



# *College Science Research*

A MURDOCK TRUST PROGRAM

*“EXPANDING UNDERGRADUATE RESEARCH OPPORTUNITIES”*

THE 26<sup>th</sup> ANNUAL MCSR CONFERENCE HOSTED BY  
THE M.J. MURDOCK CHARITABLE TRUST



**M.J. Murdock**  
CHARITABLE TRUST

CO-HOSTED WITH  
WHITWORTH UNIVERSITY



**WHITWORTH**  
UNIVERSITY



## 25th ANNUAL MCSR CONFERENCE

Spokane Convention Center, Spokane, WA

Co-hosted by Whitworth University & M.J. Murdock Charitable Trust

### Thursday, Nov. 9, 2017

5:00 – 9:00 p.m.

**Registration Open** – DoubleTree Hilton Hotel Lobby  
(322 N Spokane Falls Ct., Spokane, WA 99201)

### Friday, Nov. 10, 2017

*Students may hang posters at the assigned spot in Room 111ABC starting at the 10:10 a.m. break and over the lunch hour. Thumbtacks will be provided.*

6:30 – 7:45 a.m.

**Registration** – Room 103  
**Breakfast** – Room 100BC

6:45 – 7:45 a.m.

**Working Breakfast** – Room 102BCD  
*For faculty, judges, and MCSRP consultants*

7:50 – 8:20 a.m.

**Opening/Welcome** – Room 100BC

- MC: Dr. Moses Lee, program director, M.J. Murdock Charitable Trust
- Welcome and Invocation: Dr. Beck Taylor, president, Whitworth University

8:50 – 11:50 a.m.

**Oral Presentations**  
*Presentations are 20 minutes in length (15 minute presentation & 5 minutes for Q&A)*

#### Symposium on Physical Sciences

Room 100B

Presider: Dr. Jean Jacoby  
Professor of Civil and Environmental Engineering, Associate Dean of Science and Engineering, Seattle University

#### Symposium on Life Sciences

Room 100C

Presider: Dr. Nigel Nicholson  
Professor of Classics and Dean of the Faculty, Reed College

10:10 – 10:30 a.m.

**Break**

11:50 a.m. – 1:15 p.m.

**Lunch** – Room 100BC  
**Set Up Posters** – Room 111ABC



12:00 – 1:00 p.m.

**Enrichment Presentation Luncheon** – Room 205  
*For administrators, faculty members, staff only:*  
*“How to craft a winning proposal”*  
*Begins promptly at 12:05 p.m. Plated lunches will be on the table.*

12:00 – 5:00 p.m.

**Graduate and Vendor Exhibition** – Room 111ABC

*Please have posters up and ready.*

1:15 – 3:00 p.m.

**Poster Session #1**– Room 111ABC  
(odd numbered posters)

3:00 – 4:45 p.m.

**Poster Session #2**– Room 111ABC  
(even numbered posters)

4:45 – 6:00 p.m.

**Take Down Posters** – Room 111ABC  
**Free Time**

6:00 – 8:30 p.m.

*Attire: [business casual](#)*

**Banquet** – Room 100BC

- MC: Dr. Moses Lee
- Welcome: Dr. John Van Zytveld, senior fellow, M. J. Murdock Charitable Trust
- Welcome and Invocation: Dr. Carol Simon, provost and executive vice president, Whitworth University

**Special Recognition and Announcement of Lynwood Swanson Scientific Research Awards:**

Drs. Lee and Swanson

**Neal Thorpe Memorial Lecture:**

*“Playing with Buckyball Maracas: Structure and Reactivity of Endohedral Fullerenes”*

Dr. Luis Echegoyen, Robert A. Welch professor of chemistry, University of Texas at El Paso

8:30 – 10:00 p.m.

**Social Networking & Poster Session on CUREs** – Room 111ABC

*For faculty, staff, and adult guests only*



## Saturday, Nov. 11, 2017

Please check out of the hotel by 11:00am – luggage can be stored at the hotel until the end of the conference

7:00 – 8:00 a.m. **Breakfast** – Room 100BC

8:00 – 11:20 a.m. **Oral Presentations**  
Presentations are 20 minutes in length (15 minute presentation & 5 minutes for Q&A)

**Symposium on Physical Sciences**  
Room 100B  
Presider: Dr. Craig Montgomery  
Professor of Chemistry and Dean of  
Natural and Applied Sciences, Trinity  
Western University

**Symposium on Life Sciences**  
Room 100C  
Presider: Dr. Noelle Wiersma  
Professor of Psychology, Dean of Arts  
and Sciences, Whitworth University

9:20 – 9:40 a.m. **Break**

11:20 – 11:50 a.m. **Check Out**

11:50 a.m. – 12:30 p.m. **Lunch** – Room 100BC

12:30 – 1:00 p.m. **Closing/Awards** – Room 100BC

*Award Recipients:*  
A photo will be taken when you receive the award. After all awards have been made, all awardees and their faculty research mentors are asked to come up for a group picture.

- MC: Dr. Moses Lee
- Dr. Beth Ambos, Executive Officer, CUR
- Dr. Noelle Wiersma, Dean, Whitworth University
- Dr. John Van Zytveld, M.J. Murdock Charitable Trust

*Faculty Enrichment Workshop* – Those who have received information about the workshop, please meet at the registration area immediately following the conference to catch the bus to Whitworth University. The bus will leave promptly at 1:30 p.m.

*Conference Survey:* Following the conference, please be sure to complete this [short survey](#). You will also receive an email with this link. Your input is greatly valued and very much appreciated.



## PARTICIPATING GRADUATE SCHOOLS & SCIENTIFIC INSTRUMENTATION VENDORS

Friday, November 10 | 12:00 – 5:00 pm | Room 111ABC

### **BOISE STATE UNIVERSITY**

Katie Stone, director of graduate recruiting

### **BRUKER**

Dr. Daniel Frankel, senior sales representative

### **EASTERN WASHINGTON UNIVERSITY**

Dr. Leslie Cornick, associate dean, College of Science, Technology, Engineering and Mathematics

### **MILLIPORESIGMA**

Brian Hall, senior scientist

### **MONTANA STATE UNIVERSITY**

Dr. Karlene Hoo, dean & professor of chemical engineering

### **OREGON STATE UNIVERSITY, GRADUATE SCHOOL**

Melissa Almanza, coordinator, student financial support and recruitment

Dr. May Nyman, professor of chemistry

### **PACIFIC UNIVERSITY**

Piper Menke, assistant director and recruitment specialist for graduate admissions

### **UNIVERSITY OF ALASKA FAIRBANKS**

Jessica Armstrong, graduate student coordinator

Dr. Paul Layer, dean, college of natural science and mathematics

### **UNIVERSITY OF IDAHO**

Mikyla Wood, management assistant, UI College of Graduate Studies

### **UNIVERSITY OF MONTANA, GRADUATE SCHOOL**

Kelly Speer, office manager

### **UNIVERSITY OF OREGON, APPLIED BIOINFORMATICS & GENOMICS MASTER'S PROGRAM**

Dr. Leslie Coonrod, Associate Director, Bioinformatics Master's Program

### **UNIVERSITY OF OREGON, GRADUATE INTERNSHIP PROGRAM**

Dr. Nima Dinyari, director, optics programs

Libby Seidell, graduate student



### **UNIVERSITY OF WASHINGTON, GRADUATE STUDIES**

Amanda Bradley, graduate student, molecular & cellular biology program  
Dr. Richard Gardner, associate professor of pharmacology molecular & cellular biology program  
Sabrina Kamran, graduate student, pharmacology  
Dr. Teresa Swanson, molecular & cellular biology program

### **WALLA WALLA UNIVERSITY, GRADUATE STUDIES**

Brandon Shadel, graduate enrollment coordinator

### **WASHINGTON STATE UNIVERSITY**

Kay Brothers, coordinator, integrated program in biomedical sciences  
Dr. Lori Carris, associate dean of the graduate school  
Dr. Qiang “Joe” Zhang, assistant professor of chemistry  
Dr. ChulHee Kang, professor of chemistry

### **WASHINGTON STATE UNIVERSITY, ELSON S. FLOYD SCHOOL OF MEDICINE**

Lynn Howard, director of medical student recruitment

### **WASHINGTON STATE UNIVERSITY VANCOUVER**

Dr. Gretchen Rollwagen-Bollens, clinical professor

### **WESTERN WASHINGTON UNIVERSITY**

Dr. Gautam Pillay, vice president for research and dean of the graduate school  
Johann Sigursonsson, graduate student  
Ian Smith, graduate student



