27th Annual Linfield College
Student Symposium

A Celebration of Scholarship and Creative Achievement
May 17, 2019

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**Schedule At-A-Glance**

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<th>Miller Fine Arts Center</th>
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<td>9:00</td>
<td>Grand Avenue</td>
<td>Delkin Hall</td>
<td>Marshall Theatre</td>
<td>Linfield &amp; Lou Galleri</td>
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*Quiet please during events in the Austin Reading Room. Refreshments will be available in the Nicholson Library throughout the day.*
<table>
<thead>
<tr>
<th>TIME</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>PRESENTATION</th>
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<tbody>
<tr>
<td>9:00 a.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Nathan J. Saragoza, Alexandra Bushman, Hanna Bingham, Cassidy Robinson, Samantha Weymouth, Luca Mallon, “Intercollegiate Wine Business Invitational”</td>
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<tr>
<td>9:00 a.m.</td>
<td>Debate</td>
<td>Marshall Theatre</td>
<td>April Alvarez, Kelsey Bruce, Mia Burnett, Melissa Garibay, Emmaline Irvine, Angela McKelvey, and Diana Vazquez Duque, “Linfield Forensics (Speech and Debate) Showcase”</td>
</tr>
<tr>
<td>9:00 a.m.</td>
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<td>Ford Hall Lobby</td>
<td>Sabine Ganezer, “Like Fireworks Weeping into Bloom”</td>
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<td>9:15 a.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Jenny Horniman, “A Comparative Analysis of Immigrant Integration Methods in France, Germany, and the Netherlands”</td>
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<tr>
<td>9:30 a.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Troy Taylor, “Quantifying Complex Systems via Computational Fly Swarms”</td>
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<tr>
<td>10:00 a.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>José Madrid Beltran, “Stigmatization of HIV: Nearly Four Decades Later”</td>
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<td>10:15 a.m.</td>
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<td>Nick Villalobos, “Transferring Power through a Magnetic Couple”</td>
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<td>10:15 a.m.</td>
<td>Oral Presentation</td>
<td>Ford Hall Lobby</td>
<td>Keri Dixon, “Mrs. Burton’s Breasts: Mapping Bodies in Elizabeth Nunez’s Prospero’s Daughter”</td>
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<tr>
<td>10:30 a.m.</td>
<td>Short Film</td>
<td>Nicholson Screening Room</td>
<td>Bruce Li, “Toxic: A Short Film”</td>
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<tr>
<td>10:30 a.m.</td>
<td>Oral Presentation</td>
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<td>Kate Henley, “Curing Racism: Infecting and Healing a Colonized World”</td>
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<td>Oral Presentation</td>
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<td>Olivia Gomez, “The Marked and the Magic in Prospero’s Daughter: Contextualizing Postmodern Witchcraft Accusations With the Early Modern”</td>
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<tr>
<td>11:00 a.m.</td>
<td>Oral Presentation</td>
<td>Austin Reading Room</td>
<td>Hannah Fisher, “Selling Childhood: How the Middle Class Used Children in the Anti-Tuberculosis Movement (1930s-1940s)”</td>
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<tr>
<td>11:00 a.m.</td>
<td>Music Performances</td>
<td>Delkin Hall</td>
<td>Pedro Grateterol, Preston R. Turner, Keri Dixon, and Avery Moen, “Music Showcase”</td>
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<tr>
<td>11:00 a.m.</td>
<td>Oral Presentation</td>
<td>Ford Hall Lobby</td>
<td>Chu Kong Adrian Iu, “Love Is Not Just Love: Approaching “Tragedy” Cross-Culturally”</td>
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<td>Austin Reading Room</td>
<td>Ruby Guyot, “Horses, Heroism, and Heimat: Rebuilding and Reinstating Gender Roles in Die Mädels vom Immenhof (1955)”</td>
</tr>
<tr>
<td>12:30 p.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Wilson Miles, “Militarism in the U.S.: The Post-2001 Diaspora of Security Aid”</td>
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<tr>
<td>12:30 p.m.</td>
<td>Theatre Performances</td>
<td>Marshall Theatre</td>
<td>Antoine Johnson, Nicole Tigner, Elise Martin, and Alexandria Hunter, “Performing Theatre Audition Scenes”</td>
</tr>
<tr>
<td>12:45 p.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Jordan Keller, “High Desert Journal: Editing with Focus”</td>
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<td>Delkin Hall</td>
<td>Melory Mirashrafi, “Renaming and Rethinking Middle Eastern Theatre”</td>
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<tr>
<td>1:15 p.m.</td>
<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Liam Pickhardt, “An elephant never forgets: The dark side of tourism in Thailand”</td>
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<td>Oral Presentation</td>
<td>Delkin Hall</td>
<td>Dave Nagaji, “Virtue Ethics and Quaker Traditions”</td>
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## Presentations by Department

### ANTHROPOLOGY

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<tr>
<th>DESCRIPTION</th>
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| Traditional Medicine in Northern Peru: Identifying Preferences and Cultural Uses of Medicinal Plants  
*Elide Sanchez Rivera | Faculty Sponsor - Thomas Love* | 14 |
| Stigmatization of HIV: Nearly Four Decades Later  
*José Madrid Beltran | Faculty Sponsor - Robert Gardner* | 67 |

### BIOCHEMISTRY

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<th>DESCRIPTION</th>
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| Copper Modulation to Effect Yeast Lifespan  
*Zachary Sherlock | Faculty Sponsor - Megan Bestwick* | 21 |
| Fluorescent Visualization of In Vitro Mitochondrial DNA Transcription  
*Kelsey Bruce | Faculty Sponsor - Megan Bestwick* | 23 |
| Fluorescent Detection of Reactive Oxygen Species in *Saccharomyces cerevisiae*  
Applied to Chronological Lifespan  
*Kelly Schultz | Faculty Sponsor - Megan Bestwick* | 49 |

### BIOLOGY

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| Genome Annotation of *Drosophila takahashi*  
*Bronwyn Boyd | Faculty Sponsor - Catherine Reinke* | 16 |
| Characterization of Mre11 Gene Variants in Cancer  
*Cristina Mateos, Ashley Headrick, Itzel Romero, and Sydney Kuehn | Faculty Sponsor - Sreerupa Ray* | 20 |
| Comparing Feeding Patterns among Two Sponge Species in the Lower Florida Keys  
*Vanessa Van Horn, Anna Peckham, and Carmen Hoffbeck | Faculty Sponsor - Jeremy Weisz* | 34 |
| How Changes in Plant Community Structure Affect Ant Communities  
*Austin Hilton and Alena Salazar | Faculty Sponsor - Chad Tillberg* | 37 |
| Exploring Yeast Diversity at Brick House Vineyards, a Biodynamic Vineyard in Newberg, Oregon  
*Alexander Morse | Faculty Sponsor - Jeremy Weisz* | 56 |

### BUSINESS

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| Intercollegiate Wine Business Invitational  
*Nathan J. Saragoza, Alexandra Bushman, Hanna Bingham, Cassidy Robinson, Samantha Weymouth, and Luca Mallon | Faculty Sponsors - Gregory Jones, Virleña Crasley, and Russ Paine* | 5 |

### CHEMISTRY

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<th>DESCRIPTION</th>
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| In Vitro Determination of Potency of Small Molecule Inhibitors of Arp2/3 Complex  
*Katherine Andersen, Natalie Wade, Shelby DeRocher, Jordan Collins (Bucknell University), Christina Pierson (Bucknell University), Levent Cavas (Dokuz Eylul University), Zoe Courntia (Bioacademy of Athens), Brad J Nolan (University of Oregon) | Faculty Sponsor - Andrew Baggett* | 7 |
| Plasmon-free Surface-enhanced Raman Spectroscopy on TiO$_2$-graphene Oxide Inverse Opal Substrates  
*Luis Perez | Faculty Sponsor - Elizabeth J. O. Atkinson* | 29 |
| Synthesis of Small Molecule Derivatives of CK-666 as Potential Inhibitors of the Arp2/3 Complex  
*Atchara Sripeng, Natalie Wade, Brad J. Nolan (University of Oregon) | Faculty Sponsor - Andrew Baggett* | 40 |
| Separation of Nucleic Acids by Ion Pair Reversed Phase High Performance Liquid Chromatography (IP RP HPLC)  
*Zachary McLeod | Faculty Sponsor - Megan Bestwick* | 52 |

*Students with a description number of 1-61 can be found in the Grand Avenue of Nicholson Library.  
Even-numbered presenters will be present from 9:30-11 a.m. Odd-numbered presenters will be present from 1-2:30 p.m.*
Synthesis of 4-Thiazolidinone Small Molecules as Potential Inhibitors of the Arp2/3 Complex
Haley Smith, and Brad J. Nolen (University of Oregon) | Faculty Sponsor - Andrew Baggett

COMMUNICATION ARTS/RHETORIC

In Search of a Genre: An Analysis of Political Campaign Rhetoric Used in Swing Races in the 2018 Midterm Elections
Annika Albrecht | Faculty Sponsor - Brenda DeVore Marshall

A Performative and Feminist Criticism of the Always #LikeAGirl Ad Campaign: Addressing Gender Stereotypes in Sports
Heather McNutt-Kaestner | Faculty Sponsor - Brenda DeVore Marshall

Persuasive Messaging in Facebook’s “Here Together” Campaign to Save Face and Rebuild Consumer Trust
Elisia Harder | Faculty Sponsor - Brenda DeVore Marshall

Understanding Body Images in the Media: A Feminist Critique of Dove’s Real Beauty Campaign
Megan Ditore | Faculty Sponsor - Brenda DeVore Marshall

Linfield Forensics (Speech and Debate) Showcase
April Alvarez, Kelsey Bruce, Mia Burnett, Melissa Garibay, Emmaline Irvine, Angela McKelvey, and Diana Vázquez Duque | Faculty Sponsors - Una Kimokeo-Goes and Jackson Miller

ECONOMICS

Financial Determinants of Yield Rates for Bachelor of Arts and Sciences Colleges
Kainoa Cuttitta and Mariah Moore | Faculty Sponsor - Jeff Summers

The Impact of Professional Sports on Cities’ Economic Performance
Carter Mensing and Chris Cassi | Faculty Sponsor - Jeff Summers

The Responsiveness of Admitted Student Enrollment to Changes in the Net Tuition Price at Linfield College
Sarah Linton and Justine Schoenbacher | Faculty Sponsor - Jeff Summers

An Investigation into the Economic Thought of Medieval Arab-Islamic Scholars and Enlightenment Philosophers
Riley E. Clayeux | Faculty Sponsor - Randy R. Grant

Forecasting New Housing Starts Using Real GDP and Average 30-Year Fixed Mortgage Rates
Lindsay Fowler | Faculty Sponsor - Jeff Summers

The Effect of Net Costs on Yield Rates of U.S. Private Law Schools
Justin Meyer and Magdalena Ceja Mendoza | Faculty Sponsor - Jeff Summers

The Effect of Athletic Success on Charitable Donations at Power 5 Conference Schools
Lukas Sherman | Faculty Sponsor - Jeff Summers

Factors That Affect College Graduation Rates of Minorities
Mauricio Duran, Eben Drake-Mudede | Faculty Sponsor - Jeff Summers

ENGLISH: CREATIVE WRITING

High Desert Journal: Editing with Focus
Jordan Keller | Faculty Sponsor - Joe Wilkins

Like Fireworks Weeping into Bloom
Sabine Ganezer | Faculty Sponsor - Joe Wilkins

Farmboy Instruction Manual: Rural Identity in Poetry & Creative Nonfiction
Donovan Douglas | Faculty Sponsor - Joe Wilkins

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Even-numbered presenters will be present from 9:30-11 a.m. Odd-numbered presenters will be present from 1-2:30 p.m.
ENGLISH: LITERATURE

Mrs. Burton’s Breasts: Mapping Bodies in Elizabeth Nunez’s *Prospero’s Daughter*
Keri Dixon | Faculty Sponsor - Daniel Pollack-Pelzner

Curing Racism: Infecting and Healing a Colonized World
Kate Henley | Faculty Sponsor - Daniel Pollack-Pelzner

