College Science Research
A MURDOCK TRUST PROGRAM

"THE POWER OF UNDERGRADUATE RESEARCH:
CREATING NEW KNOWLEDGE AND ENHANCING STUDENT LEARNING"

THE 27th ANNUAL MCSR CONFERENCE HOSTED BY

THE M.J. MURDOCK CHARITABLE TRUST

M.J. Murdock
CHARITABLE TRUST

CO-HOSTED WITH

LINFIELD COLLEGE

Linfield
College

27th ANNUAL MCSR CONFERENCE

Hilton Vancouver, Vancouver, WA
Co-hosted by Linfield College & M.J. Murdock Charitable Trust

Thursday, Nov. 8, 2018

5:00 – 9:00 p.m. **Registration Open** – Heritage Foyer
(301 W. 6th St., Vancouver, WA 98660)

Friday, Nov. 9, 2018

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

6:30 – 7:45 a.m. **Registration** – *Heritage Foyer*
Breakfast – *Discovery A-E*

6:45 – 7:45 a.m. **Working Breakfast** – *Hemlock/Oak*
For faculty, judges, and MCSRP consultants

7:50 – 8:20 a.m. **Opening/Welcome** – *Discovery A-E*

- MC: Dr. Moses Lee, program director, M.J. Murdock Charitable Trust
- Dr. Miles Davis, President, Linfield College
- Chaplain David Massey

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
Discovery A/B
Presider: Dr. Kevin Johnson
Professor of Chemistry, Associate Dean and Director School of Natural Sciences, Pacific University

Symposium on Life Sciences
Discovery C/D/E
Presider: Dr. Sara Heggland
Smith-Stanford Professor of Biology, College of Idaho

10:10 – 10:30 a.m. **Break**

11:50 a.m. – 1:15 p.m. **Lunch** – *Sack Lunch w/ Seating in Discovery & Heritage*
Set Up Posters – *Heritage Ballroom*

12:00 – 1:00 p.m.	**Enrichment Presentation Luncheon** – *Hemlock/Oak* For administrators, faculty members, & staff only: *"Major National Student Awards and Partners in Science"* Begins promptly at 12:05 p.m. Plated lunches.
12:00 – 4:45 p.m.	**Graduate and Vendor Exhibition** – *Discovery Foyer*

Please have posters up and ready

1:15 – 3:00 p.m.	**Poster Session #1**– *Heritage Ballroom* (odd numbered posters)
3:00 – 4:45 p.m.	**Poster Session #2**– *Heritage Ballroom* (even numbered posters)
4:45 p.m.	**Promptly Take Down Posters** – *Heritage Ballroom* *To allow for the room to be set for the banquet*
4:45 – 5:30 p.m.	**Free Time**
5:45 – 6:00 p.m.	**Group Picture** – *Gather in Heritage Foyer*
6:00 – 8:30 p.m. *Attire: business casual*	**Banquet** – *Heritage Ballroom* • MC: Dr. Moses Lee • Welcome: Mr. Jeff Grubb, Trustee, M. J. Murdock Charitable Trust • Welcome: Susan Agre-Kippenhan, Provost and Vice President for Academic Affairs, Linfield College • Invocation: Chaplain David Massey **Special Recognition and Announcement of Lynwood Swanson Scientific Research Awards:** Drs. Lee and Swanson **Neal Thorpe Memorial Lecture:** *"My Journey into Engineering and My Research in Magnetic Materials and Devices for Electrical and Biomedical Applications"* Dr. Pallavi Dhagat, Professor of Engineering, Oregon State University
8:30 – 10:00 p.m.	**Faculty & Staff Social Networking** – *Hemlock/Oak* For faculty, staff, & adult guests only

Saturday, Nov. 10, 2018

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** – *Heritage Ballroom*

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	Symposium on Life Sciences
Discovery A/B	*Discovery C/D/E*
Presider: Dr. Jennifer Heath, Professor of Physics, Linfield College	Presider: Dr. Greg Hermann Professor of Biology, Lewis and Clark College

9:20 – 9:40 a.m. **Break**

11:20 – 11:50 a.m. **Check Out**

11:50 a.m. – 12:30 p.m. **Lunch** – *Heritage ABEF*

12:30 – 1:00 p.m. **Closing/Awards** – *Discovery A-E*

- MC: Dr. Moses Lee
- Dr. Megan Bestwick
- Kim Newman, M.J. Murdock Charitable Trust
- Dr. John Van Zytveld, M.J. Murdock Charitable Trust

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.

Faculty Enrichment Activity | 2:00 – 4:00 pm | Saturday, November 10, 2018
Bus leaves at 1:30 pm for Oregon Health & Science University to visit and tour the *OHSU Center for Spatial Systems Biomedicine* located at the Robertson Life Sciences Building, 2730 S.W. Moody Ave., Portland, OR 97201

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

PARTICIPATING GRADUATE SCHOOLS & SCIENTIFIC INSTRUMENTATION VENDORS

Friday, November 9 | 12:00 – 4:45 pm | Heritage Foyer

BOISE STATE UNIVERSITY
Kinzi Poteet, Director of Graduate Recruiting

BRUKER
Dr. Daniel Frankel, Senior Sales Representative
Dr. Michael Ruf

CENTRAL WASHINGTON UNIVERSITY
Dr. Kevin Archer, Dean of the School of Graduate Studies and Research

EASTERN WASHINGTON UNIVERSITY
Dr. Rebecca Brown, Professor and Chair of the Department of Biology

LINFIELD COLLEGE
Anna Harrington, Director of Nursing Recruitment
Todd McCollum, Director of Enrollment Services

MILLIPORESIGMA
Ben Alderete, Imagining Specialist

MONTANA STATE UNIVERSITY
Dr. Karlene Hoo, Dean of the Graduate School

OREGON HEALTH & SCIENCE UNIVERSITY
Dr. Ujwal Shinde, Associate Professor, Biochemistry & Molecular Biology
Richard Goranflo III, Assistant Dean, Academic Affairs

OREGON STATE UNIVERSITY, GRADUATE SCHOOL
Melissa Almanza, Graduate Recruitment and Financial Support

SEATTLE PACIFIC UNIVERSITY
Jason Chivers, Director of Graduate Admissions

UNIVERSITY OF ALASKA FAIRBANKS
Dr. Michael Castellini, Interim Dean, Graduate School

UNIVERSITY OF IDAHO
Kate Strum, Director of Graduate Student Support Programs

UNIVERSITY OF MONTANA
Dr. Ashby Kinch, Associate Dean of the Graduate School

UNIVERSITY OF OREGON, APPLIED BIOINFORMATICS & GENOMICS MASTER'S PROGRAM
Emily Reister, Lecturer

UNIVERSITY OF OREGON, MASTER'S INDUSTRIAL INTERNSHIP PROGRAM
Lynde Ritzow, Director, Recruitment & Marketing
Nima Dinyari, Director, Optical Materials & Devices Track
Dr. Teresa Swanson, Molecular & Cellular Biology Program

UNIVERSITY OF WASHINGTON
Dr. Rich Gardner, Associate professor of Pharmacology Molecular & Cellular Biology Program
Maia Low
Amanda Bradley

WALLA WALLA UNIVERSITY, GRADUATE STUDIES
Brandon Shadel, Graduate Enrollment Coordinator

WASHINGTON STATE UNIVERSITY
Dr. Lori Carris, Associate Dean of the Graduate School
Christina Brelia, Graduate Program Coordinator, Pharmaceutical Sciences

WASHINGTON STATE UNIVERSITY VANCOUVER
Christine Portfors, Associate Vice Chancellor of Research and Graduate Education

WESTERN WASHINGTON UNIVERSITY
Dr. Gautam Pillay, Vice President for Research and Dean of the Graduate School

LIFE SCIENCES ORAL PRESENTATIONS

Friday, November 9 | 8:50 – 11:50 am | Discovery C/D/E

1. "*Effects of Traffic Noise on Problem-Solving and Cognition in Zebra Finches*" – Alison Osbrink; Dr. Christopher Templeton, Pacific University | 8:50-9:10am