## LIFE SCIENCES ORAL PRESENTATIONS

Friday, November 10 | 8:50 – 11:50 am | Room 100C

1. “Investigation of a Dipeptidase from *Lactobacillus helveticus* for the Enzymatic Detoxification of Gluten” – Nicholas Bratt; Dr. Deanna Ojennus, Whitworth University | 8:50-9:10am
2. “Modeling glucose metabolism and enzyme kinetics in cultured mink uterine epithelial cells” – Hayden Holmlund and Andrew Holston; Dr. Ayokunle Hodonu, Northwest Nazarene University | 9:10-9:30am
3. “Botryococcene Pathway Optimization With a Fluorescent Screen” – Tyler Johnson and Christine Sohn; Dr. Jon O. Freeman, Pacific Lutheran University | 9:30-9:50am
4. “Investigation of Genes Involved in Compatible Solute Biosynthesis in *Methanococcus maripaludis*” – Ashley Beausoleil and Aleksei Gendron; Dr. Kylie Allen, Gonzaga University | 9:50-10:10am

### Break 10:10 - 10:30am

5. “The influence of structure on the mechanistic toxicology of dipyridyl herbicides” – Jason Nguyen; Dr. Brendan Stamper, Pacific University | 10:30-10:50am
6. “Electrospun Matrices for Neural Tissue Engineering” – Bradley Snow and Nicholas Iwakoshi; Dr. Janice McKenzie, Walla Walla University | 10:50-11:10am
7. “Integrin Linked Kinase (ILK) and Abl in Cell Cycle Progression and Survival” – Jacqueline Tan; Dr. Julia Mills, Trinity Western University | 11:10-11:30am
8. “Exploring mechanisms of Parkinson's Disease using zebrafish” – Isaac Boardman; Dr. Tamily Weissman-Unni, Lewis & Clark College | 11:30-11:50am



## LIFE SCIENCES ORAL PRESENTATIONS

Saturday, November 11 | 8:00 – 11:20 am | Room 100C

9. “*Allelopathy in Three Species of Neotropical Cloud Forest Ferns*” – Mary Brady; Dr. Delbert Hutchison, Whitman College | 8:00-8:20am
10. “*Phylogeny and population genetic history of the ecologically important unicellular green algae *Micrasterias rotata* (Desmidiaceae)*” – Brittany Takushi; Dr. Michael Zanis, Seattle University | 8:20-8:40am
11. “*Forage Fish as Biological Indicators of Regional Marine Plastic Pollution in Puget Sound*” – Robyn Thomas; Dr. Peter Hodum, University of Puget Sound | 8:40-9:00am
12. “*Potential Niche Partitioning Among Sponge Species in the Lower Florida Keys*” – Carmen Hoffbeck and Clara Prentiss; Dr. Jeremy Weisz, Linfield College | 9:00-9:20am
13. “*Landscape Genetics of *Dermacentor andersoni**” – Nicholas Hensley; Dr. Jennifer Glowienka, Carroll College | 9:20-9:40am

### Break 9:40 - 10:00am

14. “*Climate change and dengue fever: A spatial and temporal analysis of dengue fever in six sites across the southern U.S.*” – Derek Lund and Paige Yeakle; Dr. Melinda Butterworth, Willamette University | 10:00-10:20am
15. “*Regulation of hERG Isoform Expression by KCNH2 Intronic Elements*” – Sequoyah Tate, Zhengfeng Zhou MD PhD, Qiuming Gong MD PhD, Anastasiya Goldys-Olson, Knight Cardiovascular Institute, Oregon Health & Science University; Dr. Matthew Stump, George Fox University | 10:20-10:40am
16. “*Investigations of Hormone-Linked Metabolic Changes in a Mouse Model of Polycystic Ovarian Syndrome*” – Amanda Ladner; Dr. April Binder, Central Washington University | 10:40-11:00am
17. “*Excavated Human Remains Give Insight into Geographical Origins*” – Raluca Gosman; Dr. Ami Ahern-Rindell, University of Portland | 11:00-11:20am





## PHYSICAL SCIENCES ORAL PRESENTATIONS

Friday, November 10 | 8:50 – 11:50 am | Room 100B

1. “*Cloud Chamber for Cosmic Ray Detection*” – Crystal Murray-Weston and Graham Lelack; Dr. Matthew Geske, Gonzaga University | 8:50-9:10am
2. “*Can Drones Measure LWD? High Resolution Aerial Imagry and Structure from Motion as a Method for Quantifying Instream Wood*” – Tyler Truksa and Jake Bowman; Dr. Jaime Goode, College of Idaho | 9:10-9:30am
3. “*Measuring and Modeling Microclimate Impacts of Sequoiadendron giganteum*” – Annemarie Morach, Maranda Hamilton, Sasha Lower, Dani Castillo, Summer Grandy, and Abigail Kessi; Dr. Ted Eckmann, University of Portland | 9:30-9:50am
4. “*Detecting nonlocal correlated errors: Bob gets caught faking a Bell-inequality violation*” – Gabe Juul, Meghan Feldman, and S.J. van Enk; Dr. Mark Beck, Whitman College | 9:50-10:10am

### Break 10:10 - 10:30am

5. “*Protein Model Quality Assessment with LSTM Networks*” – Matthew Conover; Dr. Renzhi Cao, Pacific Lutheran University | 10:30-10:50am
6. “*Self patterning of PS-b-PEO as a shadow mask for quantum nanowire deposition*” – Stephen Hall and Lydia Steiner; Dr. Jerry Harris, Northwest Nazarene University | 10:50-11:10am
7. “*Mapping the fluorescence lifetime curves of quantum dots for use in luminescent solar concentrators*” – Jessy Hosken; Dr. Amy Spivey, University of Puget Sound | 11:10-11:30am
8. “*Benzophenone Blues: Proton Tunneling and Ketyl Test of Air-Free Methods*” – Ellis Douma and Zachary S. Mathe; Dr. Miriam A. Bowring, Reed College | 11:30-11:50am

## PHYSICAL SCIENCES ORAL PRESENTATIONS

Saturday, November 11 | 8:00 – 11:20 am | Room 100B

9. “*Immobilization of a Ruthenium (III) Chloride Catalyst*” – Ryan LaVigne; Dr. Casey Jones, Lewis & Clark College | 8:00-8:20am
10. “*Quantifying the role of copper in modifying cytochrome c oxidase expression and oxidant production in yeast mitochondria*” – Matthew Walser; Dr. Megan Bestwick, Linfield College | 8:20-8:40am
11. “*Stability of Cytochrome C6 from psychrophilic diatom F. cylindrus*” – Logan Tillery; Dr. Katie Frato, Seattle University | 8:40-9:00am
12. “*Kinetics of Letrozole Metabolism by Cytochrome P450 3A4: Modulation and Fitting to non-Michaelis-Menten Models*” – Ryan Colson, Hayley Heers, and Dr. John Harrelson; Dr. Jeannine Chan, Pacific University | 9:00-9:20am
13. “*Development of Complex Enhanced Lanthanide Fluorescence Immunoassay*” – Christopher Nicolet; Dr. Marc McCoy, University of Alaska Anchorage | 9:20-9:40am

### Break 9:40 - 10:00am

14. “*Structural Screening of Photoactive Organic Materials*” – Jack D’Amelio; Dr. Tim Kowalczyk, Western Washington University | 10:00-10:20am
15. “*Introduction of MOM and MEM via acid-catalyzed transacetalization using solid acid catalysts*” – Joseph Edgecomb; Dr. Gregory Milligan, Saint Martin’s University | 10:20-10:40am
16. “*Photochemical Degradation of Brominated Estrogens*” – Reid Milstead; Dr. David Griffith, Willamette University | 10:40-11:00am
17. “*Identification and Quantification of Paralytic Toxins in Shellfish*” – Emily Deveau; Dr. Karisa M. Pierce, Seattle Pacific University | 11:00-11:20am