The Marked and the Magic in *Prospero’s Daughter*: Contextualizing Postmodern Witchcraft Accusations With the Early Modern
Olivia Gomez | Faculty Sponsor - Daniel Pollack-Pelzner

Love Is Not Just Love: Approaching “Tragedy” Cross-Culturally
Chu Kong Adrian Iu | Faculty Sponsors - Daniel Pollack-Pelzner, Jamie Friedman, and Rachel Norman

ENVIRONMENTAL STUDIES: SCIENCE FOCUS

Survivorship and Growth of Seedlings and Saplings in Urban Forests
*William W. McCuen and Austen F. Bassler (Oregon City High School)* | Faculty Sponsor - Nancy Broshot

HEALTH, HUMAN PERFORMANCE AND ATHLETICS

Physical Activity and the Health Related Components of Physical Fitness in People with Visual Impairment: A Systematic Review
*Sarah Bell* | Faculty Sponsor - Janet Peterson

Movement Capability Changes in Collegiate Basketball Players Following a Corrective Exercise Program
*Kathy Armstrong, Bailey McDevitt, Kaitlin Baumann, Liam O’Reilly, and Yasmeen Ramos* | Faculty Sponsor - Cisco Reyes

Use of the Functional Movement Screening in Division III Collegiate Athletics
*Kathy Armstrong, Bailey McDevitt, Kaitlin Baumann, Liam O’Reilly, and Yasmeen Ramos* | Faculty Sponsor - Cisco Reyes

Pig Tales: Forensic Taphonomy in Cozine Creek
*Audrey Hyem and Cailyn Cattell* | Faculty Sponsor - Elizabeth DeVisser

The Effects of Social Stress on Voluntary Running Behavior in Female Mice
*Cailyn Cattell* | Faculty Sponsor - Sarah Coste

Comparing the Effects of Various Exercise Regimens on Anxiety Levels in College Aged Students
*Drew McHugh, Alex Reid, and Ellen Nopp* | Faculty Sponsor - Sarah Coste

Validity and Reliability of Devices Measuring Countermovement Vertical Jump Performance
*Danielle Steinman, Maddie Shirley, and Michael Fuller* | Faculty Sponsor - Cisco Reyes

Dietary Intake of Collegiate NCAA Football Players: Division I vs. Division III
*Ashley Filler, Elizabeth DeFrang, Darian Stedman, and Wendy Repovich (Eastern Washington University)* | Faculty Sponsor - Janet Peterson

NCAA Division III Football Players’ Dietary Intake: In-Season Vs. Off-Season
*Elizabeth DeFrang* | Faculty Sponsor - Janet Peterson

Effects of Foam Rolling on Flexibility
*Michaela Adams, Kyco McKillip, Tiffany Wall, and Arielle Vu* | Faculty Sponsor - Sarah Coste

The Effects of Exercise on Cerebral Palsy
*Cameron Kemper* | Faculty Sponsor - Janet Peterson

HISTORY

Linfield College Public History Project: World War II as Experience and Memory
*Elisia Harder, Ruby Guyot, Kara Skokan, and Melvin Van Hurck* | Faculty Sponsors - Lissa Wadewitz, Rachel Schley, and Rich Schmidt
Selling Childhood: How the Middle Class Used Children in the Anti-Tuberculosis Movement (1930s-1940s)
Hannah Fisher | Faculty Sponsor - Sharon Bailey Glasco

Horses, Heroism, and Heimat: Rebuilding and Reinstating Gender Roles in Die Mädels vom Immenhof (1955)
Ruby Guyot | Faculty Sponsor - Sharon Bailey Glasco

JOURNALISM AND MEDIA STUDIES

Market Research for Artist Website
Gillian Wilson | Faculty Sponsor - Susan Currie Sivek

Neck Braces in Motocross
Malia Riggs | Faculty Sponsor - Susan Currie Sivek

Toxic: A Short Film
Bruce Li | Faculty Sponsors - Michael Huntsberger and Susan Currie Sivek

An elephant never forgets: The dark side of tourism in Thailand
Liam Pickhardt | Faculty Sponsors - Susan Currie Sivek and Brad Thompson

MUSIC

Mozart’s Piano Quartet in Eb Major, K. 493
Pedro Graterol | Faculty Sponsor - Johnandrew Slominski

Europe
Preston R. Turner | Faculty Sponsors - Joan Paddock and Andrea Reinkemeyer

Honors Recital: “5 Lieder” by Alma Mahler (1879-1964)
Keri Dixon | Faculty Sponsor - Johnandrew Slominski

“Sonate für Flöte und Klavier” by Paul Hindemith (1895–1963)
Avery Moen | Faculty Sponsor - Abigail Sperling

Like Fireworks Weeping into Bloom
Sabine Ganezer | Faculty Sponsor - Joe Wilkins

PHILOSOPHY

Response through the Intentional Arc: Merleau-Ponty, Dreyfus and Second Language Acquisition
Mia Burnett | Faculty Sponsor - Leonard Finkelman

PHYSICS/APPLIED PHYSICS

Detecting Changes in Pressure Using a Graphene Field Effect Transistor
Benedikt Toeldte | Faculty Sponsor - Michael Crosser

Exploring the Electrical Properties of Twisted Bilayer Graphene
William Shannon, Byron D. Greenlee, Joseph Murphy, and Joel Toledo-Urena | Faculty Sponsor - Jennifer Heath

Manufacturing and Testing the Permanent Magnet Linear Motor with Two Structures
Renjie Kang | Faculty Sponsor - Tianbao Xie

Field Electron Emission of Hafnium Carbide
Morgan Chamberlain | Faculty Sponsor - Bill Mackie

Exploring the Influence of Wind Turbine’s Blades on Its Output and Efficiency
Siyun Yang | Faculty Sponsors - Tianbao Xie and Michael S. Crosser

Quantifying Complex Systems via Computational Fly Swarms
Troy Taylor | Faculty Sponsor - Joelle Murray

Transferring Power through a Magnetic Couple
Nick Villalobos | Faculty Sponsor - Tianbao Xie

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POLITICAL SCIENCE

New Zealand and the United States Compared: Campaign Finance Laws and Voter Efficacy
Annika Albrecht | Faculty Sponsor - Dawn Nowacki 13

The Fire Is upon Us
Aspen Brooks and Maddy Colson | Faculty Sponsor - Nicholas Buccola 31

The New Role of Corporate Social Responsibility in the Digital Age
Isaac Grebisz | Faculty Sponsor - Patrick Cottrell 41

Generational Turnover and Political Institutions in the U.S. and Spain
Aspen Brooks | Faculty Sponsor - Dawn Nowacki 59

A Comparative Analysis of Immigrant Integration Methods in France, Germany, and the Netherlands
Jenny Horniman | Faculty Sponsor - Dawn Nowacki 65

Militarism in the U.S.: The Post-2001 Diaspora of Security Aid
Wilson Miles | Faculty Sponsor - Patrick Cottrell 73

PSYCHOLOGY

Opiate Drug Seeking and Addiction: The Influence of Sucrose Consumption on the Acquisition and Expression of Morphine-induced Conditioned Place Preferences (CPP)
Shareeta Senthithasan, Isabel R. Berger, and Stephanie Wolff | Faculty Sponsor - Lee Bakner 9

An Experimental Study of the Priming Effects of Objectified Words
Shareeta Senthithasan, Monique Vega, Lara Martz, and Diana Vazquez Duque | Faculty Sponsors - Tanya Tompkins and Jennifer Linder 10

“I Am a Hot Box of Rice”: Influence of Makeup Advertisements on Women’s Self-Objectifying Statements
Diana Vazquez Duque, Lara Martz, Shareeta Senthithasan, and Monique Vega | Faculty Sponsors - Tanya Tompkins and Jennifer Linder 17

Depression and Anxiety Are Not the Same: Mental Health and College Student Well-Being over Time
Catherine Dirksen | Faculty Sponsor - Yanna Weisberg 22

RELIGIOUS STUDIES

Virtue Ethics and Quaker Traditions
Dave Nagaji | Faculty Sponsor - David Fiordalis 76

THEATRE

A “Prop-er” Look at Dr. Jekyll and Mr. Hyde
Nathan Dillon | Faculty Sponsor - Derek Lane 3

No Guts, No Glory: Stage Managing Dr. Jekyll and Mr. Hyde
Erika Glas | Faculty Sponsor - Derek Lane 24

Renaming and Rethinking Middle Eastern Theatre
Melory Mirashrafi | Faculty Sponsor - Lindsey Mantoan 75

Performing Theatre Audition Scenes
Antoine Johnson, Nicole Tigner, Elise Martin, and Alexandria Hunter | Faculty Sponsor - Janet Gupton 78

WINE STUDIES

Intercollegiate Wine Business Invitational
Nathan J. Saragoza, Alexandra Bushman, Hanna Bingham, Cassidy Robinson, Samantha Weymouth, and Luca Mallon | Faculty Sponsors - Gregory Jones, Virlena Crosley, and Russ Paine 5

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Even-numbered presenters will be present from 9:30-11 a.m. Odd-numbered presenters will be present from 1-2:30 p.m.
Project Descriptions

1
Linfield College Public History Project: World War II as Experience and Memory

Elisia Harder, Ruby Guyot, Kara Skokan, Melvin Van Hurck, Rich Schmidt, Rachel Schley, Lissa Wadewitz

History

World War II was one of the defining events of the twentieth century and the number of people alive who experienced this momentous time decreases every day. This project thus set out to identify and interview, first, Linfield alumni who lived through this crucial event. Through the use of recorded oral history interviews, this project uncovered pieces of Linfield’s past as well as important and engaging stories about what life was like for those who lived through the Second World War. This project is ongoing with plans to interview more Linfield alumni and community members about their various wartime experiences.

2
Market Research for Artist Website

Gillian Wilson
Journalism and Media Studies

My senior project is strategic communication in the form of an artist website based on information gained from a market analysis report. The goal of my project is to promote my art for sale online and show future employers what my capabilities are through an artist website. The website includes an about page, an eCommerce page, and an art portfolio page. The market analysis report includes information gained from interviewing other artists and entrepreneurs about their own experiences, as well as what eCommerce sites (such as Etsy, Redbubble, or Society6) are best to sell my art on. The research also includes looking at other artist websites and audience analysis. In addition, I designed a posting schedule for my artist account, @gillianmelinart on Instagram. This project will help me with my career goal of becoming an artist. In the future, I want to do illustrations and surface pattern design and sell my art online, as well as licensing my designs. A good first step is to set up an artist website that future employers and clients can refer to.

3
A “Prop-er” Look at Dr. Jekyll and Mr. Hyde

Nathan Dillon
Theatre

This work represents both the design and construction process and product for equipping the stage with period-specific properties for the Linfield Theatre’s production of Jeffrey Hatcher’s play Dr. Jekyll and Mr. Hyde. The design team tried to capture the underbelly of Victorian society by approaching the production through an Expressionistic and Selectively Realistic lens. Research began by looking at real furniture and properties from the time period from which we then selected only a couple pieces of furniture and props to best represent each location. Although Victoriana is known for its controlled clutter, we decided to be selectively realistic in the way that each scene was initially set. However, as the play went on, the different locations began to collide, and as the play progressed the settings even overlapped one another until we achieved that Victorian clutter. In terms of Expressionism, the properties and furniture designs had to fit into an off-kilter world created by the lighting effects, sound design, and some of the architectural units. This display highlights the props I created and demonstrates how they fit into the world of the play. For this production, I received the Society of Properties Artisan Masters (SPAM) Award for Excellence in Properties Design at the Kennedy Center American College Theatre Festival (Region VII) held in Eugene, Oregon in February 2019.
Neck Braces in Motocross

Malia Riggs

Journalism and Media Studies

Neck braces in motocross is a hot topic right now within the motocross, dirt bike, and enduro riding community. Riders either swear by them or refuse to wear them. I wanted to focus on why neck braces have become an essential part of a rider’s attire recently (within the last 10 years). I do this by talking to individuals who have suffered a neck or spinal injury while riding motocross and getting opinions on the matter by trusted members in the community. Through research and real life stories of riders, I hope to be able to reach riders and even individuals outside of the sport through the stories I tell by interview. With this longform journalistic article, I am getting opinions from riders on both spectrums regarding neck braces. I also talk with individuals in the medical field. But, this is not an advocacy piece, because riders may not have the same opinions as doctors or specialists. I want to know if riders think it is more advantageous to wear braces or not and why. Since I am photo-based in my journalistic work, I tell this story through photos as well as the story I write, since I have studied both photography and journalistic writing extensively.