2. "*Giving a voice to the Vocal Dink Frog: Bioacoustic analyses of the advertisement call of Diasporus vocator*" – Austin Reich; Dr. John Cossel, Northwest Nazarene University | 9:10-9:30am

3. *"Understanding how sex and ecosystem influence shape in the three-spine stickleback fish"* – Rebecca Frampton & Ethan Warwick; Dr. Heidi Schutz, Pacific Lutheran University | 9:30-9:50am

4. "*Metagenomic Analysis of Secondary Metabolites in Marine Sponges*" – Brett Youtsey; Dr. Rosa Leon-Zayas, Willamette University | 9:50-10:10am

Break 10:10 - 10:30am

5. "*How Changes in Plant Community Structure Affect Ant Communities*" – Austin Hilton & Alena Salazar; Dr. Chad Tillberg, Linfield College | 10:30-10:50am

6. "*Japanese Hops: An Invasive Plant Study*" – Joshua Stokman; Dr. Travis Almquist, Carroll College | 10:50-11:10am

7. "*The effects of habitat quality on the health of small mammals*" – Sophie Boyd & Jessie Karr; Dr. Laurie Dizney, University of Portland | 11:10-11:30am

8. *"Investigating the cardioprotective effects of exercise in young and old female mice"* – Delaney Kirchmeier; Dr. Stephen Luckey, Seattle University | 11:30-11:50am

LIFE SCIENCES ORAL PRESENTATIONS

Saturday, November 10 | 8:00 – 11:20 am | Discovery C/D/E

9. "*The Anxiolytic Effect of b-caryophyllene Based on the Porsolt Swim Test in Sprague-Dawley Rats*" – Debora Calderon; Dr. Alisha Epps, Whitworth University | 8:00-8:20am

10. "*Importance of T-Type Ca Channels in Cardiac Pacemaking in T. Scripta*" – Gus Barber, Dr. Jonathan Stecyk, University of Alaska Anchorage | 8:20-8:40am

11. "*Investigating the putative GEF of a Rab GTPase in lysosome-related organelle biogenesis*" – Simran Handa; Dr. Greg Hermann, Lewis & Clark College | 8:40-9:00am

12. "*Exploring Tertiary Structure Change in BcHMGR Using ANS Fluorescence*" – Sophia Dewing; Dr. Jeff Watson, Gonzaga University | 9:00-9:20am

13. "*Metoprolol Enhances 6-OHDA Induced Cytotoxicity in Differentiated SH-SY5Y Dopaminergic Cells*" – Aaron Rodriguez; Dr. Michael Coronado, Whitman College | 9:20-9:40am

Break 9:40 - 10:00am

14. "*Quantitative Three-Dimensional Basal Ice Roughness from Scanning Electron Microscopy*" – Katie Gray; Dr. Steven Neshyba, University of Puget Sound | 10:00-10:20am

15. "*Excretory cell function in pathogen resistance: The role of UNC-53 in osmotic stress and intracellular trafficking*" – Aaron Boehmer & Mikayla Bakker; Dr. Eve Stringham, Trinity Western University | 10:20-10:40am

16. "*Manuka Honey Chelates Iron to Impact Iron Regulation in Pseudomonas aeruginosa*" – Marcos Monteiro; Dr. Andrea Castillo, Eastern Washington University | 10:40-11:00am

17. "*Mapping Algoriphagus machipongonensis Transposon Mutants involved in Carotenoid Biosynthesis*" – Alexis Oxley, Heritage University; Dr. Rosie Alegado, University of Hawai`i at Manoa

PHYSICAL SCIENCES ORAL PRESENTATIONS

Friday, November 9 | 8:50 – 11:50 am | Discovery A/B

1. "*Reducing Light-Scattering Losses in Luminescent Solar Concentrators*" – Daniel Korus; Dr. Andrea Munro, Pacific Lutheran University; Dr. Amy Spivey, University Puget Sound; Dr. Carlisle Chambers, George Fox University; Dr. David Patrick, Dr. Mark Bussell, Dr. David Rider, Dr. John Gilbertson, Dr. Stephen McDowall, Western Washington University | 8:50-9:10am

2. "*Production and Chemistry of Erbium Fullerenes*" – Suzanna Officer; Dr. Kurt Hoffman, Whitman College | 9:10-9:30am

3. "*An Adventure in Phosphate Ligand Coordination to Bismuth (III)*" – Zesean Ali; Dr. Rebecca LaLonde, Reed College | 9:30-9:50am

4. "*Direct Access to Lactam-Fused Lactones by Stereoselective and Regiodivergent Halolactonization of Allylic Lactamoyl Acids*" – Morgan Rodriguez; Dr. Timothy K. Beng, Central Washington University | 9:50-10:10am

Break 10:10 - 10:30am

5. "*Observational Astronomy in Tacoma: Analyzing Jupiter's Rotation and the Brightness Profile of Saturn's Rings*" – Justin deMattos & Megan Longstaff; Dr. Katrina M. Hay & Dr. Sean M. O'Neill, Pacific Lutheran University "| 10:30-10:50am

6. *"Does our Milky Way Galaxy have a central bulge?"* – Jonathan Ogata; Dr. Christian I. Johnson, Harvard-Smithsonian Center for Astrophysics & Dr. Andrea Kunder, Saint Martin's University | 10:50-11:10am

7. "*MakerSat-0: 3D Printed Polymer Degradation Data From Orbit*" – Connor Nogales; Dr. Stephen Parke, Northwest Nazarene University | 11:10-11:30am

8. "*Low-Resource Neural Machine Translation of Ancient Languages*" – Annie K. Lamar; Dr. America Chambers, University of Puget Sound | 11:30-11:50am

PHYSICAL SCIENCES ORAL PRESENTATIONS

Saturday, November 10 | 8:00 – 11:20 am | Room Discovery A/B

9. *"Peptide Recognition and Folding by Supramolecular Host Curcubit[8]uril"* – Megan Glenski; Dr. Masaomi Matsumoto, Gonzaga University | 8:00-8:20am

10. "*Facile synthesis of novel biocompatible, biodegradable and thermo-responsive poly(valerolactone)s with tunable LCSTs*" –Asteria Yiu; Dr. Jing Hao, George Fox University | 8:20-8:40am

11. "*Applications of analytical chemistry in the development of a polyphenol releasing stent to treat coronary artery disease*" – Elana Thieme; Dr. Casey Jones, Lewis & Clark College | 8:40-9:00am

12. "*Isolation of antibiotic materials from ancient soil bacteria*" – Anthony Gutierrez & Casey Raul; Dr. Angela Hoffman, University of Portland | 9:00-9:20am

13. "*Development of Novel Antibiotics that Interrupt Bacterial Signaling Processes*" – Tucker Hamilton; Dr. John Thurston, The College of Idaho; Dr. Kenneth Cornell, Boise State University; Dr. Danny Xu, Idaho State University | 9:20-9:40am

Break 9:40 - 10:00am

14. "*Investigating properties of large molecular systems using molecular dynamics: kinetics of substrate interactions with cytochrome P450 2A6 and dynamic equilibrium of surfactant molecules at an interface*" – Asela Chandrasinghe & Shawn Opfer; Dr. Kevin Johnson, Pacific University | 10:00-10:20am

15. "*Photolysis of halogenated estrogens as a practical waste water treatment process*" – Keeton Nance; Dr. David Griffith, Willamette University | 10:20-10:40am

16. "*Development of a high-precision autocollimator to study short-range interactions*" – Neipori Pelle; Dr. Woo-Joong Kim, Seattle University | 10:40-11:00am

17. "*Complexity and Fly Swarms*" – Troy Taylor; Dr. Joelle Murray, Linfield College | 11:00-11:20am