## POSTER PRESENTATIONS

Friday, November 10 | Room 111ABC

1:15 – 3:00pm odd numbered posters | 3:00 – 4:45pm even numbered posters

### A – Ecology / Evolution / Biodiversity

- A-1 “A new species of fringe-limbed treefrog (*ecnomiohyla*)” - Austin Reich; Dr. John Cossel, Northwest Nazarene University
- A-2 “A survey of macro and microinvertebrate diversity at Deep Creek Preserve” - Rhenz Dan Illoreta, Bailey Luoma; Dr. Betsy A. Bancroft, Gonzaga University
- A-3 “Climate or disturbance? The relative effects of climate and disturbance on temporal patterns of tree establishment in a mixed-species forest in the Rocky Mountains” - Christopher P. Murar; Dr. Paige E. Parry, George Fox University
- A-4 “Comparison of male and female survivorship of Columbian black-tail deer (*Odocoileus hemionus columbianus*) on Blakely Island, WA” - Alia Zieg; Dr. Eric Long, Seattle Pacific University
- A-5 “Development and Survival of Pacific Lamprey in Standing and Moving Water” - Amanda Champion; Alexa Maine (Confederated Tribes of the Umatilla Indian Reservation), Whitman College
- A-6 “Development of microsatellite markers to characterize population connectivity in two Pacific Northwest amphibians” - Sadie Parker, Owen Fortney, Katy Weil (Conservation Program, Metro Parks and Nature); Dr. Lauren Chan, Pacific University
- A-7 “Disentangling the effects of light availability, edaphic factors, and biotic interactions on seedling establishment patterns in Rocky Mountain forests” - Elizah Stephens; Dr. Paige E. Parry, George Fox University
- A-8 “Diversity of Vegetative Understory in Rocky Mountain Ponderosa Pine Woodland and Montane Sagebrush Steppe Post Wildfire” - Bryce Walker; Dr. Travis Almquist, Carroll College
- A-9 “Do trends in pollinator choice predict trends in flower size in invasive Scotch broom?” - Catherine Dufresne; Dr. Robert Bode, Saint Martin's University
- A-10 “Effect of *Cytisus scoparius* flower size on plant fitness” - Kaylin Fosnacht; Dr. Robert Bode, Saint Martin's University
- A-11 “Effects of climate change on food preference in brook stickleback” - Paige Hauter, Julia E. Misslin; Dr. Betsy A. Bancroft, Gonzaga University
- A-12 “Effects of climate change on larvae of non-native amphibian species and their interactions with native amphibians” - Karli McIntyre, Ondraya Romero, Megan Lantsberger, Bridget Eastwood, Dr. Brook O. Swanson; Dr. Betsy A. Bancroft, Gonzaga University
- A-13 “Effects of Habitat Complexity and Socioeconomic Status on Avian Biodiversity in Urban Environments” - Kaitlyn Finlayson; Dr. Peter Hodum, University of Puget Sound
- A-14 “Effects of Heavy Metal Pollution on the Macroinvertebrate Community of the Lower Coeur d'Alene River Basin” - Rachael Snodgrass, Jackson M. Davis, Quinn Kensey, David M. Goltz; Dr. Stephen G. Hayes, Gonzaga University
- A-15 “Estimating the baseline genetic diversity of an island population of Black-tailed Deer” - Shun-Je Bhark, Dr. Eric S. Long; Dr. Jennifer R. Tenlen, Seattle Pacific University



- A-16 *"Factors influencing seasonal shifts in mudflat primary producer communities in Yaquina Bay, OR"* - Grace Brennan, Madeline Henningsen, Victoria Avalos; Dr. Christine Weilhoefer, University of Portland
- A-17 *"Feeding ecology of stream-dwelling idaho giant salamanders (dicamptodon aterrimus)"* - Jennifer Dewey; Dr. John Cossel, Northwest Nazarene University
- A-18 *"Genome Size Correlations Among Crustaceans"* - Jeremy Bjelajac; Dr. Kristin Hultgren, Seattle University
- A-19 *"Growth and production of Hops (Humulus lupulus) varieties in the Helena Valley (MT)"* - Reegan Debruycker; Dr. Travis Almquist, Carroll College
- A-20 *"Herpetofauna conservation via disease surveillance: developing an external positive control for ranavirus qpcr analysis"* - Katelynd Routledge, Ayokunle Hodonu; Dr. John Cossel, Northwest Nazarene University
- A-21 *"How Changes in Plant Community Structure Affect Ant Communities: Year 4 of 5"* - Michael Molgaard, Jordan Clark, Liam Home; Dr. Chad Tillberg, Linfield College
- A-22 *"How Sexual Dimorphism of Gasterosteus aculeatus Differs Between Populations"* - Ethan Warwick, Blanca P. Atilos Rios (University of Calgary), Tegan N. Barry, Heather A. Jamniczky; Dr. Heidi Schutz, Pacific Lutheran University
- A-23 *"Impacts of urbanization on the intertidal community in the Puget Sound"* - Morgan Beste; Dr. Kristin Hultgren, Seattle University
- A-24 *"Leaf morphology variation in knotweed (Fallopia) species in relation to interspecific hybridization"* - Micaela Janse van Rensburg, Matthew Strelau; Dr. David Clements, Trinity Western University
- A-25 *"Lichen Assessment of the Beartooth Pass"* - Jade Gjerde; Dr Megan Poulette, Rocky Mountain College
- A-26 *"Machine Learning Design of a Hunter Agent Based Model: A Study of Climate Change and its Impact on Subsistence Harvest and Land Use in the Arctic"* - Henri Thomas, Maxwell Franklin and Cory Sheaffer; Dr. Martin Cenek, University of Alaska Anchorage
- A-27 *"Mate recognition by olfaction in a songbird"* - Passina Abe; Dr. Christopher Templeton, Pacific University
- A-28 *"Meiofaunal Diversity and Bacterial Symbioses in High Sulfide Environments of Commencement Bay"* - Jacob Shaffer; Dr. Joel Elliott, University of Puget Sound
- A-29 *"Natural Reward Dynamics of C. arvensis in the Mediterranean Ecoregion"* - Taylor Salguinto, Dr. John M. Hranitz, Dr. Theodora Petanidou, Dr. Thomas Tscheulin, Dr. Victor Gonzalez, Vilnery Rivera, Professor H. Dobson; Dr. John Barthell, Whitman College
- A-30 *"Petal Lobe Anthocyanin Pigmentation in Mimulus variegatus variegatus"* - Kuenzang Om; Dr. Arielle Cooley, Whitman College
- A-31 *"Pollinator Communities on Invasive Scotch broom in the Pacific Northwest vary in Space and Time"* - Danner Linhart; Dr. Robert Bode, Saint Martin's University
- A-32 *"Pre-treatment monitoring for North Hebgen Lake Whitebark Pine Restoration"* - Kelsey Crona; Dr. Megan Poulette, Rocky Mountain College
- A-33 *"Pushing the Limits of Species Delimitation with Alpheus Shrimps"* - Sydney Hensyel; Dr. Kristin Hultgren, Seattle University



- A-34 *“Regional Survey for a Resistant-Breaking Strain of Raspberry bushy dwarf virus (RBDV-RB) in Washington and Oregon”* - Adrienne Scarcella, Tessa C. Wright; Dr. Kara K. Lanning, Pacific Lutheran University
- A-35 *“Spatial and Temporal Variation in Epibiotic Bacteria of Shore Crabs”* - Elise Phillips; Dr. Joel Elliott, University of Puget Sound
- A-36 *“Species Distribution and Diversity in the Absaroka-Beartooth Wilderness”* - jacob meyers; Dr. Megan Poulette, Rocky Mountain College
- A-37 *“Species interactions in an urban carnivore community”* - Sam Levy, Peter Reinhardt; Dr. Mark Jordan, Seattle University
- A-38 *“Stress Across Aquatic Ecosystems: a Meta-Analysis of Synergistic Interactions”* - Austen Rankin; Dr. Betsy A. Bancroft, Gonzaga University
- A-39 *“Territorial aggression in the Riverside Wren determined through duet song choice and behavioral response to conspecific playback”* - Lauren Lykins, Esmeralda Quirós-Guerrero (University of St Andrews); Dr. Christopher Templeton, Pacific University
- A-40 *“The Effect of Non Native Reed Canary Grass (Phalaris arundinacea) on Macroinvertebrates in Wetland Areas of Tunrnbull National Wilde Life Refuge”* - Gunner Davies, Henery Price, Shara Hindle, Dr. Camille McNeely; Dr. Rebecca Brown, Eastern Washington University
- A-41 *“The Effect of Substrate Affinity, pH, and Canopy Openness on Niche Partitioning of Three Fern Species in the Olympic Peninsula”* - Eric Hartel; Dr. Carrie Woods, University of Puget Sound
- A-42 *“The effects of ecological restoration on small mammal health”* - Dru Martinez, Eli Waxman, Rachel Aber; Dr. Laurie Dizney, University of Portland
- A-43 *“The relationship between host mutation and microbiome composition in Daphnia magna”* - Avehi Singh, Nick Thayer; Dr. Sarah Schaack, Reed College
- A-44 *“Ureolytic Gut Microbes and UT-B Transporters in Arctic Ground Squirrels”* - Sarah Gering, Karen Carlson; Dr. Khrys Duddleston, University of Alaska Anchorage
- A-45 *“Variations in Pest Bird Populations on Dairies”* - Aurora Sachet; Karen Steensma, Trinity Western University
- A-46 *“Using stable isotope analyses to explain patterns in epiphyte distributions in temperate rainforests”* - McKinley Nevins; Dr. Carrie Woods, University of Puget Sound
- A-47 *“Using Lichens as a model for coral reef thermal tolerance using cytoplasmic HSP70 protein in algal cells”* - Anna Danford, Marissa Pounds and Heidi Niederstadt; Dan Shay and Randy James, North Central High School