Intercollegiate Wine Business Invitational

Nathan J. Saragoza, Alexandra Bushman, Hanna Bingham, Cassidy Robinson, Samantha Weymouth, Luca Mallon

Wine Studies

A team of six Linfield College students participated in the Intercollegiate Wine Business Invitational. Our team created a business plan, financial plan, and wine label for a $25 red wine blend from California producing 10,000 cases. Our business plan envisioned a winery named Sobremesa that was started by six friends after a night where the conversations never stopped flowing. We wanted to produce a product that encourages people to stay for a while and enjoy time with their family or friends. Our wine, Alianza, served as a catalyst for Sobremesa Cellars. Competing against colleges and universities across the country, Linfield earned the Grand Prize for constructing all three components in a cohesive manner.

In Vitro Determination of Potency of Small Molecule Inhibitors of Arp2/3 Complex

Katherine Andersen, Natalie Wade, Shelby DeRocher, Jordan Collins (Bucknell University), Christina Pierson (Bucknell University), Levent Cavas (Dokuz Eylul University), Zoe Cournia (Bioacademy of Athens), Brad J. Nolan (University of Oregon), Andrew W. Baggett

Chemistry

Actin is a key protein building block of actin microfilaments, which are constructed and deconstructed in response to cellular signaling pathways to regulate cellular processes such as motility, division, and endocytosis. Arp2/3 Complex is a 7-subunit protein complex that is involved in cellular construction of branched actin networks, functioning by attaching to the side of a pre-existing actin filament and nucleating a daughter branch. Overexpression of Arp2/3 complex has been linked to the ability of certain metastatic cancers to proliferate. This work describes the synthesis and in vitro biochemical testing of several molecules predicted by computational docking to be inhibitors of Arp2/3 Complex, and therefore of potential interest in clinical applications. A bulk actin polymerization assay is used as the key method to determine the potency of inhibitor candidates. Structure-activity relationships derived from these results are also discussed.
Financial Determinants of Yield Rates for Bachelor of Arts and Sciences Colleges

Kainoa Cuttitta, Mariah Moore

Economics

This paper investigates the effects of financial factors on the yield rates of Bachelor of Arts and Sciences colleges. We define the yield rate as the percentage of students accepted who choose to enroll. Our data is drawn from the Integrated Post-secondary Education Data System (IPEDS) and consists of 107 Bachelor of Arts and Sciences colleges during the period from 2010 to 2016. Controlling for institutional factors, we find that the responses of the yield rate to increases in federal student loans and increases in tuition and room and board costs are negative and inelastic, while the response to changes in grant aid is not statistically significant.

Opiate Drug Seeking and Addiction: The Influence of Sucrose Consumption on the Acquisition and Expression of Morphine-induced Conditioned Place Preferences (CPP)

Shareeta Senthithasan, Isabel R. Berger, Stephanie Wolff, Lee Bakner

Psychology

Sucrose intake may lead to changes in brain and behavior similar to the effects of abused drugs. For example, sucrose may agonize endogenous opiate systems and modulate opiate-seeking behavior. Previous research reported equivocal outcomes where sucrose may either enhance (i.e., cross-sensitization) or attenuate (i.e., cross-tolerance) drug seeking as measured by morphine-induced CPP. The present experiment extends from past work and evaluated the impact of sucrose administered prior to place conditioning. Additionally, unique groups received sucrose prior to tests for CPP to measure sucrose influences on CPP expression.

Sprague-Dawley rats (n=24) were assigned to sucrose (15% w/v) or water pre-exposure conditions. Subsequently, subjects received morphine place conditioning where morphine (10mg/kg) was administered on the initially non-preferred side of the apparatus. Three post-tests were conducted and, prior to each test, animals within each pre-exposure group (sucrose or water) received either sucrose or water. Factorial ANOVA was used to analyze data. Results showed robust morphine-induced CPP. Although animals in the sucrose pre-exposure condition displayed enhanced CPP, the outcomes were not statistically significant. The present findings support the value of CPP techniques to measure opiate drug-seeking behavior. Future work may discover the sufficient conditions for detecting sucrose cross-sensitization of morphine CPP.

An Experimental Study of the Priming Effects of Objectified Words

Shareeta Senthithasan, Monique Vega, Lara Martz, Diana Vazquez Duque, Tanya Tompkins, Jennifer Ruh Linder

Psychology

Objectification, a tendency to adopt an externalized view of self (self-objectification) or others, has primarily been studied with regard to exposure to media images and experiences. Limited research found that mere words can also prime objectifying states. However, in a recent study, we were unable to replicate this result, finding no effects of word priming on behavior (i.e, objectifying gaze). The current experiment used a larger sample and modified design to examine whether objectifying words have subtle effects that may diminish with time or exposure to images of women.

Males and females (n=376) were primed with one of three versions of the Scrambled Sentence Task (SST) which included either objectifying words, body competence words, or neutral words among four filler words. Participants were tasked with creating grammatically correct four-word sentences. Next, they were randomly assigned to view either images of women, nature, or a page loading GIF for 3 minutes. Participants then completed a modified Twenty Statements Test (TST) to measure state self-objectification (SSO) and other measures of objectification of self and others (e.g., literal objectification, body surveillance/shame). Results indicated that if words do prime, it is subtle and fleeting. Possible reasons for failure to replicate are discussed.
Physical Activity and the Health Related Components of Physical Fitness in People with Visual Impairment: A Systematic Review

Sarah Bell
Health, Human Performance and Athletics

Visual impairment is becoming progressively more common in America’s aging society. Physical inactivity contributes to the development of chronic health conditions. Therefore, it is important to understand the relationship between visual impairment and its impact on health-related physical activity and fitness. The purpose of this systematic review is to examine the prevalence of physical activity and the five components of physical fitness in the visually impaired population. This review was limited to articles addressing individuals with “visual impairment,” as defined by the National Eye Institute. The data abstracted included documentation of visual impairment, physical activity rates, physical fitness measures, gender, age, number of participants, and sample size. Results confirm that persons with visual impairment tend to participate in physical activity significantly less than their sighted counterparts and are often less physically fit, especially in regards to body composition, cardiovascular endurance, and muscular strength. Consensus within the research attributes this decreased physical fitness to the lack of sufficient physical activity within the population. The observed lack of physical activity warrants intentionally improving upon the many physiopsychological and social factors which prevent visually impaired children and adults from having equal access to opportunities to engage regularly in physical fitness activities.

In Search of a Genre: An Analysis of Political Campaign Rhetoric Used in Swing Races in the 2018 Midterm Elections

Annika Albrecht
Communication Arts/Rhetoric

This study examined one press release and one video ad from six Democratic candidates running for the United States Congress in swing states and districts in the 2018 midterm elections. The purpose of this study was to determine if the rhetoric used by Democratic candidates running for the U.S. Congress in swing races constitutes a specific genre of political communication. Generic criticism was employed as a theoretical frame to determine if there was a common genre within this situated political communication. In addition, Burke’s cluster criticism was used to provide a close reading of the texts to identify key themes in the rhetoric. The two methods suggested the possibility of the development of a genre of communication used by Democratic candidates running in swing races for the United States Congress in the 2018 midterm elections. The rhetorical cluster analysis revealed that themes of justice, inclusivity, bipartisanship, people above politics, and independence were used strategically by all of the candidates included in the study, suggesting strategic thematic language use that may be employed to win over voters in swing districts in midterm elections.

The paper upon which this poster was based was written for the Senior Seminar course in Communication Arts. The paper was competitively selected for and subsequently presented at the Northwest Communication Association Conference in Coeur d’Alene, Idaho in April 2019.
New Zealand and the United States Compared: Campaign Finance Laws and Voter Efficacy

*Annika Albrecht*

**Political Science**

This study conducted a comparative analysis between the United States and New Zealand looking at campaign finance laws. The purpose of this study was to determine the feasibility of the United States adopting similar campaign finance laws as the ones in New Zealand, the least corrupt nation in the world, and to see how these laws would look in the United States. The comparative analysis was done using qualitative data derived from the nations' laws and scholarly journals about these laws. After establishing the comparative analysis between the two nations, the paper looked at campaign finance laws and voter efficacy. Using quantitative data including a 2011 Worlds Value Survey and voter turnout records, the study answered the question, “Do campaign finance regulations affect how citizens view their government?”

The paper upon which this poster was based was written for the Senior Capstone course in Political Science.

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Traditional Medicine in Northern Peru: Identifying Preferences and Cultural Uses of Medicinal Plants

*Elide Sanchez Rivera*

**Anthropology**

Throughout the years, many undergraduate students from around the country have had the opportunity to perform ethnobotanical, biochemical, and medical anthropology research in Trujillo, Peru with guidance from Dr. Douglas Sharon (University of California, Berkeley) and Dr. Rainer Bussmann (Missouri Botanical Garden). Since 2010, Linfield College students have also had the opportunity to do research with the additional guidance of Dr. Thomas Love (Linfield Anthropology). In the summer of 2018, I had the privilege of working on this project with four other students conducting household surveys in Huanchaco, a peri-rural community, and Huanchaquito, a traditional fishing community, to learn about their knowledge and use of medicinal plants.

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The Impact of Professional Sports on Cities’ Economic Performance

*Carter Mensing, Chris Cassi*

**Economics**

The purpose of this paper is to estimate the impact of professional sports on cities’ economic performance as measured by real per capita income growth and changes in the unemployment rate. We use a panel model across 43 cities over eight years. Explanatory variables include the number of professional sports franchises in a city and the performance of those franchises. We find no statistically significant evidence suggesting that professional sports franchises impact cities’ real per capita income growth. We do, however, find that professional sports franchises have a statistically significant impact on unemployment rates.
Genome Annotation of *Drosophila takahashi*

*Bronwyn Boyd, Catherine Reinke*

**Biology**

The Genomics Education Partnership (GEP) seeks to train faculty and undergraduates in the use of modern genomics techniques, with a particular emphasis on genome annotation. There are many species with sequenced but unannotated genomes, meaning that the order of As, Gs, Ts, and Cs is known, but the location of gene features is ambiguous. Annotated genomes enable researchers to address specific questions exploring evolutionary histories and principles of genome organization and gene expression. Genomes can be annotated with the use of a well-annotated model organism reference sequence, such as the annotated sequence of *Drosophila melanogaster*. My research focuses on two segments of the *Drosophila takahashi* genome. Practice annotations were carried out to learn how to apply bioinformatics tools to the annotation of novel sequences. A number of tools are available for genome annotation, including the UCSC Genome Browser, Flybase, BLAST, and a custom tool, the Gene Record Finder. All of these tools have been used to discover gene features in the *D. takahashi* genome. Future work will document gene and genome evolution among these *Drosophila* species and interrogate key principles of gene expression.

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“I Am a Hot Box of Rice”: Influence of Makeup Advertisements on Women’s Self-Objectifying Statements

*Diana Vazquez Duque, Lara Martz, Shareeta Senthithasan, Monique Vega, Tanya L. Tompkins, Jennifer Ruh Linder*

**Psychology**

Objectification theory posits that makeup advertisements socialize women to self-objectify (habitually control external perceptions through monitoring of appearance) and have negative effects on women. An emerging literature suggests the benefits of promoting positive body image through media campaigns portraying broader definitions of beauty. Therefore, we sought to evaluate whether an alternative makeup ad, “Be a Force of Beauty,” would counteract the inherently objectifying effects of makeup ads. We found that participants who viewed the alternative ad reported less self-objectifying statements, more trait self-statements, and more positive self-statements overall than those who viewed a typical or neutral ad.