POSTER PRESENTATIONS

Friday, November 9 | Heritage Ballroom

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

A – Ecology / Evolution / Biodiversity

A-1	*"Age of Rescue (AOR) as an Indicator for Social Competence Levels in Male Chimpanzees"* - Annalise Kress, Sam Baird, and Ann-Scott Ettinger; Dr. William Ettinger, Gonzaga University
A-2	*"An Ear for Fear: The Influence of Background Noise on the Foraging Behavior of Peromyscus maniculatus gracilis (Woodland Deer Mice)"* - Erin Stewart; Dr. Michael Cramer, University of Notre Dame, University of Puget Sound
A-3	*"Analysis of Frogs and Toads in Chimfunshi"* - Kaohi Kapiko; Dr. William Ettinger, Gonzaga University
A-4	*"Beaver, Bats and Burned Riparia: The effects of beaver modified riparia on bat activity within burned and non-burned watersheds in the Methow Valley, WA"* - Cole Sherwood; Dr. Rebecca Brown, Eastern Washington
A-5	*"Bioacoustical analyses of the poison dart frogs Phyllobates lugubris and P. vittatus"* - Rikki Myers & Amy Swenson; Dr. John Cossel, Northwest Nazarene University
A-6	*"Changes in seed size in invasive Cytisus scoparius due to natural selection by biocontrol agents"* - Sabrina White; Dr. Robert Bode, Saint Martin's University
A-7	*"Comparing Bee Communities in Urban and Rural Environments"* - Samantha Coleman & Annie Jolliff; Dr. Briana Lindh, Willamette University
A-8	*"Contributions of climate and microsite to seedling recruitment patterns in Pacific Northwest forests"* - Claire Retter; Dr. Paige Parry, George Fox University
A-9	*"Diet Variation of Age-0 and Age-1 Sablefish in Southeast Alaska"* - Willa Johnson; Heidi Dobson, Whitman College
A-10	*"Discovering superstar phages at Northwest Indian College and annotating Homura (Cluster K)"* - Destinee Hutchinson, Yakaiystai Gorman, and Breana Nguyen; Dr. John Rombold and Dr. Rachel Arnold, Northwest Indian College
A-11	*"Distribution and Population Demographics of Spiney Softshell turtles in Southeastern Montana"* - Reece Robinett, Andrhea Massey, Gabriel Aponte, and Ulrich Hoensch; Dr. Kayhan Ostovar, Rocky Mountain College
A-12	*"Do Cytisus scoparius plants that flower early avoid biocontrol attack?"* - Maria Breznau; Dr. Robert Bode, Saint Martin's University
A-13	*"Do isopod bite wounds provide a head start for the progression of eelgrass wasting disease?"* - Paul Foster, Carston Haffner, and Sarah Anderson; Dr. David Cowles, Walla Walla University
A-14	*"Ecological Impacts on Minnow Extra-Oral Taste Bud Density"* - Teagan Haden; Dr. Jacob J. D. Egge, Pacific Lutheran University
A-15	*"Effects of salinity on alarm signaling in Anthopleurine elegantissima"* - Kara Eckley; Dr. Ryan Ferrer, Seattle Pacific University

A-16 *"Effects of Strawberry Cultivar on Two-spotted Spider Mite (Tetranychus urticae) Oviposition and Biocontrol Efficacy of Predatory Mites Neoseiulus fallacis and Phytoseiulus persimilis"* - Alexis Ashe, Gonzaga University, Samantha Willden, Cornell University; Dr. Greg Loeb, Gonzaga University

A-17 *"Epiphyte Distributions Vary with Structural Heterogeneity in Acer Macrophyllum"* - Kaela Hamilton; Dr. Carrie Woods, University of Puget Sound

A-18 *"Extracting DNA from deer skulls to determine population fitness of an island deer population"* - Shun-Je Bhark, Callista Nackviseth, and Eric Long; Dr. Jennifer Tenlen, Seattle Pacific University

A-19 *"Floral color determines plant fitness through pollination, not biocontrol attack"* - Giulia Perini; Dr. Robert Bode, Saint Martin's University

A-20 *"Genetic Comparison of Species of Tree Frogs using DNA Barcoding"* - Stewart Cope, Karina Lopez, and August Thornton; Dr. Ayokunle Hodonu, Northwest Nazarene University

A-21 *"Growth Analysis of Humulus Lupulus in Montana"* - Taylor Tyson; Dr. Travis Almquist, Carroll College

A-22 *"How Common is Incest in the Cooperatively Breeding Acorn Woodpecker?"* - Elsi Hildebrand; Dr. Joseph Haydock, Gonzaga University

A-23 *"Hylocomium splendens: Microhabitat Selection and Potential Role in Forest Succession"* - Anna Marchand; Dr. Carrie Woods, University of Puget Sound

A-24 *"Impacts of Floral Resource Availability on the Foraging Behavior of Urban Pollinators"* - DeShae Dillard & Carter Odean; Dr. Gary Chang, Gonzaga University

A-25 *"Impacts of shrub loss on the body condition of desert reptiles"* - Vanessa Beane & Carly Gilmore; Dr. John Cossel, Northwest Nazarene University

A-26 *"Integrative taxonomy of the Flesh-bellied Frog (Craugastor melanostictus): a molecular approach"* - Larell Brown; Dr. John Cossel, Northwest Nazarene University

A-27 *"Investigating stomatal density as a drought-resistant trait in Helianthus annuus (common crop sunflower)"* - Bridget Smith; Dr. Jennifer Dechaine, Central Washington University

A-28 *"Looking at Diet and Possible Helminthic Parasite Interaction in Canis latrans"* - Martina Davis; Dr. Krisztian Magori, Eastern Washington University

A-29 *"Microsatellite analysis of Culex tarsalis populations in Montana"* - Kaitlin Stromberg; Dr. Grant Hokit & Dr. Jennifer Glowienka, Carroll College

A-30 *"Microscopic manipulators: two bacterial endosymbionts that infect aphids on sagebrush"* - Devin Gaskins & Tamika Russell; Dr. Anna Himler, The College of Idaho

A-31 *"Neighborhood structure modulates range-wide recruitment trends in Pacific Northwest forests"* - Shelby Byerly; Dr. Paige Parry, George Fox University

A-32 *"Octopus predation may be responsible for sponge-scallop mutualism"* - Dustin Gienger & Jefferson Humbert; Dr. David Cowles & Dr. Kirt Onthank, Walla Walla University

A-33 *"Phenology of Alpine Plant Species in the Beartooth Mountains, Wyoming"* - Jacob Myers; Dr. Megan Poulette, Rocky Mountain College

A-34 *"Quantifying the Abundance and Identity of Microplastics in Breeding Birds of the Bering Sea"* - Janelle Trowbridge; Dr. Douglas Causey, University of Alaska Anchorage

A-35 *"Road Ecology Through the Lens of Snakes in Central Washington"* - Tyler Larsen & Adrian Slade; Dr. Daniel Beck, Central Washington University

A-36 *"Snake scale microstructures: A comparison of imaging approaches"* - Anna Ripley; Dr. Kate Jackson, Whitman College

A-37 *"Snapping turtle populations and movements in tributaries of the Yellowstone River"* - Andrhea Massey, Gabriel Aponte, Reece Robinett, and Ulrich Hoensch; Dr. Kayhan Ostovar, Rocky Mountain College

A-38 *"Stem number, not plant age, determines Cytisus scoparius seed production"* - Catherine Dufresne; Dr. Robert Bode, Saint Martin's University

A-39 *"Survivorship of Columbian Black-Tailed Deer (Odocoileus Hemionus Columbianus) on Blakely Island, Washington"* - John Hemenway & Urim Kim; Eric Long, Seattle Pacific University

A-40 *"Territory size of the Golden Cheeked Woodpecker"* - Kenya Byrnes; Dr. Gabrielle Stryker & Dr. Daniel Beck, Central Washington University

A-41 *"The Effect of Hurricane Patricia on Habitat Use by the Mexican Spotted Wood Turtles in the Tropical Dry Forest"* - Jessica Luna, Taggert Butterfield, and Cameron Cupp; Dr. Gabrielle Stryker & Dr. Daniel Beck, Central Washington University

A-42 *"The evolution of duet complexity and coordination in neotropical wrens"* - Megan Meatte & Emily L. Keenan; Dr. Karan J. Odom, Cornell University & Dr. Christopher Templeton, Pacific University

A-43 *"The Evolution of Extraoral Taste Buds in Fishes"* - Tess Olsson; Dr. Jacob J. D. Egge, Pacific Lutheran University