Friday, November 10 | Room 111ABC

1:15 – 3:00pm odd numbered posters | 3:00 – 4:45pm even numbered posters

**B – Developmental Biology / Physiology**

- B-1 “*Weapon Performance of Rhinoceros Beetles*” - Benjamin Buchalski, Dylan Scanes; Dr. Brook Swanson, Gonzaga University
- B-2 “*Blood Perfusion*” - Hayley Cheyney Kane, Anita Karr; Dr. Cara Wall-Scheffler, Seattle Pacific University
- B-3 “*Do Hummingbirds Radiate Heat From Their Long Bills?*” - Kaheela Reid, Emma Bloomquist; Dr. Donald R. Powers, George Fox University
- B-4 “*Effects of Vitamin B12 and Ginseng Complex on the Murine Immune System*” - Winston Weigand; Dr. Joan Redd, Whitman College
- B-5 “*Evaporative Heat Dissipation at High Temperature during Hovering in Hummingbirds*” - Emma Bloomquist, Dr. Bret Tobalske (University of Montana); Dr. Donald R. Powers, George Fox University
- B-6 “*Global Gene Expression Analysis in the absence of a non-receptor tyrosine kinase in post-embryonic development of the nematode C. elegans*” - Gabriella Bullman, Suhail Rajah; Dr. Aaron Putzke, Whitworth University
- B-7 “*Human Behavior at Crossroads*” - Minh Dang, Azariea Bonner-Harris, Antavea Green; Dr. Cara Wall-Scheffler, Seattle Pacific University
- B-8 “*Human Walking Behavior at Crosswalks*” - Azariea Bonner-Harris, Antavea Green, Ngan Dang, Kristi Holt, Alexis Campbell; Dr. Cara Wall-Scheffler, Seattle Pacific University
- B-9 “*Identification and Analysis of a Highly Conserved Protein Family in the Tardigrade Hypsibius dujardini*” - Katelyn Eggiman; Dr. Jennifer Tenlen, Seattle Pacific University
- B-10 “*Identifying the function of zebra fish endogenous retrovirus potential PDE*” - Jackson Klee; Dr. Holly Basta, Rocky Mountain College
- B-11 “*Investigating the Effects of Nicotine in Drosophila melanogaster*” - Madison Lambert, Ariel Shaw, Haley Halperin Perry; Norma Velazquez-Ulloa, Lewis & Clark College
- B-12 “*Investigative Study Determining the Cardioprotective Effects of Exercise in the Context of the Pathological Formation of Cardiac Fibrosis*” - Courtney Olson; Dr. Stephen Luckey, Seattle University
- B-13 “*Multilevel responses of Octopus rubescens to ocean acidification*” - Dustin Geinger, Alex Hartzell; Kirt Onthank, Walla Walla University
- B-14 “*Patterns of Nighttime Body-Temperature Regulation in Hummingbirds*” - Isabelle Cisneros; Dr. Donald R. Powers, George Fox University
- B-15 “*Physiological and pathological mitochondrial fission is mediated by beta adrenergic signaling pathways*” - Lee Hausman-Cohen; Dr. Michael Coronado, Whitman College
- B-16 “*Response of Daphnia magna heart rate to e-cigarette flavorings and nicotine*” - Camas Curran; Dr. Thomas Pirtle, The College of Idaho
- B-17 “*The Effect of Platelet Yield on 5 to 7 Day Platelet Storage*” - Aja Anderson, Joe Rice (Terumo BCT); Dr. Jennifer Swanson, University of Providence
- B-18 “*The Effects of Olfaction on Maternal Recognition in Peromyscus californicus*” - Mariah Conley, Timothy Liu; Dr. Janet Bester-Meredith, Seattle Pacific University



- B-19 *“The Ontogeny of Kisspeptin Neurons in the Rhesus Monkey”* - Heidi Funderburgh, Uyen-Vy Navarro; Dr. Heidi Stincic (OHSU); Dr. Oline RØnnekleiv, George Fox University
- B-20 *“Transgenerational immune priming in an insect: embryonic development and larval survival”* - Patrick Anderson, Erin Cole, Dr. Wendy Smith, Dr. Rebeca Rosengaus (Northeastern University); Dr. Diane Lund, University of Providence
- B-21 *“Adaptive mutations in the sodium channels of venomous hymenopterans”* - Matthew Dolan, Ashleigh Miller; Dan Shay and Randy James, North Central High School



Friday, November 10 | Room 111ABC

1:15 – 3:00pm odd numbered posters | 3:00 – 4:45pm even numbered posters

### C – Molecular and Cell Biology

- C-1 “14-3-3 Proteins as Novel Regulator of the Ubiquitin 26S Proteasome” - Ryan Apathy; Dr. Bryan Thines, University of Puget Sound
- C-2 “A new way to regulate the ISmaMI Homing Endonuclease using Sortase” - Austin Bailey; Dr. Brett Kaiser, Seattle University
- C-3 “Where Does Transcription Initiation Begin in the Bacteriophage Corndog?” - Kailee McGeer, Julia Engstrom; Dr. Kirk Anders, Gonzaga University
- C-4 “Assessing the F-box genes F-BOX STRESS INDUCED 1, 2, 3, and 4 under salt stress in *Arabidopsis Thaliana*” - Lily O'Connor; Dr. Bryan Thines, University of Puget Sound
- C-5 “Calcium Control of MDM2 in Breast Cancer Cells” - Gia Han Nguyen; Dr. John M. Schmitt, George Fox University
- C-6 “Characterization of CLCA1 in the Rhesus Macaque Cervix” - Jessenia Chavez; Dr. Ov Slayden (Oregon Health & Science University), Willamette University
- C-7 “Dopamine localization by glyoxylic acid-induced histofluorescence microscopy in the marine macroalga, *Ulvaria obscura*” - Cibelle Nassif, Dr. Rick L Ridgway; Dr. Rick Ridgway, Seattle Pacific University
- C-8 “Effect of Electronic Cigarette Liquid on Cytotoxicity and Key Osteoblast Markers in MG-63 Cells” - Florence Wavreil, Mary M. Brown, Dr. Kristen A. Mitchell (Boise State University), Dr. Wendy A. Harvey (Boise State University); Dr. Sara Hegglund, The College of Idaho
- C-9 “Effects of Plasminogen and ABCA1 Interactions on Cellular Sterol Efflux” - Paige Bergstrom; Dr. Nathalie Pamir, George Fox University
- C-10 “Effects of Testosterone on Claudin Gene Expression in the Ovary” - Tatyana Pisarenko; Dr. April Binder, Central Washington University
- C-11 “Effects of the Phthalate-Free Plasticizers ATBC, DOA, and GPO on Neuronal Cell Growth and Viability” - Vanessa Ramirez, Elaine Wong; Dr. Lucinda Carnell, Central Washington University
- C-12 “Examining Differential F-box Gene Expression under Abiotic Stresses in *Arabidopsis thaliana* via a Meta-Analysis” - Tina Chapman; Dr. Bryan Thines, University of Puget Sound
- C-13 “Exploring the functional effect of synonymous mosaic mutations in autism spectrum disorder” - David Degnan, Ryan Mulqueen (OHSU), Dr. Rebecca Barnard (OHSU); Dr. Brian O'Roak (OHSU), George Fox University
- C-14 “Functional Annotation of Putative ZmlAAs : A Synthetic Auxin Signaling System in Yeast” - Robert "Tristan" Cates, Kathleen Daly-Jenson, Kristina Jackson; Dr. Britney Moss, Whitman College
- C-15 “Gene expression of *Triticum monococcum* in response to cold stress” - Belana Anderson, Abigail Limov; Dr. Sam Fox, Saint Martin's University
- C-16 “Identification of an Alternative Exon in a GABA Receptor Gene” - Shannon Apgar, Connell Crabtree, Tenzin Yangchen; Dr. Cecilia Toro, Linfield College
- C-17 “Immune reaction of human lung cells from stimulation by hantavirus-like particle: a new model for study” - Mary India Trogden; Dr. Christina Rush, Salish Kootenai College