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Movement Capability Changes in Collegiate Basketball Players Following a Corrective Exercise Program

*Kathy Armstrong, Bailey McDevitt, Kaitlin Baumann, Liam O’Reilly, Yasmeen Ramos, Cisco Reyes*

**Health, Human Performance and Athletics**

While much data is available regarding Functional Movement Screen (FMS) scores in corrective exercise programs and injury prevention, limited data exists regarding comparisons between movement patterns in various sports. The purpose of this study was to review FMS scores to find any mobility and stability differences between several NCAA Division III sports. In this study, 83 healthy student-athletes, from four different sports teams, performed a battery of tests to measure physical capabilities prior to the beginning of their competitive season. All participating student-athletes performed the FMS, which is a tool used to gauge fundamental movement patterns including range of motion, stability, and balance, to measure movement asymmetries and limitations.
Use of the Functional Movement Screening in Division III Collegiate Athletics

Kathy Armstrong, Bailey McDevitt, Kaitlin Baumann, Liam O’Reilly, Yasmeen Ramos, Cisco Reyes

Health, Human Performance and Athletics

The Functional Movement Screen (FMS) aims to expose movement limitations and asymmetries by screening an individual on seven different fundamental movement patterns. Limited research has been conducted using individual FMS test scores comparatively to composite scores. The purpose of this study was to examine the effects of a corrective exercise program on improving individual FMS scores for a collegiate basketball team. Thirteen healthy, male student athletes from an NCAA Division III men’s basketball team performed all seven FMS movements. The team was randomly divided into control and treatment groups. The control group followed their typical pre-practice dynamic warm-up four days per week for four weeks, while the treatment group performed a specific warm-up geared towards improving FMS for four days per week for four weeks. The athletes performed the complete FMS following the completion of the training program. The specific corrective exercise training program did not significantly change FMS movements.

Characterization of Mre11 Gene Variants in Cancer

Cristina Mateos, Ashley Headrick, Itzel Romero, Sydney Kuehn, Sreerupa Ray

Biology

Among the different damages that a cell can undergo, DNA double-strand break (DSB) is the most detrimental one. DNA contains all the necessary information for a cell’s proper functioning and replication; therefore, a break that damages both of its strands completely destabilizes the DNA molecules. If not properly repaired, this could lead to genomic instability and tumorigenesis. Cells repair DSBs by two repair pathways — homology-directed repair (HDR) and non-homologous end-joining (NHEJ). Recently a back-up NHEJ pathway has been reported and is referred to as alternate-NHEJ (Alt-NHEJ). Although Alt-NHEJ is advantageous for damaged cells, it can mutate the DNA sequences at the junctions, which may lead to an altered genome that can have severe biological consequences. Mre11 is an essential component of the MRN complex and plays a key role in DSB repair pathways as HDR, NHEJ and Alt-NHEJ. Mre11 possesses single-strand endonuclease activity and double-strand-specific 3’-5’ exonuclease activity which are essential for DNA end-processing. Recently Mre11 is shown to be overexpressed in breast cancer and high Mre11 expression was associated with a more malignant behavior in breast cancer. Furthermore, germline mutations of the Mre11 gene was identified in a recent screening of hereditary susceptibility to breast and/or ovarian cancer. Mutations in DNA repair genes can have a significant impact on cancer prognosis and treatment. We are focusing to determine whether germline and somatic mutations of Mre11 can lead to tumorigenesis and alter responses to chemotherapies.

Copper Modulation to Effect Yeast Lifespan

Zachary Sherlock, Megan Bestwick

Biochemistry

The role of copper in yeast’s (Saccharomyces cerevisiae) chronological lifespan and the production of reactive oxygen species (ROS) in the mitochondria is not well characterized. The mitochondrial electron transport chain (ETC) machinery is the primary site of superoxide formation, a ROS associated with premature cell aging. A primary defense against ROS is the enzyme superoxide dismutase (Sod1p). This enzyme requires copper and zinc as metal cofactors in the conversion of superoxide to hydrogen peroxide, a less harmful ROS. The aim of this project is to determine the effect of exogenous copper treatment on strains of yeast lacking Sod1p and its copper chaperone, Lys7p. Our results indicate that low levels of exogenous copper (0.25 mM copper sulfate or less in restricted nutrient media) extend yeast chronological lifespan, especially in cells lacking Lys7p. All cell types see a dramatic reduction in lifespan when exogenous copper levels are increased to 2.0 mM copper sulfate or higher. This indicates that a small increase in the amount of copper in the media is beneficial for yeast in these restricted media conditions. Our current studies are to assess protein levels and gene expression of the yeast ETC machinery, as well as ROS levels, to mechanistically understand how exogenous copper in a small dose is contributing to lifespan extension.
Depression and Anxiety Are Not the Same: Mental Health and College Student Well-Being over Time

Catherine Dirksen
Psychology

Moving to college is an important transition in many young people’s lives. As such, colleges offer programming to aid students in their adjustment to college life. These programs often have a dual focus: preparing students academically as well as socially. Too often, however, it seems that the academic focus becomes the priority, to the detriment of aiding student well-being. We are interested in how these programs can best meet student needs with respect to their social and emotional development. Using data collected from incoming college students at a small, residential college (N=130), we investigated how mental health and well-being changed over an eight-week period. Students who reported higher levels of depression showed decreases in self-reported subjective happiness and satisfaction with life. No similar association was found for anxiety. Students who came in with higher levels of subjective happiness decreased in depression over the eight-week period, though no effects were found for anxiety levels or predicted by subjective well-being. Intercorrelations suggest that students who score higher in depression and/or lower in subjective happiness have high levels of behavioral inhibition and lower levels of motivation, which may prevent them from engaging in campus life and building social support.

Fluorescent Visualization of In Vitro Mitochondrial DNA Transcription

Kelsey Bruce
Biochemistry

Mitochondria are important organelles within eukaryotic cells especially for their role in metabolism and ATP production by the oxidative phosphorylation (OXPHOS) pathway. In human cells there are approximately 80 protein subunits that make up the OXPHOS pathway, thirteen of which are encoded by the mitochondrial genome (mtDNA). Mitochondria house all the transcription and translation machinery (i.e., mitochondrial RNA polymerase, mitochondrial ribosome, tRNAs, etc.) required to produce those thirteen mtDNA encoded subunits. In vitro mitochondrial transcription is a method that utilizes recombinantly purified proteins and linear mitochondrial DNA templates to investigate transcription regulation of the organelle. To visualize the products of in vitro transcription, it is still common practice to utilize radioactive nucleotides or staining with ethidium bromide. These conditions can be undesirable due to safety hazards, expense, interference with electrophoresis, and time demands. As an alternative, fluorescent dyes have been developed for DNA and RNA tagging. This work establishes a procedure for post-staining of T7 RNA polymerase in vitro transcription products run via denaturing gel electrophoresis and stained with Gel Red and SYBR Gold dyes. Our current studies focus on applying this procedure to the in vitro mitochondrial transcription assay.

No Guts, No Glory: Stage Managing Dr. Jekyll and Mr. Hyde

Erika Glas
Theatre

This poster details the process of stage managing Linfield College Theatre’s November 2018 production of Dr. Jekyll and Mr. Hyde. The stage manager acts as the coordinator/liaison among all members of the directing, design, and production staff. Since theatre is a collaborative art, the stage manager is responsible for creating successful communication among all members of the production staff. During rehearsals, the stage manager works with the director to record creative decisions in the form of blocking and properties notes. Once performances begin, the stage manager is responsible for calling all the technical (lights and sound) cues throughout the show. One of the primary responsibilities of the stage manager is to create a prompt book for the production. The prompt book holds all the important paperwork for the production including rehearsal reports, blocking notes, and cue calling notes. This poster includes pages from the prompt book that provide examples of the various elements involved in this production.

This project was presented at the 2019 Kennedy Center America College Theatre Festival’s Design, Technology, and Management Competition in Eugene, Oregon. This project received a Stage Management Meritorious Achievement Award at the festival.
Detecting Changes in Pressure Using a Graphene Field Effect Transistor

*Benedikt Toeldte, Michael S. Crosser*

**Physics/Applied Physics**

Graphene is a single, atomic layer, hexagonal lattice with useful electrical properties. Discovered as a stable isolated sheet in the early 2000s, graphene field effect transistors (GFET) are an effective way to detect small changes in electrical activity. When an electrolytic fluid is placed on a GFET, a double layer capacitor can develop at the interface between the fluid and graphene. Surprisingly, this interface is sensitive to barometric pressure, making GFETs a viable device for measuring pressure changes. In this work we built a pressure vessel and placed GFETs inside to test the performance limits of graphene based on its environment.

A Performative and Feminist Criticism of the Always #LikeAGirl Ad Campaign: Addressing Gender Stereotypes in Sports

*Heather McNutt-Kaestner*

**Communication Arts/Rhetoric**

The purpose of this study was to examine rhetorical strategies used in two videos from Proctor and Gamble’s Always #LikeAGirl advertising campaign created in part to encourage the target audience (young women) to increase their confidence in their athletic abilities. The analysis focused on the ads “Always #LikeAGirl” and “Quarterback Karlie Harman’s Story” in its examination of individual female self-identity as it is formed through repeated actions and the influence of societal expectations. Using the framework of performativity and feminist criticism, the investigation explored the following questions: What rhetorical strategies are employed in the #LikeAGirl ads? Does Always implement methods that improve women’s self-esteem? How might #LikeAGirl help break gender stereotypes in sports? The study concluded that it is crucial that companies with expansive resources and influence commit to changing the hegemonic ideologies about gender by bringing awareness to gender inequality. Media producers are in the prime position to begin the enactment of social change through the messages they portray. With the capacity to communicate to large audiences, these creators have the opportunity to contribute to a paradigm shift in social views and expectations of gender norms.

The paper upon which this poster was based was written for the Senior Seminar course in Communication Arts. The paper was competitively selected for and subsequently presented at the Northwest Communication Association Conference in Coeur d’Alene, Idaho in April 2019. At the conference, this paper was recognized as the Top Undergraduate Paper in the Rhetorical Theory and Criticism Division, and it also received the overall conference Top Undergraduate Paper Award.

Pig Tales: Forensic Taphonomy in Cozine Creek

*Audrey Hyem, Cailyn Cattell, Elizabeth DeVisser*

**Health, Human Performance and Athletics**

The medicolegal community relies heavily upon determining the postmortem interval (PMI), the knowledge of how much time has elapsed since the person has died. Forensic taphonomy is the study of postmortem changes caused by outdoor environmental conditions that play a crucial role in decomposition rates. These include local temperatures, humidity, soil, plants, and insect and other scavenger activity. Minimal research exists examining the rate of surface decomposition in the Pacific Northwest climate. The purpose of this pilot study is to analyze the rate of decomposition in the microclimate of McMinnville, Oregon. A deceased juvenile pig (*Sus scrofa*) was placed in a secure cage in Cozine Creek on February 17, 2018. Data collection continues until May 2019 and includes daily observations, photographs, weather data, and insect collection for entomological assessment. Statistical analysis will be performed once all data is collected. Preliminary results suggest weather fluctuations and insect activity significantly influence decomposition rates. During the first four weeks, cold weather conditions did not favor decomposition: snow, low temperatures, and few insects. Once temperatures reached 13°C, a dramatic increase in insect activity and intensity was observed. Dermestid beetles, maggot masses, and blowflies were present, and within days a substantial increase in decomposition occurred.
The Effects of Social Stress on Voluntary Running Behavior in Female Mice

Cailyn Cattell, Sarah C. Coste
Health, Human Performance and Athletics

Regular physical activity (PA) positively impacts physical and mental health outcomes. However, there is a reciprocal relationship wherein stress significantly reduces healthy levels of routine PA. We showed previously that voluntary running behavior of male mice essentially ceases following exposure to a resident-intruder social stress. Here we examined female mice. Female mice were divided into four groups (n=8/group): sedentary/control, voluntary running/control, sedentary/stress, and voluntary running/stress. Running groups were given unlimited access to a running wheel in the home cage for 9 weeks with a nightly average of 6.86 ± 2.5 km. During the ninth week, stress groups were exposed to a single, 6-hour bout of a female-specific, resident-intruder social stress. Plasma corticosterone significantly increased following stress (34.56 ± 13 ng/ml basal to 330.5 ± 95 ng/ml immediately post-stress). Nightly running dropped significantly to 1.72 ± 0.9 km. Unlike male mice where running levels were slow to recover, voluntary running in these female mice returned to normal levels by the second night (5.01 ± 2.5 km). This study shows the sensitivity of habitual running behavior to stress exposure and suggests the utility of this mouse model in exploring the means by which stress negatively impacts routine PA.