A-44 *"The First De Novo Genome Assembly of the Hemiclonal Live Bearing Poeciliid Fish, Poeciliopsis monacha"* - Talon Arbuckle, Northwest Indian College, Robert C. Vrijenhoek and Shannon Johnson, Monterey Bay Aquarium Research Institute; Nathaniel K. Jue, California State University Monterey; Northwest Indian College

A-45 *"The Impacts of Temperature on Reproductive Output in the Western Painted Turtle"* - Kendall Butz; Dr. Elizabeth Addis, Gonzaga University

A-46 *"The Rough Skinned Newt (Taricha Granulosa) in Idaho: Introduced or Endemic?"* - Carly Askren; Dr. John Cossel, Northwest Nazarene University

A-47 *"To clone or not to clone: using population genetics to estimate the level of the clonal life history strategy in eukaryotic algae"* - Carolyn Fish; Dr. Michael Zanis, Seattle University

A-48 *"Using Age to Assess Retention Time of Ingested Plastic in Seabirds"* - Tessa Nania; Dr. Peter Hodum, University of Puget Sound

A-49 *"Using genetic data to understand the mode of mitochondrial and chloroplast inheritance in algae"* - Meaghan O'Conner Lenth; Dr. Michael Zanis, Seattle University

Friday, November 9 | Heritage Ballroom

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

B – Developmental Biology / Physiology

B-1	*"Effects of Prenatal Testosterone Exposure on Female Reproduction: Alterations in Ovarian Function"* - Silvia Gutierrez & Jennifer Magana; Dr. April Binder, Central Washington University
B-2	*"Examining the effect of maternal obesity on vitamin-D metabolism in the placenta"* - Nora Hendricks; Dr. Susan Murray, University of Portland
B-3	*"Follicle development in a PCOS model of NOD and 129S mice strains"* - Jennifer Magana & Silvia Gutierrez; Dr. April Binder, Central Washington University
B-4	*"Global Gene Expression Analysis in the Absence of a Non-Receptor Tyrosine Kinase During Post-Embryonic Development of the Nematode C. elegans."* - Suhail Rajah; Dr. Kent Jones & Dr. Aaron Putzke, Whitworth University
B-5	*"Is Daytime Mass Management and Pre-Roost Hyperphagia Common in Hummingbirds?"* - Sarah Thompson; Dr. Donald Powers, George Fox University
B-6	*"Isoproterenol alters myocardial metabolic gene expression in B-Raf cardiac-knockout mice"* - Lison Lemoine; Dr. Natasha Chattergoon, OHSU, Knight Cardiovascular Institute & Dr. Natasha Chattergoon, Pacific University
B-7	*"Role of ANGPTL3 inhibition on PCSK9 homeostasis"* - Emma Arndt; Dr. Hagai Tavori, Warner Pacific University
B-8	*"Seasonal changes in susceptibility to Chytridiomycosis in Columbia spotted frogs (Lithobates luteiventris)"* - Delaney Burrows; Dr. Brandon Sheafor, Carroll College
B-9	*"Shear stress patterns during coronary artery development"* - Cole Malibiran & Allegra VanderWilde; Dr. Laura Dyer, University of Portland
B-10	*"microRNA Guided Radiogenetics for T-Cell Engineering"* - Laura Polkinghorn, Dr. Cristina Espinoza, Oregon Health & Science University; Dr. Sudarshan Anand, OHSU, Willamette University
B-11	*"Testing a Selective FDA Approved Drug in a Cardiomyopathy Mouse Model"* - Jess Mil & Karthikeyan Bose, Oregon Health & Science University; Dr. Dhandapany Perundurai, Linfield College
B-12	*"The Effects of Developmental Nicotine Exposure on Drosophila Melanogaster Embryogenesis"* - Ariel Shaw; Dr. Norma Velazquez-Ulloa, Lewis & Clark College
B-13	*"The role of WASP binding to the arp2/3 complex in actin assembly in cells"* - Dayton Towata; Dr. Su-Ling Liu, Willamette University
B-14	*"Use of Post-Hovering Behavior to Dissipate Accumulated Heat in Hummingbirds"* - Natalie Amodei & Bret Tobalske, University of Montana; Dr. Donald Powers, George Fox University

Friday, November 9 | Heritage Ballroom

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

C – Molecular and Cell Biology

C-1	*"Polymorphism in TonB Dependent Receptors Affects Stress Management in Caulobacter"* - Katerin Vasquez; Dr. Melissa E. Marks, Willamette University
C-2	*"A Multicolor Flow Cytometry Approach for the Identification of Peripheral Immune Cell Subset Frequencies in Patients Receiving CAR-T Cell Therapy"* - Erin Peterson; Dr. Marion Gotz, Whitman College
C-3	*"Analysis of Klf4 regulation in stem cells through the proximal promoter"* - Natalie Klee; Sharon Torigoe, Lewis & Clark College
C-4	*"AngularQA: Predicting Protein Model Accuracy using Reinforcement Learning"* - Max Staples; Dr. Renzhi Cao, Pacific Lutheran University
C-5	*"Bioprinting with Polycaprolactone and Hydroxyapatite for Bone Tissue Applications"* - Vladislav Krivoruk; Dr. Janice McKenzie, Walla Walla University
C-6	*"CancerLinker: Comparing Healthy and Cancer-Dysregulated Pathways"* - Emma Sol Taylor-Brill & Kathy Thompson; Dr. Anna Ritz, Reed College
C-7	*"Characterization of Mre11 Gene Variants in Cancer"* - Sydeny Kuehn & Cristina Mateos; Dr. Sreerupa Ray, Linfield College
C-8	*"Constructing a Transgene Reporter to Understand Endothelial Heterogeneity"* - Garrett Yarter; Dr. Anthony Barnes & Dr. Uchenna Emechebe, Oregon Heath Sciences University, Dr. James Smart, George Fox University
C-9	*"Defining the role of two newly identified proteins in the Vibrio vulnificus TonB2 system"* - Mario Manzo & Brianne Zbylicki; Dr. Ryan Kenton, University of Portland
C-10	*"Differential Effects of High Sugar Diets on Hepatic Metabolic Pathways in Obese Mice"* - Katareanna Coen, Dallyce Vetter, Joel Johnson, Levi Miles, Cassandra Davis, James Donnell, and Tessa Nelson; Dr. Sarah Comstock, Corban University
C-11	*"DualQA: Deep Learning on a Novel 3D Representation for Protein Structure Prediction"* - Natalie Stephenson; Dr. Renzhi Cao, Pacific Lutheran University
C-12	*"Electrospinning with Melanin for Neural Cell Applications"* - Nicholas Iwakoshi; Dr. Janice McKenzie, Walla Walla University
C-13	*"Estrogen Activation of ERK Promotes Osteosarcoma Cell Proliferation"* - Morgan Postlewait; Dr. John Schmitt, George Fox University
C-14	*"GCode generation and Tooling for Biological Research"* - Dustin Neumann; Dr. Janice McKenzie, Walla Walla University
C-15	*"Genome Analysis to Determine Promoter Region Locations in Phage Corndog"* - Logan Rank & Joseph Nichols; Dr. Kirk Anders, Gonzaga University
C-16	*"Glycolytic Modeling of GMMe Uterine Endometrial Epithelial Cells"* - Angelique Yang; Dr. Jennifer Chase, Northwest Nazarene University
C-17	*"Glycolytic Modeling of Ishikawa Cancer Uterine Endometrial Epithelial Cells"* - Hunter Bain; Dr. Jennifer Chase, Northwest Nazarene University
C-18	*"Characterization of PolQ Gene Variants in Cancer"* - Sahaj Wanchu; Dr. Sreerupa Ray, Linfield College

C-19 *"HCC827 and H1975 ENU Mutants Show Resistance to Afatinib and Osimertinib"* - Alice Kesler; Dr. Dan Vernon, Whitman College

C-20 *"Impact of ROS Presence on Oncogenic Ras Activity"* - Chris Andersen; Dr. Leslie Saucedo, University of Puget Sound