- C-18 *“Interactions of Microbiota and the Immune Response in Threespine Stickleback”* - Kelly Ireland, Emily Lescak and Lucas Kirschman; Dr. Kat Milligan-Myhre, University of Alaska Anchorage
- C-19 *“Inverse Relationship Between Alzheimer's and Cancer”* - Kristin Shirley; Dr. Randall Woltjer, Warner Pacific College
- C-20 *“Investigating the Genetic Basis of Inbreeding Depression in Mimulus guttatus Using Greenhouse Observation Methods and Population Genetic Analysis”* - Kelly Kingdon; Dr. Vanessa Koelling, University of Puget Sound
- C-21 *“Investigating the promoters of two genes in the Cluster O bacteriophage, Corndog”* - Elisabeth Sitio; Dr. Kirk Anders, Gonzaga University
- C-22 *“Investigating the Role of an ABC Transporter in Lysosome-Related Organelle Localization and Trafficking”* - Jackson Thein, James Brandt, Logan Harper; Greg J. Hermann, Lewis & Clark College
- C-23 *“Investigation of Functional Consequence, Oncogenic Potential, and Pathogenic Cooperativity of Mutant Kinases in Medulloblastoma”* - Theodore Truong; Dr. Monika Davare, University of Portland
- C-24 *“Metabolic Impacts of Fructose and Copper on the Progression of Non-Alcoholic Fatty Liver Disease”* - Megan Tegman; Dr. Leslie Saucedo, University of Puget Sound
- C-25 *“Modeling glucose metabolism and enzyme kinetics in cultured mink uterine epithelial cells”* - Hayden Holmlund, Andrew Holston; Ayokunle Hodonu, Northwest Nazarene University
- C-26 *“Modification of Mouse Lens Proteins in Response to a High Sugar Diet”* - Abigail Lucas, Dr. Kirsten Lampi (OHSU), Dr. Larry David (OHSU); Dr. Sarah Comstock, Corban University
- C-27 *“PepperPathway: Visualizing Proteins of Influence in Cancer Pathways”* - Nick Egan; Anna Ritz, Reed College
- C-28 *“Pilot Cell Experiments in Custom-designed Bioreactor”* - Nicholas Iwakoshi, Bradley Snow, Braden Stanyer, Ashley Norman; Janice McKenzie, Walla Walla University
- C-29 *“Regulation of hERG C-terminal Isoform Expression by Poly(A) Binding Protein Nuclear 1”* - Rachel Nguyen, Dr. Zhengfeng Zhou, Dr. Qiuming Gong, Anastasiya Goldys-Olson (Knight Cardiovascular Institute, Oregon Health & Science University); Dr. Matthew R. Stump, George Fox University
- C-30 *“Role of a single amino acid of grapevine fanleaf virus in symptom expression”* - Jaime Kenney; Dr. Rebecca Brown, Eastern Washington University
- C-31 *“Testing a Clonal Competition Model of Brain Development”* - Talia Lichtenberg, Nicole L. Brockway; Tammy Weissman-Unni, Lewis & Clark College
- C-32 *“Testing the Ability of Bacillus subtilis to Cross Protect Against Oxidative Stress”* - Vina Tran; Dr. Carla Y. Bonilla, Gonzaga University
- C-33 *“The cytotoxic effects of anthracyclines on the GL261 cell line”* - Megan Phelps; Dr. Luke Daniels, The College of Idaho
- C-34 *“The Effect of Heat Stress on Pollen in Pirl Gene Mutants in Arabidopsis thaliana”* - Chanel Knight; Dr. Dan Vernon, Whitman College
- C-35 *“The effect of methylmercury on the onset and progression of diabetes type II”* - Courtney Stinger; Dr. Wendy Westbroek, Salish Kootenai College
- C-36 *“The potential role of prolactin in glycogen metabolism”* - Luke LaMue; Ayokunle Hodonu, Northwest Nazarene University



- C-37 *“The recruitment and activation of a Rab GTPase in lysosome-related organelle biogenesis”* - Simran Handa; Greg Hermann, Lewis & Clark
- C-38 *“Upregulation of Hepatic De Novo Lipogenesis in Sugar Induced Obese Mice”* - Dallyce Vetter, Dr. Kirsten Lampi (Oregon Health and Science University); Dr. Sarah Comstock, Corban University
- C-39 *“Vitamin D and CaM Kinase Phosphatase Mediate Breast Cancer Proliferation”* - Quinlan Morrow; Dr. John M. Schmitt, George Fox University
- C-40 *“Where Does Transcription Initiation Begin in the Bacteriophage Corndog?”* - Julia Engstrom, Kailee McGeer; Dr. Kirk Anders, Gonzaga University
- C-41 *“An analysis of TRPV3 mutations in Columbian Mammoth”* - Francis Neff, Steven Patrick; Dan Shay and Randy James, North Central High School



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**D – Neuroscience / Psychology / Exercise Science**

- D-1 *“Changes in the behavior and the morphology of the visual cortex in weanling rats after 4 and 10 days of differential housing”* - Tessa Dignum; Dr. Ginger Withers, Whitman College
- D-2 *“Determining the Location of GABA Receptor mRNA Transcripts in Danio rerio”* - Jackson O’Keefe, Connell Crabtree, Tenzin Yangchen; Dr. Cecilia Toro, Linfield College
- D-3 *“Developing zebrafish model to determine the effects of prenatal immune activation on the development of the central nervous system”* - Arianna Cannady, Stephanie Ramirez-Hernandez; Dr. Carla Parker, Willamette University
- D-4 *“Diabetic Neuropathy Results in Reduced Proprioceptive Acuity in the Knee”* - Elizabeth Simonovich; Dr. Lucas Ettinger, Willamette University
- D-5 *“Does dopamine signaling change in a brain with Huntington’s disease? Measures of tyrosine hydroxylase intensities in the cortical-limbic-striatal circuitry over time in a transgenic mouse model of Huntington’s disease”* - Zachary Daniels, Ruby Perez; Dr. Mark Pitzer, University of Portland
- D-6 *“Effects of Synthetic Cathinone on GnRH Neurons vis Dopaminergic Neurons in Zebrafish”* - Anjalee Raman; Dr. Siddharth Ramakrishnan, University of Puget Sound
- D-7 *“Independent association of TPeak and TEnd interval on ECG VCG and sudden cardiac death”* - Ryan Gonzales; Dr. Larisa Tereshchenko, Concordia University Portland
- D-8 *“Invertebrate neurophysiology: Testing the efficacy of natural insecticides”* - Anastasiya Ananenka; Dr. Wayne Tschetter, Concordia University Portland
- D-9 *“Investigating the Role of DNC-2 and DLL-1 in AMPA Receptor Mediated Behavior in C. elegans”* - Natalie Oberding; Dr. Stefanie Otto-Hitt, Carroll College
- D-10 *“Oxytocin Affects Reaction Time but Not Appraisal of Uncanny Valley Stimuli”* - Andre Zamani; Dr. Erin Colbert-White, University of Puget Sound
- D-11 *“Quantitative comparison of visual acuity using visually evoked potentials and behavior in mice”* - Emmanuel Drutu; Dr. Wayne Tschetter, Concordia University Portland
- D-12 *“The Influence of Baby’s Position On Walking Strategies”* - Oluwadamilola Sosanya; Dr. Cara Wall-Scheffler, Seattle Pacific University
- D-13 *“The influence of color and contrast on information reliability and flight control in Bumblebees”* - Emily Campbell; Dr. Jonathan Dyhr, Northwest University
- D-14 *“The role of Rab7A in cortical development”* - Brittany Curtiss, Dr. Anthony Barnes and Dr. Sarah Santiago (Oregon Health & Science University); Dr. James Smart, George Fox University
- D-15 *“Zebrafish Rheotaxis in the Presence of GABA Receptor Modulators”* - Austin Ramsey; Dr. Cecilia Toro, Linfield College

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### E - Biochemistry

- E-1 “007 - Attachment of enzyme cargo to a computationally designed protein scaffold using Spycatcher and Spytag partners” - Caley Polkinghorn; Dr. Brett Kaiser, Seattle
- E-2 “Adaptive Mutagenesis in an RNA Polymerase Mutant Cell Line” - Alyssa Jilk; Dr. Tina T. Saxowsky, Pacific Lutheran University
- E-3 “An investigation of a novel pathway regulating biofilm formation in the plant pathogen, *Agrobacterium tumefaciens*” - Lisa DePledge, Clay Fuqua (Indiana University), Nathan Feirer (Indiana University); Dr. Kylie Allen, Gonzaga University
- E-4 “Assessing the Role of Reactive Oxygen Species in the Inactivation of Cytochrome P450 2A6 by *trans*-Cinnamaldehyde” - Casey Johnston, Dr. John Harrelson; Dr. Jeannine Chan, Pacific University
- E-5 “Biomolecular Target Identification of a Nerve Specific Fluorophore Using Novel Proteomics Methods for Nerve Sparing Radical Prostatectomy” - Broderick House, Connor Barth; Dr. Summer Gibbs, University of Portland
- E-6 “Characterization of a Hypothetical Radical S-adenosyl-L-methionine Enzyme from *Clostridium botulinum*” - Samuel Matsuura, Mai Jones; Dr. Rachel Hutcheson, University of Portland
- E-7 “Characterization of a novel RNA tertiary interaction found in THF riboswitches” - Charles Mitchell, Charles Mitchell, Laura DeWald, Dustin Kress; Dr. Wade Grabow, Seattle Pacific University
- E-8 “Characterization of the thermal and chemical stability of the c-type cytochrome Tp35934 from *T. pseudonana*” - Miranda Wilson; Dr. Katie Frato, Seattle University
- E-9 “Coding the Split Spinach Aptamer” - Jack O'Hara; Dr. Wade Grabow, Seattle Pacific University
- E-10 “Determining the role of retinoid X receptor alpha in mitochondrial DNA transcription” - Sarah Rempelos; Dr. Megan Bestwick, Linfield College
- E-11 “Elucidating the Role of Transcription in Adaptive Mutagenesis with *rad26?* Cell Lines of *Saccharomyces cerevisiae*” - Xinhui (Sunny) Huang; Dr. Tina T. Saxowsky, Pacific Lutheran University
- E-12 “Elucidation of the Role of CT610 in the Folate Synthesis Pathway in *Chlamydia trachomatis*” - Megan Zimbelman, Thomas Cast, Ian Crawford; Dr. Kylie Allen, Gonzaga University
- E-13 “Evolution of Morpheein Behavior in Bacterial HMG-CoA Reductase” - Annalise Rogalsky, Chad Hicks; Dr. Jeff Watson, Gonzaga University
- E-14 “Fluorescent detection of reactive oxygen species in *Saccharomyces cerevisiae* applied to chronological lifespan” - Kelly Schultz; Dr. Megan Bestwick, Linfield College
- E-15 “Identification of a Modified Coenzyme F430 in *Methanococcus maripaludis* and *Methanosarcina acetivorans*” - Aleksei Gendron, Ashley Beausoleil; Dr. Kylie Allen, Gonzaga University
- E-16 “Identification of interacting proteins for the mitochondrial transcription factor TFAM and mutants” - Shae Reece; Dr. Megan Bestwick, Linfield College