Plasmon-free Surface-enhanced Raman Spectroscopy on TiO$_2$-graphene Oxide Inverse Opal Substrates

Luis Perez, Elizabeth J.O. Atkinson
Chemistry

TiO$_2$-graphene oxide (GO) inverse opal materials were shown to be active plasmon-free surface-enhanced Raman spectroscopy (SERS) substrates. The SERS activity of the substrates was analyzed using three different probe molecules: phenethylamine (PEA), methylene blue (MB), and 4-mercaptobenzoic acid (4-MBA). The morphology of the substrates was investigated by SEM and AFM. Prepared TiO$_2$-GO inverse opals substrates can be reused up to five times with minimal loss of signal, rendering them perfect candidates to be used as highly stable, low-cost, metal-free, recyclable SERS substrates.

The Responsiveness of Admitted Student Enrollment to Changes in the Net Tuition Price at Linfield College

Sarah Linton, Justine Schoenbacher
Economics

This paper investigates the effect of changes in the net tuition price on the probability of enrollment for students admitted to Linfield College. Our sample data was provided by the Linfield College Office of Institutional Research for the 2015-2016 through the 2017-2018 academic years. A logit (logistic) model is used to determine how the probability of enrollment is affected by the net tuition price controlling for academic achievement, student demographics, and the year of admittance. Given these controls, we find that a 1% increase in the net tuition price decreases the probability that an admitted student will enroll by about 29%.
The Fire Is upon Us

*Aspen Brooks, Maddy Colson, Nicholas Buccola*

**POLITICAL SCIENCE**

On February 18, 1965, an overflow crowd at the Cambridge Union witnessed an epic clash of ideas as one of the leading radical intellectuals of the era, James Baldwin, sparred with one of the leading conservative intellectuals of the era, William F. Buckley, Jr., on this question: Is the American Dream at the expense of the American Negro? It would be difficult to imagine two human beings with more dramatically different life experiences and worldviews. Baldwin was Black and gay and had emerged from the “Harlem ghetto” to become one of the most famous writer-activists in the Civil Rights Movement. Buckley was born into an immensely wealthy, devoutly Catholic, and deeply conservative family in Connecticut, and he had risen through elite prep schools and Yale to become one of the leading figures on the American Right. In this project, this famous clash is used to explore the intellectual biographies of both men against the backdrop of mid-20th century political history.

Exploring the Electrical Properties of Twisted Bilayer Graphene

*William Shannon, Jennifer Heath, Byron D. Greenlee, Joseph Murphy, Joel Toledo-Urena*

**PHYSICS/APPLIED PHYSICS**

Two-dimensional materials exhibit properties unlike anything else seen in conventional substances. Electrons in these materials are confined to move only in the plane. In order to explore the effects of these materials, we have built apparatus and refined procedures with which to create two-dimensional structures. Two-dimensional devices have been made using exfoliated graphene and placed on gold contacts. Their topography has been observed using Atomic Force Microscopy (AFM) confirming samples with monolayer, bilayer, and twisted bilayer structure. Relative work functions of each have been measured using Kelvin Probe Force Microscopy (KPFM) showing that twisted bilayer graphene has a surface potential 20mV higher than that of monolayer graphene and 35 mV below bilayer graphene.

Comparing the Effects of Various Exercise Regimens on Anxiety Levels in College Aged Students

*Drew McHugh, Alex Reid, Ellen Nopp*

**HEALTH, HUMAN PERFORMANCE AND ATHLETICS**

Generalized anxiety disorder is described as excessive and inappropriate worrying that is persistent and not restricted to particular circumstances. Anxiety has recently surpassed depression as the number one mental health disorder on college campuses. Multiple studies have shown that exercise reduces anxiety symptoms and feelings of stress. Many students enroll in physical activity courses due to college requirements, or as a way to engage in regular physical activity. On our campus, yoga and pilates are two of the most popular physical activity courses and require two 50-minute sessions each week. The purpose of this study was to determine whether participation in these courses has a significant impact in reducing anxiety in a traditional college population. We surveyed students enrolled in either a yoga or pilates class and compared their responses to a control group not enrolled in a physical activity course.
Comparing Feeding Patterns among Two Sponge Species in the Lower Florida Keys

Vanessa Van Horn, Anna Peckham, Carmen Hoffbeck, Jeremy Weisz

Biology

The sand flats off the islands of the Lower Florida Keys represent a harsh environment for sessile marine invertebrates, with high food variability and high light intensities. This habitat is home to two taxonomically distinct sponge species that share similar morphologies: Cliona varians forma varians and Ircinia cf. felix. Despite sharing a habitat, these two species differ in their symbiont regime, with C. varians hosting dinoflagellate photosymbionts, and Ircinia hosting cyanobacterial photosymbionts. We conducted experiments to measure several aspects of their feeding patterns. The sponges were all assayed for pumping rates using dye-video analysis and microbiome composition. Inhalant and exhalant water samples were collected from each individual and analyzed for bacterial composition. The results indicated that Ircinia had a significantly higher pumping rate than C. varians. The microbiomes of both species were significantly different. Analysis of the bacterial composition of water samples revealed significant differences, both between species and between inhalant and exhalant samples. This data suggests that despite being two morphologically similar species, their difference in feeding patterns leads them to occupy different ecological roles.

Validity and Reliability of Devices Measuring Countermovement Vertical Jump Performance

Danielle Steinman, Maddie Shirley, Michael Fuller, Cisco Reyes

Health, Human Performance and Athletics

The counter-movement jump (CMJ) test is a standard measure of lower body power and can be related to other aspects of athletic performance. With many tools commercially available, it can be difficult for professionals to distinguish which device provides the most accurate results for the best cost. While these devices have been previously validated individually, no past studies have concurrently examined these specific tools. The purpose of this study was to determine the accuracy of four different CMJ measuring devices when compared to the gold standard of a force plate. Thirty-one physically active university students were recruited for this study. Upon completion of a short dynamic warm-up and instruction on proper jumping technique, each participant performed four maximal CMJs on the force plate. They then performed an additional four maximal CMJs in an area where four other instruments were used to measure CMJ simultaneously: accelerometer-based sensor, a contact mat, a photoelectrical cell system, and a mobile device video app. Analysis of the data was conducted, and results showed that while slightly overestimating measurements, the commercial devices that seem to agree the closest to the gold standard force plate were the contact mat and accelerometer-based sensor.

How Changes in Plant Community Structure Affect Ant Communities

Austin Hilton, Alena Salazar, Chadwick V. Tillberg

Biology

We investigated how change in plant community composition brought about by annual grass-specific herbicide application affects terrestrial arthropod communities, with special emphasis on the mutualists of the endangered Fender’s blue butterfly, Plebejus icarioides fenderi (Family: Lycaenidae). Larvae of this species form facultative mutualisms with ants, who chase away potential predators of the larvae. We used pitfall trapping to compare ant communities between control and herbicide-treated plots through time. The extent to which major changes in plant community composition affect the mutualistic ant community differed among years. Our findings may have relevance for management decisions if the focus of the conservation effort has strong ecological interactions with greatly affected non-target species.
An Investigation into the Economic Thought of Medieval Arab-Islamic Scholars and Enlightenment Philosophers

Riley E. Clayeux, Randy R. Grant

This student-faculty collaborative research project focused on the contributions to economic thought of two distinct groups: medieval Arab-Islamic scholars and Enlightenment philosophers. The primary goal of the project was to generate two new chapters to supplement the *Evolution of Economic Thought* text. It looked to answer the research question, “How did the intellectual activity of medieval Arab-Islamic scholars and Enlightenment philosophers reflect and/or contribute to the development of modern economic thought?” The medieval Arab-Islamic chapter produced findings including a centrality of religion to economic life, the importance of specialization for increased efficiency, and an understanding of just price. Ibn Khaldūn, a prominent scholar of the medieval Arab-Islamic era, recognized a need for the division of labor, as individuals lack the capability of providing sufficient goods on their own to subsist. A holistic approach to thinking and an emphasis on rational methodology and objectivity were major contributions from the research on Enlightenment philosophers. Thomas Hobbes’s social contract theory is a philosophical idea that underlies modern economic theory, discussed at length in the Enlightenment chapter. Both chapters will be accessible online and available for instructors to use separately or in conjunction with existing online chapters as precursors to the main, physical text.

Synthesis of Small Molecule Derivatives of CK-666 as Potential Inhibitors of the Arp2/3 Complex

Atchara Sripeng, Natalie Wade, Brad J. Nolen (University of Oregon), Andrew W. Baggett

The Actin-Related Protein (Arp) 2/3 Complex is an actin nucleating factor intrinsically involved in cellular regulation of actin networks during life-essential processes such as motility. Overexpression of the Arp2/3 complex has indicated as a factor allowing the proliferation of certain metastatic cancers. This work describes the synthesis and in vitro biochemical testing of several molecules predicted by computational docking to be inhibitors of Arp2/3 Complex, and therefore of potential interest in clinical applications. The molecules are designed based off of the structure of known Arp2/3 inhibitor CK-666, which was discovered via high-throughput screening. Details of the synthesis of the tryptamine derivatives are discussed, and the bulk actin polymerization assay used to determine potency of the new compounds is discussed.

The New Role of Corporate Social Responsibility in the Digital Age

Isaac Grebisz

In 2018, Nike, Inc. and Colin Kaepernick released the ad “Believe in something. Even if it means sacrificing everything.” Within hours, the ad went viral, angering some while drawing praise from many others. This act marked an inflection point in the conventional wisdom of Corporate Social Responsibility (CSR). Historically, firms steered away from engaging in highly controversial political issues. However, today, as political leadership declines and polarization plagues the government, corporations must change how they behave. Three influencing factors to this new corporate behavior are: 1) the increased value and fragility of a firm’s reputation, 2) the increased availability of information at lightning speeds, and 3) consumers now expect corporations to engage in political issues at a much greater rate than traditionally expected by consumers. Using these influences, a new CSR definition will emerge, creating an updated lens that fits corporate behavior in the digital age, where more knowledgeable consumers require political action from major corporations.
Forecasting New Housing Starts Using Real GDP and Average 30-Year Fixed Mortgage Rates

Lindsay Fowler
Economics

This research analyzes the short and long run relationships between new housing starts (HOUS), real gross domestic product (RGDP), and average 30-year fixed mortgage rates (AFM) over the period 1972:Q2 to 2018:Q3 in order to forecast housing starts for the fourth quarter of 2018. After concluding all three series exhibit unit roots, a cointegrating regression was used to test for a long run relationship between the variables. The hypothesis that HOUS, RGDP, and AFM are not cointegrated was rejected at the 5% level, indicating they maintain a long run relationship. Next, a Vector Error Correction Model (VECM) was estimated and used to forecast HOUS for the fourth quarter of 2018. The forecasted value of 1,333,000 new housing units compares favorably to the actual value of 1,151,000 new units with a forecast error of less than 15%.

Dietary Intake of Collegiate NCAA Football Players: Division I vs. Division III

Ashley Filler, Elizabeth DeFrang, Darian Stedman, Wendy Repovich (Eastern Washington University), Janet T. Peterson
Health, Human Performance and Athletics

Poor nutrition in college football players leads to an increased risk of metabolic syndrome associated conditions. This study compared the dietary intake of Division I (DI) and III (DIII) football players. A total of 31 players completed testing this fall. Variables included height, weight, and a 24-hour diet recall. A 5-pass interview was used to collect nutrition and processed by the ESHA Food Processor program. Data were compared using an independent t-test and a Pearson r correlation test. There were no significant differences between BMI, total caloric intake, carbohydrate, fat, water, fiber, or micronutrients. DI players consumed a higher percentage of calories from protein. Using BMI, 67% of DI and 81% of DIII players were classified overweight and 19% of DI and 40% of DIII players were classified obese. There was a significant negative correlation of BMI with fiber and relative protein intake. All players met the Dietary Reference Intakes except for carbohydrate and potassium. Of concern are cholesterol and sodium levels. Data showed higher BMI correlated with poor diet choices. BMI is not an accurate measure and future analysis will include body composition. Athletes should work with health professionals to maximize performance and decrease metabolic syndrome associated conditions.