C-21 *"Inflammation of Human Microglia Cells"* - Mary India Trogden; Dr. Christina L. Rush, Salish Kootenai College

C-22 *"Integrin Linked Kinase (ILK) and Abl in Cell Cycle Progression and Survival"* - Jonathan Dresselhuis; Dr. Julia Mills, Trinity Western University

C-23 *"Interactions of the F-BOX STRESS INDUCED protein family in Arabidopsis thaliana stress response"* - Anneke Fleming & Emily Parlan; Dr. Bryan Thines, University of Puget Sound

C-24 *"Investigating the promoter specificity of the Klf4 enhancer in stem cells"* - Helena Loftus; Sharon Torigoe, Lewis & Clark College

C-25 *"Investigating the role of iron transport pathways in Vibrio vulnificus pathogenicity using the model organism Caenorhabditis elegans"* - Adria Bowles; Dr. Ryan J. Kenton & Dr. David Wynne, University of Portland

C-26 *"Investigation of Gene Evolution in Agrobacterium using CRISPR-Cas9"* - Bailey O'Connor & Emily Stohler; Dr. Derek Wood, Seattle Pacific University

C-27 *"Involvement of ydaD, a NADH-dependent Dehydrogenase, in Oxidative Stress Resistance of Bacillus subtilis"* - Hoai Tran; Dr. Carla Y. Bonilla, Gonzaga University

C-28 *"Isolating new mutations in an essential cell division gene using CRISPR gene editing in Caenorhabditis elegans"* - Katherine Brown, Justin Olson, Anthony Nguyen, and David Ile; Dr. Valerie Walters, Dr. Ronda Bard, Kara Breuer, Dr. Julio de Paula, and Dr. David Wynne, University of Portland

C-29 *"Mapping the molecular evolution of viral coat proteins to understand the diversity of freshwater algal viruses"* - Robert Criswell; Dr. Michael Zanis, Seattle University

C-30 *"Match seq: developing a tool for aligning and visualizing ChIP seq, DAP seq, and RNA Seq"* - Ben Cosgrove; Dr. Britney Moss, Whitman College

C-31 *"Modulating the Cancerous Effects of Src through Reactive Oxygen Species"* - Kate Segar; Dr. Leslie Saucedo, University of Puget Sound

C-32 *"Not all nanoparticles are created equal in the eyes of E. coli"* - Kourtney Gwin; Dr. Jamee Nixon, Northwest Nazarene University

C-33 *"Parasites in parasites: The evolution and diversity of selfish genetic elements within the genes of viruses"* - Levi Spears; Dr. Michael Zanis, Seattle University

C-34 *"Petal Anthocyanin Expression by R2R3 MYBs in Mimulus cupreus and Mimulus luteus variegatus"* - Ashley Person; Dr. Arielle Cooley, Whitman College

C-35 *"Pheromone Production from Sexually Dimorphic Caudal Courtship Glands in the Salamander Karsenia koreana"* - Jared DeBruin; Dr. Nancy Staub, Gonzaga University

C-36 *"Physiological and Genetic Analysis of Cardiovascular Adaptations Resulting from High-Fat Diet Administration"* - Ashley Abel; Dr. Stephen Luckey, Seattle University

C-37 *"Potential Role of Prolactin in Glycogen Metabolism in Mink Uterine Epithelial Cells"* - Luke LaMue & Chaselyn Rhinehart; Dr. Ayokunle Hodonu, Northwest Nazarene University

C-38 *"Presence of Myb genes in Mimulus naiandinus"* - Jonah Rodewald; Dr. Britney Moss, Whitman College

C-39 *"Protein Fold Switch in High-Identity Sequence Space?"* - Andrew Munoz, Dr. James Wrabl, Keila Sheetz, and Miranda Russo, Johns Hopkins University; Dr. Vincent Hilser, George Fox University

C-40 *"Quantifying Phenotypes and Genetically Mapping Complex Traits in Mimulus Hybrids"* - Melia Matthews; Dr. Arielle Cooley, Whitman College

C-41 *"Regulation of hERG C-Terminal Isoform Expression by PABPN1"* - Andrea Reichle; Dr. Matthew Stump, George Fox University

C-42 *"Regulation of hERG C-Terminal Isoform Expression by PABPN1 and PABPC1"* - Rachel Nguyen & Andrea Reichle; Dr. Quiming Gong and Dr. Zhengfeng Zhou, Oregon Health & Sciences University, Dr. Matthew Stump, George Fox University

C-43 *"Regulation of TNF-Stimulated Gene 6 by Guanylate Binding Protein 5 in Osteoarthritic Pathogenesis"* - Madeline McDougal, Gonzaga University, Mahamudel Haque and Anil Singh, Washington State University Spokane; Dr. Salah-uddin Ahmed, Gonzaga University

C-44 *"Single DNA molecule study of barrier- to- autointegration factor (BAF) protein by magnetic tweezers"* - Lindsay Schwartz; Dr. Dan Vernon, Whitman College

C-45 *"Akap200 is a modifier of Gliotactin during the formation of Frizzled-independent planar cell polarity in Drosophila"* - Brookelyn Biffart; Dr. Dennis Venema, Trinity Western University

C-46 *"The effect of unvaped and vaped cinnamon-flavored electronic cigarette liquids on human osteoblast-like MG-63 cells"* - Florence Wavreil; Dr. Sara Heggland, The College of Idaho

C-47 *"The role of MARCKS gene as a targeted treatment of Acute Myeloid Leukemia"* - Gabrielle Dewson, Willamette University & Mona Mohammadhosseini, Oregon Health & Science University; Dr. Anupriya Agarwal, Willamette University

C-48 *"Using Interferon Signaling in Human Lung Carcinoma for Natural Killer Cell Immunotherapy"* - Amer Chaudhry; Dr. Eric Bortz, University of Alaska Anchorage

C-49 *"Using Virus-like Particles with Hanta-Virus Gc protein segments to illicit immune response in cultured cells: A new model of study"* - Audrey Romine; Dr. Christina L. Rush, Salish Kootenai College

C-50 *"Variation in nutrient transport affects survival phenotypes in Caulobacter crescentus"* - Karen Espinoza; Dr. Melissa E. Marks, Willamette University

C-51 *"Vitamin D Control of Breast Cancer Cell Growth Requires CaM Kinase Phosphatase"* - Quinlan Morrow; Dr. John Schmitt, George Fox University

C-52 *"Y-Haplotype Analysis Using Human Expectorate and Ancient Human Remains"* - Matthew Schumann; Dr. Amelia Ahern-Rindell, University of Portland