- E-17 *“Investigating a Potential Three-Way Interaction Between the Emx2, Qkl-7, and Cnot6l Proteins”* - Susana Camacho Plascencia; Dr. Todd Kroll, Central Washington University
- E-18 *“Investigating the effects of oxidative DNA damage on survivability and mutagenesis in Saccharomyces cerevisiae”* - Olivia Egejuru; Dr. Tina T. Saxowsky, Pacific Lutheran University
- E-19 *“Isolation and characterization of antibacterial and antifungal activity of ancient soil sediment actinomycetes”* - Madeline Otto; Dr. Angela Hoffman, University of Portland
- E-20 *“Isolation of antibiotic materials from bacterium collected at a Roman archeological dig site”* - Astrid Schick; Dr. Angela Hoffman, University of Portland
- E-21 *“Ligand selectivity in a pathogenic preQ1 riboswitch aptamer domain”* - Brittney Kessel, Karyl Yamakawa; Dr. Ian Suydam, Seattle University
- E-22 *“Resurrecting Common Ancestors to Study Evolution of HMG-CoA Reductase”* - Chad Hicks; Dr. David G. Lynn, Gonzaga University
- E-23 *“Synthesis of Tetrahydroquinoline Derivatives as Novel Histamine H4 Receptor Antagonists”* - Hoi Cheung; Dr. Alia Clark, University of Puget Sound
- E-24 *“The binding of alpha-alkyl analogs of trans-cinnamic aldehyde to cytochrome P450 2A6”* - Hung Nguyen, Tia Uehara, Hung Nguyen, Blessing Cao, Dr. John Harrelson; Dr. Jeannine Chan, Pacific University
- E-25 *“The effects of mono amine oxidase A polymorphisms on canine aggression”* - Danielle Jones, Victoria Stryd; Dan Shay and Randy James, North Central High School

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### F – Organic Chemistry

- F-1 “Approaches to the Chemoenzymatic Total Synthesis of Epoxyquinol A” - Brad Kline; Dr. Jonathan Collins, Whitman College
- F-2 “Conjugation of Benzofulvenes due to Exocyclic Substituents” - Nicolas (Cole) Fisher, Connor Whyte; Dr. Adam C. Glass, Pacific Lutheran University
- F-3 “Conversion of Ureas to Hydroxyguanidines for Conjugation to Drug-Releasing Polymers” - North Foulon; Dr. Neal A. Yakelis, Pacific Lutheran University
- F-4 “Crystallization efforts of a hydroquinone ring-cleaving dioxygenase, PcpA” - Annie Stefanides; Dr. Tim Machonkin, Whitman College
- F-5 “Developing Peptide Metallo-Cages” - Hanna Clements; Dr. Masaomi Matsumoto, Gonzaga University
- F-6 “Dicarboxylation of the CB<sub>11</sub>H<sub>12</sub> anion: Synthesis of 1,12-dicarboxy-1-carba-closo-dodecaborate” - William Mendelsohn; Dr. Mark Juhasz, Whitman College
- F-7 “Effect of Poly(methylmethacrylate) Incorporation on Carbon (<sup>13</sup>C) and Nitrogen (<sup>15</sup>N) Isotopic Ratios in Alaskan Caribou Teeth” - Erik Linduska, Nathan Harmstron; Dr. Pat Tomco, University of Alaska Anchorage
- F-8 “Encapsulation of Reactions in a Tetrahedral Ga Supramolecular Cage” - Bri Dobson, Gayle Chan, Johnathan Sheiman; Rebecca LaLonde, Reed College
- F-9 “Investigating the Rates of Retro-Nitroso-Diels-Alder of 1-Substituted-1,3-Cyclohexadienes as a Novel Strategy for Long-Acting Injectable Drug-Polymer Conjugates” - Moon Jung (Luna) Kim; Dr. Neal A. Yakelis, Pacific Lutheran University
- F-10 “Investigation of New Monohalogenated Substrates of Benzoate Dioxygenase” - Samuel Erickson, Deepraj Pawar; Dr. Jonathan Collins, Whitman College
- F-11 “Investigation of silica/titania composite materials doped with graphene oxide (GO) as plasmon-free Surface Enhanced Raman Spectroscopy (SERS) substrates & analysis of GO defect density after thermal reduction” - Luis Perez; Dr. Elizabeth O. Atkinson, Linfield College
- F-12 “Preliminary Biological Activities and Characterization of Root Extract from Dalea Lanata (fabaceae)” - Nicholas Ragland, Dr. Blaise Dondji, Dr. Marcin Kolaczowski; Dr. Gil Belofsky, Central Washington University
- F-13 “Retro-Diels-Alder Reactions of Nitrosocarbaminides as Potential Urea Prodrugs” - Nguyen (Anna) Tran; Dr. Neal A. Yakelis, Pacific Lutheran University
- F-14 “Synthesis and Testing of Novel Tetracaine Derivatives as Potential Local Anesthetics” - Claire DeAngeli, Dr. Jeffrey Kirsch (Oregon Health and Science University); Dr. Sarah Kirk, Willamette University
- F-15 “Synthesis of a Cavitand for Use in Eight-Helix Template Assembled Synthetic Protein Systems” - Jennifer Delegard; Dr. Jon O. Freeman and Dr. Neal A. Yakelis, Pacific Lutheran University
- F-16 “Synthesis of Antimalarial 2-Hydroxy-1,4-naphthoquinones Containing 3-Alkyl-diphenylether Side Chains” - Alyson Sillin, Chelsea Swartchick; Dr. Warren Wood, University of Portland
- F-17 “Synthesis of organic ligands for improving the behavior of luminescent solar concentrators” - Grace Ferguson; Dr. Carlise Chambers, George Fox University



- F-18 *“Synthesis of thermo-responsive functional poly(valerolactone)s via post-polymerization modification”* - Asteria Yiu; Dr. Jing Hao, George Fox University
- F-19 *“Synthesis of Thiourea Based Bifunctional Catalysts and Testing of Catalysts for Direct Amide Formation”* - Chris Roach; Dr. Luc Boisvert, University of Puget Sound
- F-20 *“Synthesis, self-assembly, and temperature-responsiveness of novel functional poly(valerolactone)s”* - Sterling Sweningson, Asteria Yiu; Dr. Jing Hao, George Fox University
- F-21 *“Two-Step Total Synthesis of an Anti-MRSA and Myosin-Inhibiting Marine Natural Product Pentabromopseudilin”* - Dong-Young Kum, Dr. Christina Cooper, Dr. Sarah Comstock, Dr. Mohamad Nazari (Oregon State University), Dr. Kerry L. McPhail (Oregon State University); Dr. Takashi L. Suyama, Corban University



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**G – Analytical / Inorganic / Physical Organic / Computational Chemistry**