Manufacturing and Testing the Permanent Magnet Linear Motor with Two Structures

Renjie Kang, Tianbao Xie
Physics/Applied Physics

Controlled mechanical motion is vital for many useful applications in technology. For many of these applications, linear motors have advantages over traditional rotating motors. In this work, we have built a permanent magnet linear motor to test and measure energy efficiency. We find a maximum 30% total energy efficiency and 79% energy transfer rate. In addition, a C-shape support structure is added to the moving part in order to increase the moving accuracy. The test shows that, with the support structure, the fluctuation on vertical direction decreases significantly, but the friction of the system increases a bit.
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Persuasive Messaging in Facebook’s “Here Together” Campaign to Save Face and Rebuild Consumer Trust

Elisia Harder

Communication Arts/Rhetoric

In order to weigh the effectiveness of Facebook’s “Here Together” persuasive advertising campaign, this study applied two of Packard’s eight hidden needs and cognitive dissonance theory as a methodological frame for evaluating the campaign’s use of persuasive messaging. As Facebook’s public image was falling apart in the wake of the Cambridge Analytica scandal, the company launched “Here Together” to rebuild consumer trust. This study found that although Facebook effectively used Packard’s compelling needs in its persuasive messaging, it did not resolve the cognitive dissonance created in its users, therefore rendering the campaign ineffective.

The paper upon which this poster was based was written for the Senior Seminar course in Communication Arts. The paper was competitively selected for and subsequently presented at the Northwest Communication Association Conference in Coeur d’Alene, Idaho in April 2019.

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The Effect of Net Costs on Yield Rates of U.S. Private Law Schools

Justin Meyer, Magdalena Ceja Mendoza

Economics

In this paper, we define a law school’s net cost as tuition and fees plus living costs minus grant aid and estimate the effect of net cost on yield rates at private law schools. Our data is drawn from Standard 509 Reports for 51 ABA-accredited private law schools with LSAT scores from the 25th and 50th percentiles over the academic years 2011-2012 and 2016-2017. We use fixed effects to control for school and year-specific effects. The results indicate that each 1% increase in net cost is associated with an approximate 0.2% decrease in the yield rate.

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Response through the Intentional Arc: Merleau-Ponty, Dreyfus and Second Language Acquisition

Mia Burnett

Philosophy

Language, when considered as part of the lived experience of human beings, fails to be reduced to mere representation. In line with non-representationalist understandings of the mind and knowledge-how centered understandings of knowledge, purposiveness in skill acquisition and second language acquisition may be understood through Dreyfus’s skillful coping, based in Merleau-Ponty’s intentional arc and maximal grip. Such an approach to second language acquisition decentralizes rule-based representationalist understandings of the process, such as universal grammar, and instead sees language and communication as responsive, dynamic and dyadic.

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Field Electron Emission of Hafnium Carbide

Morgan Chamberlain

Physics/Applied Physics

Hafnium carbide, or HfC, is a robust material whose high melting point makes it an advantageous electron source for a variety of uses, including imaging. This research focused on the effects of an applied field at high temperature on HfC crystals, which induces a faceting effect over time. The cause of this faceting was studied to determine whether it could be correlated to evaporation or self-diffusion during use. The method for electrochemically etching hafnium carbide cathodes was also optimized, and the crystallographic geometry of the tip surfaces was studied using field emission microscopy.
Fluorescent Detection of Reactive Oxygen Species in *Saccharomyces cerevisiae* Applied to Chronological Lifespan

*Kelly Schultz, Megan Bestwick*

**Biochemistry**

During the course of normal aerobic metabolism, cells are exposed to a wide range of reactive oxygen species such as the superoxide anion, hydrogen peroxide, and the hydroxyl radical. These reactive oxygen species (ROS) are highly reactive metabolites of oxygen and can damage a wide range of macromolecules in the cell, including nucleic acids, proteins, and lipids, and can even, in some severe cases, lead to cell death. Normally, molecular oxygen is relatively unreactive and harmless in its ground state; however, it can undergo partial reduction via electrons that are leaked from the electron transport chain to form both the superoxide anion and hydrogen peroxide, both of which can react further to form the dangerously reactive hydroxyl radical. In order to combat the toxic and potentially deadly effects of ROS, cells are equipped with various antioxidant defense mechanisms, which include enzymes like superoxide dismutase 1 (Δsod1). Our objective is to observe these various reactive oxygen species using yeast (*Saccharomyces cerevisiae*) as a model organism and explore different biochemical staining assays such as Amplex Red (AR) and Dihydroethidium (DHE). These stains can both be used to track live cells and quantify ROS levels. This will allow us to study how ROS changes during chronological yeast lifespan. Although there are many types of reactive oxygen species that exist in various parts of the cell, our work thus far has aimed to track extracellular hydrogen peroxide via AR and superoxide generation in the mitochondria via DHE. Our initial results indicate that we are able to track superoxide production using DHE in wild type cell and Δsod1 yeast strains spectroscopically. Ultimately, we will use both fluorescence spectroscopy and live cell imaging via fluorescence microscopy to assess superoxide levels in multiple yeast strains. Our results will provide insight into the role of ROS in aging as we quantify levels during yeast lifespan.

The Effect of Athletic Success on Charitable Donations at Power 5 Conference Schools

*Lukas Sherman*

**Economics**

This poster explores the effect of athletic success on charitable donations received by colleges in the Power 5 Conferences, using a time series cross-sectional model. The data set is drawn from IPEDS and ESPN for the years 2009-2016. I find that donations to colleges are not affected by real state per capita income or by measures of athletic success, such as placing in the top 25 rankings and winning a national championship.

NCAA Division III Football Players’ Dietary Intake: In-Season Vs. Off-Season

*Elizabeth DeFrang*

**Health, Human Performance and Athletics**

**Purpose:** The purpose of this study was to examine the diet of Division III football players in- and off-season and to identify the differences between skilled and unskilled players.

**Methods:** Twenty-two players [18.9 ± 0.79 yr] completed in-season (F, Fall) and off-season (S, Spring) testing. Data included height, weight, body composition, and a 24-hour diet recall using the 5-pass method.

**Results:** All players gained weight (F: 86.1 ± 13.1 kg; S: 92.0 ± 12.8 kg, p = 0.033) by spring. The weight gain was associated with an increase in percentage body fat (F: 13.8 ± 4.6; S: 16.3 ± 4.4, p = 0.028). All players decreased total caloric intake in the spring (F: 5553 ± 1922 kcal; S: 3972 ± 1384 kcal, p = 0.0008). There were no differences in total calories, macronutrient composition, relative protein intake, sodium, or cholesterol between the skilled and unskilled players.

**Conclusion:** Body weight and percent body fat increased from Fall to Spring with an associated increased caloric intake during the season. It is important for players to make dietary choices to maximize performance and reduce long-term health risks within the constraints of eating at the college dining hall.
Separation of Nucleic Acids by Ion Pair Reversed Phase High Performance Liquid Chromatography (IP RP HPLC)

Zachary McLeod, Megan Bestwick

Ion-pair reversed-phase high performance liquid chromatography (IP RP HPLC) is shown to be an effective method to reliably analyze DNA. IP RP HPLC is a much faster and safer alternative to conventional methods of DNA separation and quantification. The method described here utilized a two-buffer effluent system consisting of triethylammonium acetate (TEAA) and acetonitrile (ACN). The method reliably separated and quantified DNA samples of 54 and 58 nt. This method will be used and optimized to separate similarly sized RNA samples. The ultimate goal is to separate mixtures of nucleotides generated from in-vitro transcription reactions.

Survivorship and Growth of Seedlings and Saplings in Urban Forests

William W. McCuen, Austen F. Bassler (Oregon City High School), Nancy E. Broshot

Research in 1993, 2003, and 2013 showed high rates of tree mortality and low rates of recruitment (new trees) in Portland, Oregon’s Forest Park. To determine if the lack of young trees was an urban phenomenon, we added three control sites in the Mount Hood National Forest in 2013. Last summer, seedlings and saplings were measured at all sites in Forest Park, the Ancient Forest Preserve, and at the control sites. Seedlings are trees less than 2 meters tall, and saplings are trees greater than 2 meters tall but having a dbh of less than 10cm. The 2018 data was compared to that collected in 2013. We measured dbh (diameter at breast height) of saplings and the basal area for seedlings, as well as the tree height and the height of the lowest living branch. In 2018, the control sites had significantly more live trees, more coniferous trees, more shade tolerant trees, and more seedlings and saplings. We also found that the seedlings and saplings in 2018 had a greater diameter at the control sites than the urban sites. We found significantly more dead trees in 2018 than 2013 in Forest Park.

Effects of Foam Rolling on Flexibility

Michaela Adams, Kycie McKillip, Tiffany Wall, Arielle Vu, Sarah Coste

Flexibility is an important factor in overall health and fitness and has been shown to reduce the risk of injury in individuals of all ages and fitness lifestyles. Static and dynamic stretching as well as massage are commonly used to improve flexibility. Foam rolling is a relatively new method that is used to loosen soft tissue restrictions of the fascia of various muscle groups. It has become an increasingly popular method, particularly for athletic populations. However, few studies have been conducted to examine whether foam rolling improves flexibility. The purpose of this study was to determine whether foam rolling increases hip flexion, knee flexion, and hamstring flexibility. In addition, we compared 30-second and 60-second foam rolling bouts to determine the optimal duration needed to impact flexibility.

Factors That Affect College Graduation Rates of Minorities

Mauricio Duran, Eben Drake-Mudede

This paper examines the factors that affect college graduation rates of minority students. We control for whether an institution is private or public, the institutions’ admission rates, institutional expenditures, and the percentage of the institutions’ faculty that are minorities. We find that institutions with higher admissions rates have higher minority graduation rates, that institutions with a higher percentage of faculty who are minorities have lower minority graduation rates, and that institutions with higher instructional expenditures have lower minority graduation rates.
Exploring Yeast Diversity at Brick House Vineyards, a Biodynamic Vineyard in Newberg, Oregon

Alexandra Morse  
Biology

Yeast are the foundation of the winemaking process. During fermentation, oxygen-deprived yeast will convert sugars from the grapes into alcohol. Many winemakers add commercially cultured strains of yeast to their grape must to drive primary fermentation, but biodynamic vineyards rely on naturally occurring yeasts that are already present on the grapes. Though there is a growing body of research into the impact of microbiomes, diverse microbial communities, on the winemaking process, little work has been done to explore what organisms drive primary fermentation in wineries that only use naturally occurring yeasts. Understanding this microbial terroir is crucial to understanding what makes each vineyard unique. To begin to characterize the diversity of yeasts and other fungi that go into a unique biodynamic wine, we sampled a variety of locations in the vineyard and winery of Brick House Vineyard, located in the Ribbon Ridge AVA (American Viticultural Association) in Newberg, Oregon. We sampled pinot noir, chardonnay, and gamay noir grapes from the vineyard 1-2 weeks prior to harvest, along with soil from the vineyard, oak tree bark from the vineyard, wasps from the vineyard, soil from near the winery, and the walls of the winery. We also took samples of grape must/ juice of all three varietals at the beginning, middle, and end of primary fermentation. DNA was extracted from all samples. A fungal-specific fragment of this DNA was amplified and sequenced, and the resulting data was analyzed to determine the identities and abundances of all yeast and other fungi in each sample. These data presented on the poster allow us to see both the unique community of yeasts and other fungi that go into these wines, and to begin to see patterns of diversity from the vineyard into the winery.

Exploring the Influence of Wind Turbine’s Blades on Its Output and Efficiency

Siyun Yang  
Physics/Applied Physics

Wind turbines are machines that convert wind energy into electricity. The efficiency of this conversion is measured by comparing the incoming wind’s speed and the output power. This paper focuses on how the properties of blades affect the output and power of wind turbines. The attributes of turbine blades that affect output and efficiency, such as blade size and angle of entry, are considerable. Although results generally match with theory models, we find a size limit with blade length.

Synthesis of 4-Thiazolidinone Small Molecules as Potential Inhibitors of the Arp2/3 Complex

Haley Smith, Brad J. Nolen (University of Oregon), Andrew W. Baggett  
Chemistry

Life-essential cellular processes such as endocytosis, motility, and division rely on a cell’s ability to precisely regulate construction of actin filaments in response to external factors and signals. Intrinsically involved in this process is the Actin Related Protein 2/3 (Arp2/3) Complex, a seven-subunit ATPase that functions by nucleating a daughter branch of actin from the side of a pre-existing microfilament. Active Arp2/3 complex is necessary for the proliferation of certain metastatic cancers, and inhibition of Arp2/3 complex is emerging as a potentially useful treatment strategy for such cancers. We describe synthesis and in vitro assays of 4-thiazolidinones predicted by computational methods to inhibit of Arp2/3 Complex strongly, and therefore serve as potential lead compounds for drug development. Known Arp2/3 inhibitor CK-869 serves as the starting point for derivative synthesis. We discuss the efforts towards the synthesis of new compounds and the biochemical data collected about their potency.
Generational Turnover and Political Institutions in the U.S. and Spain

Aspen Brooks
Political Science

This investigation compares how the political institutions of the United States and Spain impact how incoming generations of politicians exercise power. Both countries have experienced an influx of younger generations in politics, represented by the new political parties Ciudadanos and Podemos in Spain, and Alexandria Ocasio-Cortez and the diverse class of Democratic freshmen elected in the 2018 midterm elections. The primary structures that affect this are the presidential and parliamentary systems, single member district, and proportional representation voting systems that create bi-party or multiparty systems, respectively. These structures shape whether or not younger generations can form their own parties and win seats in the legislature and the relationship they have with the executive branch of government.

Understanding Body Images in the Media: A Feminist Critique of Dove’s Real Beauty Campaign

Megan Ditore
Communication Arts/Rhetoric

This study examined the Dove Real Beauty Campaign to better understand how young girls and women view body images in the media. Specifically, the campaign’s advertisement Sketches – You are more beautiful than you think was analyzed using the lens of feminist criticism to explore the messaging tools that Dove employed to help young girls and women become more confident in their own natural bodies. This particular advertisement challenged societal norms and traditional media practices through the use of the words and images of real, “unedited” women. By exploring the variations in one’s own view of one’s body image and how one is seen by others, the advertisement contributed to the disruption of the ideology of “beauty” dominant in the U.S. culture.

The paper upon which this poster was based was written for the Senior Seminar course in Communication Arts. The paper was competitively selected for and subsequently presented at the Northwest Communication Association Conference in Coeur d’Alene, Idaho in April 2019.

The Effects of Exercise on Cerebral Palsy

Cameron Kemper
Health, Human Performance and Athletics

There is limited research on the effects exercise has on a Cerebral Palsy (CP) diagnosis. The purpose of this case study is to test a modified prolonged muscle stretching protocol to increase range of motion (ROM) and reduce spasticity in the wrist. The client is a 19-year-old male who has CP. The protocol reduced a modern 30-minute prolonged muscle stretching protocol to 10 minutes in three different motions: wrist extension, supination, and pronation. Adaptations were made if the client’s muscle entered a state of spasticity. The client was instructed to complete the exercise once a day. Wrist ROM was measured using a standard goniometer. Measurements were taken at baseline, two weeks, and two weeks after the last session. The protocol was completed nine times in two weeks (64% compliance). Results showed increases in pronation ROM, no change in left supination and left extension, and decreased right supination and right extension ROM. Greater ROM increases independence and quality of life. This case study provides further understanding of the positive effects of exercise on people with CP and increases the awareness of the need for more knowledge regarding the benefits of exercise in CP.
Toxic: A Short Film

Bruce Li

Journalism and Media Studies

This presentation is a short film/proof of concept for an original script that I wrote. The project is a film/video that was originally intended for my senior capstone in the JAMS (Journalism and Media Studies) major. The film features Linfield College students and showcases my passion for filmmaking.

Selling Childhood: How the Middle Class Used Children in the Anti-Tuberculosis Movement (1930s-1940s)

Hannah Fisher

History

During the anti-tuberculosis movement of the 1930s and 1940s, children were chosen as focal points, with their roles shaped by society’s changing view of childhood, the emergence of the middle class, and the socioeconomic and political climate. Children were used by middle-class reformers as conduits through which to disseminate information and enact controls on the working class. Health education in schools had two main goals: (1) for educated children to become educated adults, and (2) for educated children to transform the behaviors of adults around them. Although researchers have studied middle-class interventions into children’s health, few have analyzed the role children themselves played in the middle class’s goal of asserting themselves as intellectually and morally superior to the working class via the education of the working-class children. Using primary source material, such as curriculum guides and educational materials designed for children’s consumption (e.g., Huber the Tubér), this paper thus examines how and why children’s health education became a hotbed of middle- and working-class conflict, particularly with regards to beliefs in science and Western medicine, during the 1930s and 1940s.

Horses, Heroism, and Heimat: Rebuilding and Reinstating Gender Roles in Die Mädels vom Immenhof (1955)

Ruby Guyot

History

The following presentation examines the 1955 West German heimatfilm Die Mädels vom Immenhof and its relationship with the renegotiation of gender roles and class status in the emergent capitalist state of West Germany. Issues addressed include the conflict in redefining gender norms in the post-World War II era, with attention drawn to the questions of unstable masculinity and normative femininity among future generations of young West Germans. The issue of class and what it means to experience financial stability is also tied to the discussion of gender norms in this film. This paper is a selection from a longer undergraduate thesis which examines 1950s heimatfilm and popular media (including advertisements) in relation to the transformation of gender and class notions during the Wirtschaftswunder era in post-war West Germany.
A Comparative Analysis of Immigrant Integration Methods in France, Germany, and the Netherlands

Jenny Horniman  
Political Science

This is a comparative case study analysis of the immigrant policies of France, Germany, and the Netherlands, with special focus on how each country was affected by the 2015 European Migrant Crisis. The effects of these changes and political shifts are analyzed in order to help determine what the future of immigrant policy will look like in each of these places. The focus of this study is specifically focused on immigrant policy as opposed to immigration policy, meaning that I am primarily looking at the experience of migrants once they are in their new host country and attempting to integrate rather than the process of how they are brought in. These three countries showcase a range of strategies and varying degrees of effectiveness in their policies; however, we may soon be witnessing some significant political changes in each of them as a response to the strain in recent years caused by the migrant crisis.

Quantifying Complex Systems via Computational Fly Swarms

Troy Taylor, Joelle Murray  
Physics/Applied Physics

A physical system is considered complex if individual components independently follow simple rules of motion but the system, as a whole, exhibits more elaborate, unexpected properties. Many different systems in nature show properties of complexity, making understanding such systems valuable. We study behaviors of fly swarms and the possible complex properties that swarms exhibit, arising from individual fly interactions. A simple stochastic fly swarm model was created to investigate the relationship between the average radius of the swarm and the number of individuals within it, as experimental data shows a power law scaling of the number of flies to average radius. In addition, this model is used to distinguish between swarming and non-swarming behavior.

Stigmatization of HIV: Nearly Four Decades Later

José Madrid Beltran  
Anthropology

In Oregon, the first recorded case of HIV was in 1981. Nearly four decades later, there are still misconceptions about the virus, how it is transmitted, and who can contract it. This thesis gauged the level of knowledge and acceptance of HIV among college students and faculty. Although all age groups were fairly knowledgeable about HIV, stigma of HIV was still evident. What followed was an attempt to present information on HIV to different groups on campus and to promote a free HIV Testing Day event in collaboration with Cascade AIDS Project.

Transferring Power through a Magnetic Couple

Nick Villalobos  
Physics/Applied Physics

Properties of several working magnetic coupled rotors have been measured and compared to theoretical models. Axial magnetic couplers allow rotors to work within harsh environments, without the need for seals. The influence of geometrical parameters, such as magnets’ shape, strength, distance from the center of the rotors, and the number of dipole pairs, were experimentally tested.
Mozart’s *Piano Quartet in Eb Major, K. 493*

*Pedro Graterol*

**Music**

Chamber music is one of the most interesting experiences in the world of instrumental music. Performing in small ensembles creates the perfect environment for performers of different instruments to communicate, harmonize, and create agreements between different parts to create something together. I think this is the perfect analogy for the way civic discourse should be carried out in society. Therefore, the lessons that can be learned from this experience transcend the musical realm. For the symposium, I perform Mozart’s *Piano Quartet in Eb Major, K. 493*, one of the first pieces written for this style of ensemble.

**Performers**

*Viola:* Pedro Graterol  
*Piano:* Dr. Johnandrew Slominski  
*Violin:* Dr. Victoria Gunn  
*Cello:* Mekenzie Solidago

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**Europe**

*Preston R. Turner*

**Music**

*Europe* for Two-Channel Fixed Media (2019) is a collection of nine pieces composed of diverse, modern, and geographically relevant field recordings taken on a cell phone. Continuity of the collection is established by each piece being composed exclusively of environmental recordings from the location of their title. Composers are often inspired by, or mimic, the environment in their work. This collection allows for the environment to speak for itself and uses music as the organizational tool in which to present and interpret it. The field recordings range from traffic signals, shattering ice, and subway trains, to pub chatter, laughter, waves, and more. Few of these sounds, however, are presented organically. Rather, they are manipulated, re-pitched, slowed down, sped up, reversed, and more to explore their musical properties. The sounds of cities are typically lost in their environments, though with music technology their sonic potential is greatly enhanced and these cityscapes become immortalized through intentional instrumentation. The task of this collection is to challenge our preconceived notions of these places and to appreciate the similarities and differences of modern European soundscapes.

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**Honors Recital:** “5 Lieder” by Alma Mahler (1879-1964)

*Keri Dixon*

**Music**

Alma Mahler composed over one hundred art songs before the age of twenty-two when she met her first husband, Gustav Mahler. However, Alma’s life as a socialite, her affairs, and marriages to an impressive lineup of artistic men, have completely overshadowed her validity as a composer. But what of Alma’s creative ability as an accomplished romantic composer? Alma’s first published compositions, *5 Lieder*, offers a glimpse into what inspired the passionate young composer. Though the set was published in 1910, it is estimated that she composed the pieces between 1898 and 1902, during a period when she experienced her first ardent feelings of love and enjoyed the attention of a long line of suitors. These pieces express the passion and instability of young love with flourishing arpeggios and a continuous pendulum of rich chromatic tension.
“Sonate für Flöte und Klavier” by Paul Hindemith (1895–1963)

Avery Moen

Music

Paul Hindemith’s compositions rarely reflected any of the troubles that often plagued his life, but his Flute Sonata written in Nazi Germany in 1936 – two years before Hindemith fled to Switzerland – has darker undercurrents, and bouts of melancholy might well reflect the turmoil in the composer’s homeland. The music throughout the movement is slightly ambivalent, here and there sounding bright but also tinged with a sense of conflict, especially from the piano’s often unsettled harmonies.

Performers

Flute: Avery Moen
Piano: Sara Greenleaf

Militarism in the U.S.: The Post-2001 Diaspora of Security Aid

Wilson Miles

Political Science

This study focuses on the shift in security aid authorities from the Department of State to the Department of Defense, determining whether or not this shift demonstrates a militarization of United States foreign policy. Specifically, it looks at budget trends and the impact of the shift in authorities on the inter-agency process. Using a comparative approach, the study shows how the shift in responsibility over security aid has occurred at a higher rate post-9/11 and argues the inter-agency process has suffered as a consequence of this shift. The findings suggest the inter-agency process of delivering security aid has contributed to the militarization of U.S. diplomacy, which may be heightened as a result of the current administration’s aim to cut the Department of State’s budget even further.

High Desert Journal: Editing with Focus

Jordan Keller

English: Creative Writing

This presentation details my experience serving as Assistant Nonfiction Editor for High Desert Journal’s 27th issue alongside Professor Joe Wilkins. In exploring the process from selection to publication, I pay particular attention to the importance of “editing with focus” for a literary magazine with such a clear mission and authorship. Distilling the editing process through the lens of “Witness to the West” underscores the importance of a focused editing approach. With this in mind, I specifically outline the selection, editing, and publication processes and provide application insight using materials featured in the magazine. I also touch on the work I did soliciting authors for the What is the West? series and the process of writing a book review for Margot Kahn and Kelly McMaster’s edited volume, This is the Place: Women Writing about Home, in the context of professional development and with further ties to the importance of focus.
Renaming and Rethinking Middle Eastern Theatre

Melory Mirashrafi

Currently, the American stage is void of the Middle Eastern voice and body; nuanced work about specific Middle Eastern countries has little to no mass appeal due to an American misunderstanding of what the Middle East is, superimposing a false history and aesthetic upon the Middle East, and making work that is truly representative of the region unrecognizable to American audiences. To say that we need more Middle Eastern people involved in theatre is true, but not enough; the problem is the American (and global) geographical and cultural framework. As evidenced by the difference in work being produced by Iranian theatre artists, and what is accepted by America as recognizable Middle Eastern theatre, a nuanced understanding of the Middle East and its vast set of cultures, religions, races, and ethnicities is lacking, resulting in the impossibility of creating theatre about the region as a whole.

Virtue Ethics and Quaker Traditions

Dave Nagaji

Beliefs are conventionally understood to guide people’s actions. The actions which people take are, conversely, generally understood to be products of what they believe. However, these claims are challenged by the fact that many Quakers hold that they do not have a creed. This feature of Quakerism creates a tension with the theory that actions must follow from beliefs. That tension prompts a question: How can Quakers make ethical decisions in an effective manner when they lack a creed? The answer to such a question is significant for two reasons. First, it provides insights into the particular case of Quakerism. Second, it brings about an important examination of the general proposition that an action must be based on a belief.

Research indicates that many variations of Quaker ethics resemble virtue ethics. This is not to say that Quakerism and the tradition of virtue ethics share a common origin, as they do not. Rather, the tendencies and values of many Quakers cause them to approach moral dilemmas in a manner which closely resembles that of virtue ethics. Accordingly, virtue ethics can be used as a tool with which one can understand, explain, and defend Quaker ethical reasoning.

Linfield Forensics (Speech and Debate) Showcase

April Alvarez, Kelsey Bruce, Mia Burnett, Melissa Garibay, Emmaline Irvine, Angela McKelvey, Diana Vazquez Duque

This showcase, presented by students on Linfield College’s intercollegiate forensics team, offers an opportunity for the Linfield community to see a Spanish-language debate, a persuasive speech, and a duo interpretation performance. These represent a few of the events team members compete in throughout the year.

Spanish-Language Debate

The United States is now home to the second largest Spanish-speaking population in the world, and in recent years the Linfield Forensics team has expanded to include practices and competitions in Spanish. The Linfield team has had great competitive success so far in Spanish-language debate, with teams competing in regional and international competitions. The debate includes four speakers (April Alvarez, Mia Burnett, Melissa Garibay, and Diana Vazquez Duque) and concludes with a brief moderated discussion (in Spanish and English) with the audience. All are welcome to attend regardless of Spanish comprehension.

Individual Events

Kelsey Bruce competes in several individual speaking and interpretation events. Bruce presents a persuasive speech, “Preparing for Emergencies in Everyday Life.”

Angela McKelvey and Emmaline Irvine compete in duo interpretation. They perform “Monster Got a Hold on Me.”
Performing Theatre Audition Scenes

*Antoine Johnson, Nicole Tigner, Elise Martin, Alexandria Hunter*

Four theatre students perform audition scenes originally presented at the 2019 Region VII Kennedy Center American College Theatre Festival (KCACTF) in Eugene, Oregon.

*Irene Ryan Acting Competition*

Four Linfield students and their scene partners competed in the 2019 Irene Ryan Acting Competition. Nominees for this competition are chosen by KCACTF respondents who view college productions throughout the region. Selections are based on the actors’ performances from plays they performed at their colleges and universities during the academic year. From a field of 240 nominated actors, Antoine Johnson and his scene partner Nicole Tigner advanced to the final round of 16 contestants. In this round, the nominee and their partner have 6 minutes to perform two scenes and their monologue or musical selection from the previous rounds.

Antoine Johnson (Irene Ryan Nominee) and Nicole Tigner (Scene Partner) perform their Irene Ryan final round audition.

Scene #1 from *Extremities* by William Mastrosimone
Monologue from *Macbeth* by William Shakespeare

Scene #2 from *I and You* by Lauren Gunderson

*Musical Theatre Singing Auditions*

Five Linfield students competed in the 2019 Musical Theatre Singing Auditions. From a field of 140 singers, Elise Martin and Melory Mirashrafi advanced to the final round of 16 contestants. Elise Martin and Alexandria Hunter perform their musical selections.

Elise Martin

Song #1: “Dance 10, Looks 7” from *A Chorus Line*, Conceived and Originally Directed and Choreographed by Michael Bennett, Book by James Kirkwood and Nicholas Dante, Music by Marvin Hamlisch, Lyrics by Edward Kleban
Song #2: “Mama Who Bore Me” from *Spring Awakening*, Book and Lyrics by Steven Sater, Music by Duncan Sheik, Based on the play by Frank Wedekind

Alexandria Hunter

Song: “It’s A Privilege to Pee” from *Urinetown, The Musical*, Music and Lyrics by Mark Hollmann, Book and Lyrics by Greg Kotis

Like Fireworks Weeping into Bloom

*Sabine Ganezer*

ENGLISH: CREATIVE WRITING

This is an excerpt from a collection of songs revolving around the theme of conditionality. The full project is a senior thesis that combines the disciplines of music and creative writing in search of a language between the two misprinted versions of the truth that constitute either of these disciplines when viewed as hermetically separate from one another or from all other forms of communication. Similarly, the exploration of conditionality -- over the course of the collection and to a lesser extent throughout each song -- finds that although human interrelations can lead to humiliation, disappointment and ravaging pain, engaging in these interrelations is eventually the choice preferable to the speaker. The speaker concludes that it is both more costly and more worthwhile to be involved messily in a community than to be hermetically isolated, safe from emotion and utterly alone.
Farmboy Instruction Manual: Rural Identity in Poetry & Creative Nonfiction

Donovan Douglas

English: Creative Writing

I wanted to tell the history of the farm, as far back as it goes. I wanted to tell the family history, with its divorces, deaths, and drama, including my own. I wanted to incite empathy in the reader for this demographic that America seems to have forgotten: the country poor. I wanted to write about millennials that aren’t living successful lives. I wanted to write a prayer to nature, a dedication to Romanticism. I wanted to really explain this farm mythology and dichotomy: its decaying reality versus its idealistic potential. I wanted to write about failure. I wanted to write about family. But most of all, like the literally hundreds of conversations I’ve had with people, I wanted to reveal my true feelings for the farm and how it changed me, for better or worse, once and for all. That way if someone asked me in the future what farm life is like for me, I could just hand them my book and be done with it.

Mrs. Burton’s Breasts: Mapping Bodies in Elizabeth Nunez’s Prospero’s Daughter

Keri Dixon

English: Literature

Dixon’s essay explores how female bodies are mapped to represent a dichotomy of postcolonial space in Elizabeth Nunez’s novel Prospero’s Daughter, a contemporary adaption of William Shakespeare’s The Tempest. Her research responds to feminists Maura Giles-Watson and Gillian Rose who assert that geographical discourse has historically feminized landscapes and encouraged the colonization of land, as well as the female bodies that inhabit them, thereby limiting spaces females are allowed to claim publically and privately. Dixon adds to the literary conversation by charting the novel’s female bodies to reflect sites of the colonized and colonizer, both geographically and theoretically, through close textual examination of Prospero’s Daughter and The Tempest.

Curing Racism: Infecting and Healing a Colonized World

Kate Henley

English: Literature

Many works attempt to parallel the treatment and state of the natural world with that of the people living in that environment. Elizabeth Nunez’s Prospero’s Daughter does just this, remaking Shakespeare’s The Tempest to reveal through nature how colonial practices affect everyone involved. Nunez uses symbols such as Gardner’s orchids and other representations of nature to inform race politics in Trinidad and the world as a whole. As a white man, Gardner’s drive to regulate the environment around him, from nature to the house he lives in, reflects his desire to control everyone in his life, particularly the native Trinidadian characters such as Carlos, Caliban’s counterpart. In fact, the environment and the indigenous people come together as one and the same, both as an agent to be controlled by Gardner as well as a force to overcome such colonization. Furthermore, Gardner’s fear of disease shows his expectation that nature is in fact deadly, but it is later revealed that Gardner serves as a parasitic character himself, leaching off the knowledge and work of the natives around him just as Prospero takes advantage of Caliban for his labor. This ecocritical reading ties into the psychological theory of nature vs. nurture, an argument discussing whether people act in certain ways because of innate characteristics or if their environment “trains” people to express said traits. Gardner attempts to nurture or train certain traits into those around him, particularly Carlos and his daughter, just as he does with his plants. This paper will look at whether nature or nurture wins out and how this psychological theory plays into race politics as a whole.
The Marked and the Magic in *Prospero’s Daughter*: Contextualizing Postmodern Witchcraft Accusations With the Early Modern

**Olivia Gomez**

**ENGLISH: Literature**

*Prospero’s Daughter* having won Elizabeth Nunez a handful of awards and having been received positively by critics, little aside from reviews about the novel exists in the literary sphere. Several articles discuss her memoir or two of her novels, namely *Boundaries*, *Beyond the Limbo Silence*, and *When Rocks Dance*, but it is challenging to find literary criticism about *Prospero’s Daughter*, let alone reference to witchcraft and magic. This essay provides that literary criticism, placing it in context with historical research on early modern witchcraft theory. Although Nunez’s novel is a postmodern Shakespeare adaptation centered in 1960s Trinidad, it contains depictions of witchery and magic consistent with those of sixteenth- and seventeenth-century witch trial records, demonology, Christian teachings of the time, and cultural anthropological and historical research. My analysis of *Prospero’s Daughter*, in featuring a reframing of witchcraft-related issues like sexuality, poisoning, and witch’s marks, bridges the scholarly gap between early modern historical past and postcolonial literary present. This paper explores how the aforementioned issues appear in main characters like Sylvia, Gardner, and Carlos, and was written to provide an updated perspective on witchcraft in literary scholarship for others who are intrigued by Nunez’s depictions.

Love Is Not Just Love: Approaching “Tragedy” Cross-Culturally

**Chu Kong Adrian Iu**

**ENGLISH: Literature**

Widely examined and classified in William Shakespeare’s plays, the Western definition of the tragedy genre has remained influential for literary scholars to approach other non-Western texts. However, under other literary cultures, the “tragedy” genre comes in various forms and does not necessarily fall under the dominant Western understanding of a “tragedy.” This project aims to explore the diverse meaning of “tragedy” in the Western and Chinese literary canons through two plays, William Shakespeare’s *Romeo and Juliet* and Tang Xianzu’s *The Peony Pavilion* (牡丹亭). By comparing the elements constituting the romantic plot between the two sets of couples, the redefinition of “tragedy” will bring the audience to understand the inadequacy of viewing Western literary traditions as the standards, as well as the importance of a culturally sensitive approach to interpret non-Western texts. Most importantly, a comparative literary setting diversifies the literary scholarship and encourages scholars from different cultural backgrounds to engage in the conversation.

An elephant never forgets: The dark side of tourism in Thailand

**Liam Pickhardt**

**JOURNALISM AND MEDIA STUDIES**

This project will discuss the poor treatment of elephants in Thailand, and how tourism correlates with an increase of elephant abuse and exploitation. Despite elephants being sacred in the Thai culture, abuse, that has led to endangerment, has increased with tourism growth. Drawing on the differences between developing and developed countries, this project will give readers insight on the negative footprint humans leave behind while taking part in unethical tourism practices. Centered on a recent trip I took to Thailand, this project will be delivered as a first-person feature article and will draw on the feelings of guilt and anger I felt while watching hundreds of elephants suffer from abuse. This project’s goal is to give readers information about the harm caused from unethical tourism and then advise on how to practice ethical tourism. Distributed via a magazine-style page layout, this project is written to match the writing style of travel and wildlife news organizations.
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