Friday, November 9 | Heritage Ballroom

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

D – Neuroscience / Psychology / Exercise Science

D-1	*"Alterations in the Brain's Dopaminergic Circuits of the Anterior Cingulate Cortex, but not in the Nucleus Accumbens in Transgenic Huntington's Disease Mice"* - Sarah Holden & Julia Norton; Dr. Mark Pitzer, University of Portland
D-2	*"C9ORF72-related Glycine-Arginine Dipeptide Repeats Disrupt Sleep in a Drosophila Model of ALS/FTD"* - Haylee Hamilton, Gonzaga University & Cody Peplinski, Washington State University Spokane; Dr. Jason Gerstner, Gonzaga University
D-3	*"Can the Bumblebee Bombus impatiens Provide a Non-Mammalian Model for Parkinson's Disease?"* - Erin Nicholson; Dr. Sue Hannaford, University of Puget Sound
D-4	*"Correlating Reactive Oxygen Species Release, Microglial Movement, and Regenerative Outgrowth of an Identified Neuron in Lymnaea stagnalis"* - Alexandria Naftchi, Charlotte A. Ritchie, and Nicholas J. Lee; Dr Richard L. Ridgway, Seattle Pacific University
D-5	*"Diabetic HbA1c as a predictor of Diabetic Severity and Proprioception"* - Marcella Murillo; Dr. Lucas Ettinger, Willamette University
D-6	*"Differentiation Between Arguments and Explanation"* - Jonathan Yuquimpo; Dr. Yasuhiro Ozuru, University of Alaska Anchorage
D-7	*"Erythritol, the artificial sweetener that's good for your waistline, but bad for insects."* - Katie Wentz; Dr. David R. Horton, United States Department of Agriculture & Dr. Rodney Cooper, Heritage University
D-8	*"Evaluation of candidate stuttering associated mutations: Variants in sex hormone metabolizing genes"* - Katie Grainger; Dr. Dennis Drayna, NIH Laboratory of Communication Disorders, University of Puget Sound
D-9	*"Event-Related Potential Correlates of Food Cue Processing in Healthy Young Adults"* - Cristian Cortes & Keenan Ashby; Todd Watson, Lewis & Clark College
D-10	*"Exposure to bisphenol-S alters spinal cord GnRH-3 neuron development in Danio rerio"* - Noah Dillon; Dr. Siddharth Ramakrishnan and Dr. Alyce DeMarais, University of Puget Sound
D-11	*"Looking at abnormal beta amyloid sin Alzheimer's disease and Lewy body dementia"* - Emily Muth; Dr. Randall Woltjer, Linfield College
D-12	*"Mapping the Munchies: Dissecting the Neural Connections between Fat-Sensing and Feeding Circuits"* - Samuel Gonzalez; Dr. Akhila Rajan, Fred Hutchinson Cancer Research Center, University of Puget Sound
D-13	*"Profiling microglial response in the cortex of rats housed in environments of differential complexity"* - Natalie Mutter; Dr. Ginger Withers, Whitman College
D-14	*"Quantitative Comparison of Visual Acuity Using Visually Evoked Potentials and Behavior in Mice"* - Emanuel Drutu; Dr. Wayne Tschetter, Concordia University Portland
D-15	*"Tangible Technology to Teach Kids Coding Concepts"* - Allie Gregoire & Anna Lyubinina; Erik Nilsen, Lewis & Clark College
D-16	*"The Effect of Acute Sleep Deprivation on the Stress Response of Undergraduates"* - Kaley Dugger; Dr. Stephen Luckey, Seattle University

D-17 *"The Role of ApoE Isoforms on DNA Double Strand Breaks in Fear Conditioned Mice"* - Skyler Younger, George Fox University & Sydney Boutros, Oregon Health Sciences University; Dr. Jacob Raber, Oregon Health Sciences University

D-18 *"The use of resting breaks changes blood perfusion during paddling bouts"* - Hayley Cheyney Kane; Dr. Cara Wall-Scheffler, Seattle Pacific University

D-19 *"Therapeutic Potential of Transcutaneous Electrical Spinal Stimulation for Muscle Spasticity in Chronic Spinal Cord Injury"* - Margaret Malone, Gonzaga University & Soshi Samejima, University of Washington; Dr. Chet Moritz, Gonzaga University

D-20 *"Understanding the Role of Thrombospondin in Locomotion"* - Asia Wooten; Dr. Norma Velazquez-Ulloa, Lewis & Clark College

D-21 *"Using the Scratch Wound Healing Assay to Measure Cellular Motility in a Glioblastoma Model System"* - Shanaya Fox; Dr. Luke Daniels, The College of Idaho

Friday, November 9 | Heritage Ballroom

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

E - Biochemistry

E-1	*"A Method for Florescent Visualization of In Vitro Transcription Products"* - Kelsey Bruce; Dr. Megan Bestwick, Linfield College
E-2	*"An enzymatic synthesis of thioglycoside analogs of bacterial cell wall"* - Jan Morgan Bomhof; Dr. John Hanson, University of Puget Sound
E-3	*"Copper Modulation to Effect Yeast Lifespan"* - Zachary Sherlock; Dr. Megan Bestwick, Linfield College
E-4	*"Design of a catalytically inactive form of PEPX"* - Jeffrey Hahn; Dr. Deanna Ojennus, Whitworth University
E-5	*"Development of Bifunctional Thiourea Catalysts for Effective Direct Amidation Reactions?"* - Alex Guzman; Dr. Luc Boisvert, University of Puget Sound
E-6	*"Elucidating the Biosynthetic Pathway of RQ Using RNAi Knockdowns in C. elegans"* - Paloma Roberts Buceta; Dr. Jennifer Shepherd, Gonzaga University
E-7	*"Engineering biofuel producing proteins to increase efficiency in botryococcene production"* - Luna Kim; Dr. Jon O. Freeman, Pacific Lutheran University
E-8	*"Evaluation of trans-Cinnamic Aldehyde Nitro Analogs as Mechanism Based Inhibitors of Cytochrome P450 2A6"* - Aiden Nguyen, Vivian Chau, and Tahmeena Raheel; Dr. John Harrelson & Dr. Jeannine Chan, Pacific University
E-9	*"Expression and Purification of Counter RNA-Silencing Protein"* - David Howell; Dr. Jeffery Vargason, George Fox University
E-10	*"Fluorescent Detection of Reactive Oxygen Species in Saccharomyces cerevisiae Applied to Chronological Lifespan"* - Kelly Schultz; Dr. Megan Bestwick, Linfield College
E-11	*"In Vitro Determination of Potency of Small Molecule Inhibitors of Arp2/3 Complex"* - Katherine Andersen; Dr. Brad Nolen, University of Oregon, Dr. Zoe Cournia, Bioacademy of Athens, and Dr. Andrew Baggett, Linfield College
E-12	*"Investigation of an Uncharacterized Radical S-adenosyl-L-methionine Enzyme from Thermatoga neopolitana"* - Lilly Landers & Kay Smith; Dr. Rachel Hutcheson, University of Portland
E-13	*"Kinetic Characterization of BcHMGR Morpheein Reactions"* - William Goodwin; Dr. Jeff Watson, Gonzaga University
E-14	*"Kinetics of Ligand Exchange with the Influence of Low Molecular Weight Organic Acids (LMWOAs)"* - Liza Briody-Pavlik; Dr. Mark Juhasz, Whitman College
E-15	*"Kinetics of Ligand Exchange with the Influence of Low Molecular Weights Organic Acids (LMWOAs)"* - Ralph Huang; Dr. Marion Gotz, Whitman College
E-16	*"Lens protein modifications in a sugar induced obese mouse model"* - Trevor Peterson, Samuel Wheeler, Kateleen Vetter, Abigail Lucas, Elizabeth Baddeley and Sabrina Reifschneider, Corban University, Kirsten Lampi and Larry David, Oregon Health and Science University; Dr. Sarah Comstock, Corban University
E-17	*"Mapping the Binding of Fibronectin and Plasminogen to the Immunodominant Adhesin Domain of Mycoplasma genitalium"* - Jonathan Mahlum & Ashton Yang, Seattle Pacific

	University, Gwendolyn E. Wood and Patricia A. Totten, University of Washington; Dr Benjamin McFarland, Seattle Pacific University
E-18	*"Metabolic stability of trans-cinnamic aldehyde and its analogs"* - Andy Cesta; Dr. John Harrelson & Dr. Jeannine Chan, Pacific University
E-19	*"PcpA is a hydroquinone ring cleaving dioxygenase (RCDO) involved in the enzymatic pathway used to break down toxic pentachlorophenol for metabolic use in Sphingobium chlorophenolicum. This enzyme utilizes a nonheme Fe(II) active site. Model complexes allo"* - Mark Blakeley; Tim Machonkin, Whitman College
E-20	*"Progress Towards the Synthesis of Iron-Based Hydrogenation Catalysts Using Hydroxypyridine Bidentate and Tetradentate Ligands"* - Sara Rockow; Dr. Luc Boisvert, University of Puget Sound
E-21	*"Purification and analysis of PEPN from Lactobacillus helveticus for potential use in treatment of Celiac disease"* - Kathryn Markham; Dr. Deanna Ojennus, Whitworth University
E-22	*"Separation of Nucleic Acids by Ion Pair Reversed Phase High Performance Liquid Chromatography"* - Zachary McLeod; Dr. Megan Bestwick, Linfield College
E-23	*"Sortase Mediated Ligations"* - Savanna Takasaki, Sierra Reed, and David Brzovic; Dr. John Antos, Western Washington University
E-24	*"Stabilization of Arylsulfatase B by Praziquantel Derivatives"* - Jack Hostetler & Karna Terpstra; Dr. Trisha Russell, Whitworth University
E-25	*"Survival of Varying Saccharomyces cerevisiae Cell Lines on Canavanine Media"* - Emily Bond; Dr. Tina T. Saxowsky, Pacific Lutheran University
E-26	*"Synthesis and Evaluation of Tetracaine Derivatives as Local Anesthetics"* - Anna Ayala; Dr. Sarah Kirk, Willamette University
E-27	*"Synthesis of Tetracaine Derivatives for the Treatment of Retinitis Pigmentosa"* - Alana Gwillym Tso; Dr. Sarah Kirk, Willamette University
E-28	*"Temperature Dependence of Gibbs Free Energy of Unfolding of a Cytochrome c6 Protein from the Mesophilic Diatom T. pseudonana"* - Miranda Wilson; Dr. Katie Frato, Seattle University
E-29	*"Temperature dependent free energy of unfolding of a cytochrome c6 from the psychrophilic diatom F. cylindrus"* - Emily Tabaie; Dr. Katie Frato, Seattle University
E-30	*"Tuning the methods of isolation of natural surfactant fractions from S. saponaria"* - Ian Sheridan; Dr. Paul Brown, Trinity Western University
E-31	*"Using HDX-MS to Locate Oligomerization Interfaces of BcHMGR"* - Eleanor Jones; Dr. Jeff Watson, Gonzaga University
E-32	*"What's in the Fiji Water?: An Investigation of Marine Microorganisms in Fiji Sediment for the Discovery of Novel Pharmaceuticals"* - Milla Bevins; Dr. Rosa Leon Zayas, Willamette University
E-33	*"Yeast two-hybrid Screen to Identify Binding Partners for QKI-6"* - Rosa Moreno Leon; Dr. Todd Kroll, Central Washington University

Friday, November 9 | Heritage Ballroom

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

F – Organic Chemistry

F-1	*"An Adventure in Phosphate Ligand Coordination to Bismuth(III)"* - Nicole Kretekos, Zesean Ali, Gabriela M. Bailey, Elena McKnight, Claire Milander-Mashlan, and Jake Stromberg; Dr. Rebecca LaLonde, Reed College
F-2	*"Chemoenzamatic Approaches to the Total Synthesis of Epoxyquinol A"* - Madeleine Duncan; Dr. Britney Moss, Whitman College
F-3	*"Conducting a screen of chiral ligands to optimize reaction enantioselectivity in an aza-Diels-Alder reaction"* - Olga Musinina & Clara Park; Dr. P.J. Alaimo, Seattle University
F-4	*"Design and Synthesis of Thiazolidinone Small-Molecule Inhibitors of Arp2/3 Complex"* - Haley Smith; Dr. Brad Nolen, University of Oregon, Dr. Zoe Cournia, Bioacademy of Athens, and Dr. Andrew Baggett, Linfield College
F-5	*"Design and Synthesis of Tryptamine Small-Molecule Inhibitors of Arp2/3 Complex"* - Atchara Sripeng; Dr. Brad Nolen, University of Oregon, Dr. Zoe Cournia, Bioacademy of Athens, and Dr. Andrew Baggett, Linfield College
F-6	*"Developing a series of hydroquinone ring-cleaving dioxygenase model complexes"* - Alex Behrman; Dr. Marion Gotz, Whitman College
F-7	*"Investigating Chalcone Polymorphism"* - Ryan Meehan; Dr. Matthew Cremeens, Gonzaga University
F-8	*"Investigation of Non-Native Substrates for Benzoate Dioxygenase"* - Zachary Clark; Dr. Jim Russo, Whitman College
F-9	*"Oxidative Desulfuration-fluorination of Thionoesters using Silver (I) Fluoride"* - Daniel Driedger & Josiah Newton; Dr. Chad Friesen, Trinity Western University
F-10	*"Percyanation of BI Cluster"* - Austin Kamin; Dr. Marion Gotz, Whitman College
F-11	*"Preliminary Isolation and Characterization of Root Extract Components of Dalea jamesii"* - Hyojin Ahn; Dr. Kerry McPhail, Oregon State University & Dr. Gil Belofsky, Central Washington University
F-12	*"Quantifying the Fate of 17?-Estradiol at Environmentally Relevant Concentrations"* - MacKayla Carolan; Dr. David Griffith, Willamette University
F-13	*"Synthesis and Characterization of Glucuronides"* - Louisa Reilly & Annalise Rogalsky; Dr. Stephen Warren, Gonzaga University
F-14	*"Synthesis of Organic Ligands in Luminescent Solar Concentrators"* - Loveleen Brar & Mercie Hodges; Dr. Amy Spivey, University of Puget Sound; Dr. Andrea Munro, Pacific Lutheran University; Dr. Mark Bussell & Dr. David Patrick, Western Washington University, and Dr. R. Carlisle Chambers, George Fox University
F-15	*"Synthesis, characterization and in vitro efficacy of urea-based inhibitors of the microbial-specific enzyme MTN"* - Azhar Koshkimbayeva, Tucker Hamilton, and Lacey Wayment, Dr. Ken Cornell, Boise State University, Dr. Danny Xu & Dr. Aoxiang Tao, Idaho State University, Mary Campbell, Boise High School, and Dr. John Thurston, The College of Idaho

F-16 *"Towards the synthesis of novel 1,3-azaborines as potential HIV-1 protease inhibitors"* - Sean Michael Dawson, Jon Hagen, Audrey Vulcano, Alexandria Williams, and Julianna Murray; Dr. Levente Fabry-Asztalos, Central Washington University

F-17 *"What Does Topology Have To Do With It? Managing Molecular Assembly With Quasiracemates"* - McKenzie Parks & Lauren Taylor; Dr. Kraig Wheeler, Whitworth University

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

G – Analytical / Inorganic / Physical Organic / Computational Chemistry

G-1	*"Additive Manufacturing of Nanomaterial Based Sensors for Extreme Environments"* - Casey Cornwell; Dr. Jerry Harris, Northwest Nazarene University
G-2	*"An Analysis of Bisphenol Migration from Bio-Based Plastic During Simulated Food Contact"* - Lillian Smith; Dr. Julie Layshock, Pacific University
G-3	*"Analysis of Pigments in Three 15th-Century Christian Paintings in Alcudia, Spain"* - Justin Olson, Anthony Nguyen, and David Ile; Dr. Valerie Walters, Kara Breuer, Dr. Julio de Paula, and Dr. Ronda Bard, University of Portland
G-4	*"Building a Quantum Random Number Generator"* - Efrain Venegas-Ramirez; Dr. Maximilian Schlosshauer, University of Portland
G-5	*"Chemicals of Emerging Concern in Plants, Sediment, and Water in a Constructed Wetland in Oregon"* - Geneva Diepenheim, Christopher Harb, and Stephen Gift; Dr. Julie Layshock, Pacific University
G-6	*"Development of Urea-Derived Nanostructured Graphitic Carbon Nitride (u-g-C3N4) / Poly(vinylalcohol) (PVA) Composite Hydrogels for Environmental Remediation Applications"* - Andrew Clifford, Lacey Wayment, and Will Callahan; Dr. John Thurston, The College of Idaho
G-7	*"Effect of nanoparticles on the redox properties of electron transfer mediators"* - Amanda Restani & Brandon Tran; Dr. Paige Hall, University of Portland
G-8	*"Effects of Hydrogenation on Decoupling Segmental Motion and Ionic Conductivity in Oxanorbornene Dicarboximide Based Polymers"* - Andrew Riedl & Kyle M. Siemers; Dr. Dean A. Waldow, Pacific Lutheran University
G-9	*"Electrochemically Induced Dimerization of 2-methylthiophene"* - Haley Meredith; Dr. John Rowley, Carroll College
G-10	*"Elemental Analysis of Coins and Other Metal Artifacts Excavated from the Ancient Roman City of Pollentia"* - John Pelleisier, Ryan Helbling, and Riley McCammon; Dr. Ronda Bard, Kara Breuer, and Dr. Valerie Walters, University of Portland
G-11	*"Expansion of secondary spheres around 2,5-dihydroxy-1,4-quinone core via phosphonate groups"* - Claire Kearney; Dr. Edward J. Valente & Dr. Eugene Urnezius, University of Portland
G-12	*"Exploring Pre-Transition Droplet Formation in Binary Systems Containing an Ionic Liquid"* - Daniel Huber; Dr. J. Charles Williamson, Willamette University
G-13	*"Forming Carbon-Carbon Bonds Via Photo-oxidation"* - Joseph Pesa; Dr. John Rowley, Carroll College
G-14	*"Functionalized Au/Ag Alloy Nanoparticle for Drug-Delivery System"* - Fatima Falcon Ontiveros, Morgan Johnson, and Ana Alfaro; Dr. Brian Gilbert, Linfield College
G-15	*"How to Calibrate Self-Calibrating LIBS"* - Margaret Hebert & Orion Cohen; Dr. Daniel Gerrity; Dr. Natasja Swartz, Reed College

G-16 *"Impact of Pi Stacking on the Decoupling of Segmental Motion from Ion Conductivity in a Novel Solid Polymer Electrolyte"* - Lance Coyer; Dr. Dean A. Waldow, Pacific Lutheran University

G-17 *"Improving Luminescent Solar Concentrator Efficiency Using Doped Elongated Nanocrystals"* - Jenise Cavness; Dr. Andrea M. Munro, Pacific Lutheran University

G-18 *"Increased Thermal Properties of Benzoxazine Polymers Cured with End-group Tosylated Polymers"* - Ayesha Nadeem & Zodiac Aerospace; Dr. David A. Rider, Western Washington University

G-19 *"Inorganic Model Complexes Potential for Hydrogen Gas Production"* - Laurinda Nyarko, Marc Foster, and Ethan Gladhill; Dr. Dalia Rokhsana, Whitman College

G-20 *"Interactive web-book design in R chemical pedagogy"* - James Vesto; Dr. Danielle Cass & Dr. Natasja Swartz, Reed College

G-21 *"Investigating Metal Ionophore Binding in Lipid Membranes Using Affinity Chromatography"* - Bridget Hoag; Dr. Eric Ross, Gonzaga University

G-22 *"Investigation of the adsorption behavior of desferrioxamine-B with the hematite/water interface using nonlinear spectroscopy"* - Joe Brennan; Dr. Amanda Mifflin, University of Puget Sound

G-23 *"Ionic Impurity Effects in the Isobutyric Acid + Water System"* - Angus Williams; Dr. J. Charles Williamson, Willamette University

G-24 *"Iron-arylphosphine complex for purification of Natural Gas"* - Hoan Nguyen; Dr. Joel Gohdes, Pacific University

G-25 *"Mechanism of Ruthenium Ethenolysis Catalyst Deactivation"* - Sarah Zalucha; Dr. Buck Taylor, University of Portland

G-26 *"Microscopic Dynamics of Colloidal Particles Confined to a Quasi One Dimensional Channel"* - Tiare Guerrero; Dr. Danielle McDermott, Pacific University

G-27 *"Modifying Carbon Electrodes with Sulfur & Gold Nanoparticles to Study the Kinetics of Redox Reactions"* - Jennica Kelm & Emily M. Ness; Dr. Justin C. Lytle, Pacific Lutheran University

G-28 *"Nanoparticle-Based Drug Delivery Vehicle"* - Morgan Johnson, Fatima Falcon, and Ana Alfaro; Dr Brian Gilbert, Linfield College

G-29 *"New synthetic route to 2,5-bis-phosphoryl-3,6-dihydroxy-1,4-quinone compounds"* - David Hoang; Dr. Edward J. Valente & Dr. Eugene Urnezius, University of Portland

G-30 *"NiO nanoparticle synthesis, characterization, and toxicology"* - Phillip Gwin; Dr. Jerry Harris, Northwest Nazarene University

G-31 *"Phthalate and Bisphenol Concentrations in Above Water Typha Plant Tissue in the Fernhill Constructed Wetlands"* - Stephen Gift; Dr. Julie Layshock, Pacific University

G-32 *"Purifying Natural Gas Using a Polymerizable Iron- Alkyl Phosphine Complex"* - Keilian MacCulloch; Dr. Joel Gohdes, Pacific University

G-33 *"Quantification of H2 using NMR techniques"* - Maryam Ahmad & Ellis Douma; Dr. Miriam Bowring, Reed College

G-34 *"Quantitative SPME-GCMS Analysis of Pyrazines Associated with Potato Taste in Green Coffee; Development of a Method based on Standard Addition and Deuterated Internal Standardization."* - Hayley Purcell; Dr. Kristy Skogerboe, Seattle University

G-35 *"Quantum Dot Ligand Exchange for Luminescent Solar Concentrators"* - Megan Packer; Dr. Andrea M. Munro, Pacific Lutheran University

G-36 *"Ruthenium-Catalyzed Ring-opening/Ring-closing Metathesis Polymerization"* - Christopher Elkhal; Dr. Buck Taylor, University of Portland

G-37 *"Self-assembly of PS-b-PEO films as a shadow mask for GaAs nanowire deposition"* - Lydia Steiner; Dr. Jerry Harris, Northwest Nazarene University

G-38 *"Study of titanium dioxide/graphene oxide inverse opal crystals as metal-free susbtrates for Raman spectroscopy"* - Luis Perez; Dr. Elizabeth Atkinson, Linfield College

G-39 *"Surface water photochemistry: pollutant fate and structure-activity relationships"* - Jaemy Martinez & Miko Ouano; Dr. Douglas Latch, Seattle University

G-40 *"Syntheses and Structures of Triple-Decker Complexes of Ruthenium"* - Timothy Casad & Joseph McBride; Dr. Eric Watson, SJ, Seattle University

G-41 *"Synthesis and characterization of Pd(SCN)2(4-mepy)2"* - Nichole Paul; Dr. Jerry Harris, Northwest Nazarene University

G-42 *"Synthesis and Metalation of Pyrrole-based NNN Pincer Ligands"* - Dalton Keith; Dr. Julie Kessler, Carroll College

G-43 *"Synthesis of Gold and Copper Nanoparticles"* - Erik Straume; Dr. Andrea M. Munro, Pacific Lutheran University

G-44 *"The use of CuInS2 nanoparticels for catalysts and antibiotics"* - Cassidy Fifield; Dr. Jerry Harris, Northwest Nazarene University

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

H – Environmental Science / Geology

H-1	*"Ammunition as a Source of Lead in the EWU Palouse Prairie Restoration Site"* - Emily Houtz; Dr. Carmen Nezat, Eastern Washington
H-2	*"Analyzing Landslide Hazards using Factor of Safety in Orting, WA"* - Haley Kling; Dr. A. Tarka Wilcox, Pacific Lutheran University
H-3	*"Characterization of a degraded wetland ecosystem in Langley, British Columbia"* - Delia Anderson, Tamara Ma, and Samit Sandhu; David Clements, Trinity Western University
H-4	*"Cloud Base Height Estimation from Two Adjacent Sky Images"* - Iris Arnold & Kat Barton; Jessica Kleiss, Lewis & Clark College
H-5	*"Comparing surface lowering and air temperature on Eklutna Glacier, Alaska"* - Sadie Mills, Roman Dial; Jason Geck, Alaska Pacific University
H-6	*"Evaluating the impacts of carbonate overprinting in Palouse loess paleosols"* - Orion Schomber; Dr. Alex R. Lechler, Pacific Lutheran University
H-7	*"Geochemical Analysis in the Ness of Brodgar, Scottland"* - Madison Nigro; Dr. Scott Pike, Willamette University
H-8	*"Hydrochemistry of Glacial Meltwater at Mount Rainier, Washington"* - Juntong Wu; Dr. Claire E. Todd, Pacific Lutheran University
H-9	*"Last glacial period paleoclimate reconstruction of Summer Lake, OR"* - Sam Couch; Dr. Alex R. Lechler, Pacific Lutheran University
H-10	*"Mapping bank erosion volumes from the Carbon river landslide using photogrammetry techniques"* - Britt McCracken; Dr. A. