 84 (45%)

Social science projects: 51 (27.5%)

Humanities projects: 37 (20%)

Fine Arts projects: 14 (7.5%)

Majors Represented

(including double majors for interdisciplinary projects):

College of Arts and Sciences: (226)

Biology: 29
Human Physiology: 20
Environmental Science: 16
Environmental Studies: 14
Psychology: 14
English: 13
History: 12
Biochemistry: 10
Physics: 10
Spanish: 8
Economics: 7
Chemistry: 6
Geological Sciences: 6
Marine Biology: 6
Anthropology: 5
Math: 5
Political Science: 5
Philosophy: 4
International Studies: 4
Folklore: 3
General Science: 3
Geography: 3
Women and Gender Studies: 3
Computer and Information Science: 2
French: 2
Latin American Studies: 2
Linguistics: 2
Archeology: 1
Asian Studies: 1
Cinema Studies: 1
Classic Civilization Minor: 1
Comparative Literature: 1
Ethnic Studies: 1
Film Studies Certificate: 1

Medieval Studies: 1
Religious Studies: 1
Romance Languages: 1
Russian, East European,
and Eurasian Studies: 1
Sociology: 1

Robert D. Clark Honors College: (63)

Biology: 9
English: 6
Human Physiology: 6
Psychology: 4
Biochemistry: 3
Economics: 3
Marine Biology: 3
Architecture: 2
Computer and Information Science: 2
Environmental Science: 2
Environmental Studies: 2
Geological Sciences: 2
International Studies: 2
Music: 2
Spanish: 2
Accounting: 1
Anthropology: 1
Business Administration: 1
Chemistry: 1
Cinema Studies: 1
Digital Arts: 1
French: 1
General Science: 1
Geography: 1
History: 1
Journalism: 1
Journalism-Advertising: 1

Journalism-Public Relations: 1
Material and Product Studies: 1
Mathematics: 1
Philosophy: 1
Physics: 1
Romance Languages: 1

College of Education (29)

Educational Foundations: 24
Education: 5

School of Architecture and Allied Arts: (25)

Architecture: 12
Product Design: 4
Art History: 3
Art: 2
Digital Arts: 2
Planning, Public Policy and Management: 2

School of Journalism and Communication: (10)

Journalism: 3
Journalism-Public Relations: 4
Journalism-Advertising: 3

School of Music and Dance: (7)

Music: 2
Music History: 1
Music Composition: 2
Music Composition-Violin: 1
Music Technology: 1

Lundquist College of Business: (3)

Business Administration: 2
Accounting: 1

Sponsored/Funded Research:

American Gastroenterological Association: 1
Colleges of Arts and Sciences Travel Grant: 1
Government of Azerbaijan: 1
HHMI/National Academies Summer Institutes for Undergraduates: 1
Huestis–McLean Memorial Scholarship, Department of Biology: 1
Humanities Undergraduate Research Fellowship (HURF): 4
Luvaas Family Fund of the Oregon Community Foundation: 1
McNair Scholars Program: 3
The National Heart, Lung, and Blood Institute: 1
NICDH—Oregon Undergraduate Researchers in SPUR: 5
NIH—National Institute of Diabetes and Digestive and Kidney Diseases: 1
NIH—National Institute of General Medical Sciences Grant: 1
NIH—University of Colorado-Anschutz Medical Campus, The Graduate Experience for Multicultural Scholars (GEMS): 1
NSF—Research Experiences for Undergraduates: 1
Presidential Undergraduate Research Scholars Program: 9
REU, National Science Foundation & Northwestern University: 1
Robert D. Clark Honors College Study Abroad Grant: 1
Robert D. Clark Honors College Thesis Research Grant: 2
Sasakawa Peace Foundation: 1
Scholarships for Oregon Scientists, University of Oregon and National Science Foundation: 1
Scientific Mentorship and Research Training (SMART) in Biology Scholar, Department of Biology Department: 1
Student Affiliates of the American Chemical Society (SAACS) Summer Research Award: 1
Swayne Family Scholarship: 1
Tom and Carol Williams Fund for Undergraduate Education: 1
University of Oregon-UNESCO Crossings Institute: 1
University of Oregon UnderGrEBES Research Grant, Institute of Ecology and Evolution: 11
Undergraduate Research Opportunities Program- Mini-grant: 22
Undergraduate Research Fellowship, Center on Teaching and Learning: 1
Undergraduate Summer Research Award: 1
United States Holocaust Memorial Museum, Research Seminar: 1
Walter Youngquist Scholarship, Department of Geology: 1