- G-1 “A Portable Laser-Induced Breakdown Spectroscopy (LIBS) Instrument for Rapid Analysis of Diesel Particulate Matter” - Matthew Moe; Dr. Ryan McLaughlin, Seattle University
- G-2 “Alloyed Nanoparticles with Lipid Coatings” - Fatima Falcon, Ana Alfaro; Dr. Brian Gilbert, Linfield College
- G-3 “An Artful Look Into a 15th Century Altarpiece: Pigment Analysis using Microscopy and Raman and XRF Spectroscopy” - Cesar Cornejo Ochoa, Triona Matheson, Kevin Jones, Dr. Valerie Walters, Dr. Kara Breuer; Dr. Ronda Bard, University of Portland
- G-4 “Analysis of Intermolecular Arrangements in Hydrazide Based Metalloids” - Zach Armstrong; Dr. Johanna Crane, University of Puget Sound
- G-5 “Analyzing the Nanomorphology of Novel Diblock Copolymers for Potential Use as Solid Polymer Electrolytes” - Kaitlin (Katie) Gardiner, Jacob M. Finney; Dr. Dean A. Waldow, Pacific Lutheran University
- G-6 “Application of XRF and LIBS Spectroscopy in Elemental Analysis of Coins Excavated from the Ancient Roman City of Pollentia” - Riley McCammon, Andrew Breuer, Kevin Jones, Jonathan Wiley, Dr. Valerie Walters, Dr. Kara Breuer; Dr. Ronda Bard, University of Portland
- G-7 “Sulfur/Iodine Flux Synthesis of Indium Antimony Sulfide” - Maileen Nakashima, Dr. Ryan Groom (Armstrong University); Dr. Susan Lattuner (Florida State University), Reed College
- G-8 “Computational Investigation of the Thermal Stability of Protein-Small Molecule Complexes” - Kory Melton, Nate Olowu; Dr. Kevin Johnson, Pacific University
- G-9 “Decorating Carbon Electrodes with Gold Nanoparticles to Study the Kinetics of Redox Reactions” - Gabrielle Kamm, Emily M. Ness (U.S. Naval Research Laboratory), Dr. Joseph F. Parker, Dr. Debra R. Rolison, Dr. Jeffrey W. Long; Dr. Justin C. Lytle, Pacific Lutheran University
- G-10 “Developing Polymer Stabilized Iron Phosphines for Small Molecule Separations” - Keilian MacCulloch, Hoan Nguyen; Dr. Joel Gohdes, Pacific University
- G-11 “Development of a sensor array to sample trace gases in the atmosphere” - Justin Taylor, Dr. Shawn Daley; Dr. Matthew E. Wise, Concordia University Portland
- G-12 “Development of Europium (III) Complexes with improved PARACEST MRI and Luminescence Properties.” - Bridget Hoag, Dianna Karlova; Dr. Osasere Evbuomwan, Gonzaga University
- G-13 “Estimating Cannabis and Other Drug Use in Tacoma, WA from Wastewater Analysis and Human Excretion Samples” - Rosie Rushing; Dr. Dan Burgard, University of Puget Sound
- G-14 “Examining the Biodegradation of 17-estradiol” - Anya Romig; Dr. David Griffith, Willamette University
- G-15 “Extraction Efficiency of Natural Surfactants from *Sapindus saponaria*” - Ramon Carranza, Mikayla Swirski; Dr. Paul Brown, Trinity Western University
- G-16 “Hydrodefluorination and Hydrogenation of Fluorinated Arenes by Rhodium Catalysts” - Joshua Tsang, Kristopher P. McNeill (ETH Zurich); Miriam Bowring, Reed College
- G-17 “Improving Luminescent Solar Concentrator Efficiency Using Doped Nanocrystals and Ligand Exchange” - Jenise Cavness, Toriana Vigil; Dr. Andrea M. Munro, Pacific Lutheran University





- G-18 *"Impurities Effects on Liquid-Liquid Binary Systems"* - Till Kallem, Makayla McKibben; Dr. Chuck Williamson, Willamette University
- G-19 *"Introducing Physical Chemistry Students to Python and Arduino Coding in the Undergraduate Laboratory"* - Siva Ho, Guilian Luchini; Dr. Steven Mayer, University of Portland
- G-20 *"Investigating the Green Chemistry Claims of Bio-based Plastic by Determining Chemical Migration During Simulated Food Contact"* - Sydney Virgen, Lilli Smith, Allyssa Burns; Dr. Julie Layshock, Pacific University
- G-21 *"Investigating the Removal of Bound Water on the MRI and Luminescence Properties of Lanthanide Complexes"* - Zach Steinberg; Dr. Osasere Evbuomwan, Gonzaga University
- G-22 *"Investigation of Mixed Silver Bismuth Catalysts for Nitrile Hydration"* - Celia Beyke; Dr. Brandy Fox, Saint Martin's University
- G-23 *"Investigation of the absorption behavior of desferriozamine-B with the hematite/water interface using second harmonic generation spectroscopy"* - Jackie Van Ardenne; Dr. Amanda Mifflin, University of Puget Sound
- G-24 *"Isolation of Pd Catalysis Products"* - Jo Keller, Oleksandr Lushchuk; Miriam Bowring, Reed College
- G-25 *"Kinetics of Ligand Exchange with the Influence of Low Molecular Weight Organic Acids"* - Liza Briody-Pavlik; Dr. Nathan Boland, Whitman College
- G-26 *"Lipid-Coated Core-Shell Noble Metal Nanoparticles"* - Ana Alfaro, Fatima Falcon; Dr. Brain Gilbert, Linfield College
- G-27 *"Measuring the Conductivity of Novel Solid Polymer Electrolytes Using Electrochemical Impedance Spectroscopy"* - Jacob Finney, Kaitlin N. Gardiner; Dr. Dean A. Waldow, Pacific Lutheran University
- G-28 *"Molecular Modeling of Amphipathic Molecules Along an Organic/Water interface in the Presence of Divalent Cations."* - Brad Martin; Dr. Kevin Johnson, Pacific University
- G-29 *"New Photocatalysts for CO<sub>2</sub> Hydrogenation: Oxide-Supported Metal Phosphides and Plasmonic Nanostructures"* - Liam Carmody; Dr. Mark Bussell, Western Washington University
- G-30 *"NiO nanoparticle synthesis, characterization, and toxicology"* - Phillip Gwin; Dr. Jerry Harris, Northwest Nazarene University
- G-31 *"Phosphorus Sorption Characteristics of upland soils and sediments in the Little Spokane River Watershed, Washington"* - Deborah Adedeji, Mutsa Chiromo, Rachel Hicks; Dr. William Ntow, Whitworth University
- G-32 *"Potential Non-statistical Dynamics for the Allene Oxide to Cyclopropanone Conversion"* - Kara Gallo, Lydia A. Rush, Kyle S. Stumetz, Ismael A. Rodriguez Perez, Rahale Getnet; Dr. Matthew Cremeens, Gonzaga University
- G-33 *"Progress Toward Polymer Stabilized Iron Phosphines for the Purification of Natural Gas"* - Hoan Nguyen, Keilian MacCulloch; Dr. Joel Gohdes, Pacific University
- G-34 *"Refining Migration Tests for Phthalate Additives in Bio-Plastics"* - Alyssa Burns, Lilli Smith, Sydney Virgen; Dr. Julie Layshock, Pacific University
- G-35 *"Surface Water Photochemistry and Pollutant Dynamics: Structure-Activity Relationships"* - Shawn Herring, Miranda Taggart; Dr. Douglas Latch, Seattle University
- G-36 *"Synthesis and characterization of solid and hollow vaterite microspheres: A proposed mechanism of formation"* - Jeremy Harder; Dr. Shane Durbach, Trinity Western University



- G-37 *“Synthesis of Functional Catalyst Based on Mo-Containing CO Dehydrogenase”* - Marc Foster, Laurinda Nyarko, Ethan Gladhill; Dr. Dalia Rokhsana, Whitman College
- G-38 *“Synthesizing Gold Nanoparticles to Study the Kinetics of Electrochemical Reactions”* - Huyen-Trang T (Trang) Le; Dr. Justin C. Lytle and Dr. Andrea M. Munro, Pacific Lutheran University
- G-39 *“Use of zno nanoparticles to photodegrade azo dye janus green b”* - Andrew Silva; Dr. Jerry Harris, Northwest Nazarene University
- G-40 *“Using Localized Surface Plasmon Resonance to Examine Interfacial Effects on Environmental Electron Transfer Mediators”* - Nancy Nguyen, Nick Slenning, Ania Pavitt (OHSU), Dr. Paul Tratnyek (OHSU); Dr. Paige Hall Osberg, Pacific University
- G-41 *“Visible Light Initiated Oxidative Dimerization at Semiconductor Interfaces for the Efficient Storage of Solar Energy in Carbon-Carbon Chemical Bonds”* - Nathaniel Burman; Dr. John Rowley, Carroll College



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## H – Environmental Science / Geology

- H-1 *“Application of Structure from Motion (SfM) Photogrammetry to quantify sediment mobilization following wildfire blowdown events”* - Jacob Bowman, Tyler Truksa; Dr. Jaime Goode, The College of Idaho
- H-2 *“Calculating Vertical Offset of the Borah Peak Fault Scarp Using Contemporary Digital Methods”* - Daniel Mongovin; Dr. Jeff Lee, Central Washington University
- H-3 *“Central Washington Brooding Sage-grouse Prefer Upland Habitat”* - Emily Donnel; Dr. Grant Casady, Whitworth University
- H-4 *“Computational Modeling of Industrial Odors in Portland, Oregon”* - Logan Simpson, Joseph Walker; Dr. Ted Eckmann, University of Portland
- H-5 *“Eocene deformation and assimilation in the Willow Lake Natural Area, Spokane County, Washington”* - Bernt Goodson, Austin Armstrong, Dr. Paul O’Sullivan; Dr. Chad Pritchard, Eastern Washington University
- H-6 *“Estimating Potential Ozone Formation from Agricultural Crop, Dairy, and Oil and Natural Gas Emissions in the San Joaquin Valley, CA.”* - Natasha Dacic, Stacey Hughes (University of California, Irvine); Dr. Donald R. Blake (University of California, Irvine), The College of Idaho
- H-7 *“Factors Influencing Magnetic Susceptibility in the Palouse Loess”* - Sarah Strozky, McKenzie Elliot; Dr. Nick Bader, Whitman College
- H-8 *“Mineral inclusions in zircons from UHP eclogite and HP granulite and constraints on the P-T conditions of zircon growth, north Qaidam terrane, China”* - Katie Stubbs, David Hernandez Uribe, Miranda Lehman, Vaughan Gilmore, Dr. Angela Halfpenny; Dr. Chris Mattinson, Central Washington University
- H-9 *“Oxygen isotope analysis of Pacific razor clam shells from Cook Inlet, Alaska”* - Henna Gould, Dr. Brad Harris, Tim Blackmon; Dr. Amanda King, Alaska Pacific University
- H-10 *“Quantification of Wastewater in the Willamette and Susquehanna Rivers”* - Clara Wheeler; Dr. Frank Dunnivant, Whitman College
- H-11 *“Quantitative Geomorphic Analysis of the Transantarctic Drainage Systems”* - Amy Gilliland; Dr. Audrey Huerta, Central Washington University
- H-12 *“Recent Discoveries of Small Vertebrate Fossils from McKay Reservoir”* - Claire Belen Vietri, Emilie Pratt; Dr. John Orcutt, Gonzaga University
- H-13 *“Reconstructing Wildfire History in the Blue Mountains, Oregon, Using Macroscopic Charcoal Analysis”* - Nicholas Poprawski, Chris Goodner; Dr. Megan Walsh, Central Washington University
- H-14 *“Role of climate warming and the biological pump in end-Permian ocean anoxia”* - Alice Fontaine; Dr. Katja Meyer, Willamette University
- H-15 *“The relationship between pyrite framboid size distribution and isotopic composition in meromictic Fayetteville Green Lake”* - Angus Williams; Dr. Katja Meyer, Willamette University
- H-16 *“U-Pb geochronology of Silver Hill, Spokane County, Washington”* - Travis Stephens, Dr. Paul O’Sullivan; Dr. Chad Pritchard, Eastern Washington University



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### I - Microbiology

- I-1 *“Alteration of host cell glucose metabolism by Murine Herpesvirus 68 (MHV-68)”* - Tyler Ptacek; Dr. Tracie Delgado, Northwest University
- I-2 *“An Antimicrobial Approach to the Investigation into the Reduction of Hospital Acquired Infections”* - Claire Henson, Alex Kures, Hans Munzing, LaShantay Walls, Dr. Patrick Tennican (University of Washington); Dr. William Ettinger, Gonzaga University
- I-3 *“Characterization of the TonB2 iron-transduction system of Vibrio vulnificus”* - Michael Berry, Hailey Pfeifer, Brianne Zbylicki, Michael Berry; Dr. Ryan Kenton, University of Portland
- I-4 *“Comparing the Microbiomes of Grapes in Biodynamic vs. Sustainable Vineyards”* - Shea Gischer; Dr. Jeremy Weisz, Linfield College
- I-5 *“How Supplemental Iron Impacts the Antibacterial Effects of Manuka Honey”* - Laurisa Ankley, Katherine Camp, Dr. Robin O'Quinn; Dr. Andrea Castillo, Eastern Washington University
- I-6 *“Integron abundance in soil and manure after exposure to antibiotics”* - Stan Plucinik, Eleanor Thaler, Jamie Steach, Dao Nguyen, Ben Weeder; Dr. Gyorgyi Nyerges, Pacific University
- I-7 *“Macrophage infection assay development and the impact of IFNAR KO on Mycobacterium tuberculosis bacterial load”* - Ashton Perry, Aderem Lab (Center for Infectious Disease Research), Ram Lab (University of Washington), Sara Cohen, Kristin Adams; Dr. Kevin Urdahl (Center for Infectious Disease Research), Seattle Pacific University
- I-8 *“Mercury methylating bacteria in Flathead Lake”* - Felicia Blandov; Dr. Christina Rush, Salish Kootenai College
- I-9 *“Using quantitative PCR to estimate the number of mercury methylating bacterial 16S rRNA gene templates from Flathead Lake-bed sediments”* - Japhanna Burns; Dr. Christina Rush, Salish Kootenai College



Friday, November 10 | Room 111ABC

1:15 – 3:00pm odd numbered posters | 3:00 – 4:45pm even numbered posters

J - Physics

- J-1 *"A Human Powered Micro-generator for Charging Various Electronic Devices"* - John Adams, Nickolas Villalobos; Dr. Tianbao Xie, Linfield College
- J-2 *"A Precision Injection System for Studies of Finite-Amplitude Perturbation Thresholds for the Transition to Turbulence"* - Brighton Sier; Dr. Daniel Borrero, Willamette University
- J-3 *"An On-Demand Droplet Generator for Experiments in Hydrodynamic Quantum Analogs"* - Terae Jones; Dr. Daniel Borrero, Willamette University
- J-4 *"Analysis of Non-Gaussian Galaxy Velocity Distributions"* - Miles Smith; Dr. Richard Watkins, Willamette University
- J-5 *"Bulk Flows in the Cosmic Flows 3 Catalog"* - Sarah Peery; Dr. Rick Watkins, Willamette University
- J-6 *"Cloud Chamber for Cosmic Ray Detection"* - Graham Lelack, Crystal Murray-Weston; Dr. Matthew Geske, Gonzaga University
- J-7 *"Constructing a Magneto-Optical Trap for Undergraduate Physics Laboratories"* - Julia Raible; Dr. Michael Braunstein, Central Washington University
- J-8 *"Counting peach fruits using the blossoms"* - Branden Braun, Abigail Stutz; Dr. Duke Bulanon, Northwest Nazarene University
- J-9 *"Determining distances for a new catalog of Yellowballs in the Milky Way"* - Leonardo Trujillo, Johanna Mori, Sarah Schoultz, Dr. Grace Wolf-Chase (The Adler Planetarium), Dr. Charles Kerton (Iowa State University); Dr. Katie Devine, The College of Idaho
- J-10 *"Development and characterization of an atmospheric aerosol impactor"* - Stefan Vincent, Dr. Shawn Daley; Dr. Matthew Wise, Concordia University Portland
- J-11 *"Entanglement entropy, dualities and deconfinement"* - Ben Kolligs; Mohamed M. Anber, Lewis & Clark College
- J-12 *"Evaluation of texture as an input of spatial context for mapping of wildland fire effects"* - Zachary Garner; Dale Hamilton, Northwest Nazarene University
- J-13 *"Experimental Measurements and Analysis of the Effects of Damping on Circular Drumheads"* - William Miyahara; Dr. Rand Worland, University of Puget Sound
- J-14 *"Fly Swarms and Complexity"* - Austin Bebee, Troy Taylor; Dr. Joelle Murray, Linfield College
- J-15 *"Gravitational wave signals of exotic dark matter stars"* - Conner Myers; Dr. Moira Gresham, Whitman College
- J-16 *"Impact Abrasion Studies of Textiles for Motorcycle Clothing"* - Weli Alamillo; Dr. James Butler, Pacific University
- J-17 *"In Vitro Characterization of Microtubule Dynamics"* - Jessica Carder, Dr. Nathan Kuwada, Dr. Derek Ricketson, Eric Foss, Howard Yeung, Brianna Owen; Dr. Erin Craig, Central Washington University
- J-18 *"Investigation of Polymer Filled Capillary Waveguides For Self-Healing Systems"* - Derek Thomson; Dr. James Butler, Pacific University
- J-19 *"Knn vs. svm: a comparison of algorithms"* - Ryan Pacheco; Dale Hamilton, Northwest Nazarene University



- J-20 *“Measuring the double-layer capacitance of graphene field effect devices”* - Geoffrey Rath; Dr. Michael Crosser, Linfield College
- J-21 *“Measuring the Quantum State of Stored Light”* - Eric LeVally, Kevin McGee; Dr. Andrew Dawes, Pacific University
- J-22 *“Modeling Geometries to Couple Fluorescence from Luminescent Solar Concentrators into Light Pipes”* - Patrick Zimmerman; Dr. Amy Spivey, University of Puget Sound
- J-23 *“Modeling Light Flavor Asymmetry in the Proton Sea with Markov Processes”* - Ethan Hunt; Dr. Mary Alberg, Seattle University
- J-24 *“Orchard guidance system for the idabot”* - Julie Cox, Josiah Radcliffe; Dr. Duke Bulanon, Northwest Nazarene University
- J-25 *“Parallelized Computational Model of Plasma Flows in Ion-Ion Thrusters”* - Thomas Dale, Travis Widmer; Dr. Kamesh Sankaran, Whitworth University
- J-26 *“Radial Velocity Measurements of RR Lyrae Stars in the Globular Cluster NGC 6441”* - Arthur Mills; Dr. Andrea Kunder, Saint
- J-27 *“Topological Assessment of Protein Structures”* - John Smith, Matthew K. L. Conover; Dr. Renzhi Cao, Pacific Lutheran University
- J-28 *“Yellowballs: what they are, how big they are, and their role in star formation”* - Sarah Schoultz, Johanna Mori, Leonardo Trujillo, Dr. Grace Wolf Chase (The Adler Planetarium), Dr. Charles Kerton (Iowa State University); Dr. Katie Devine, The College of Idaho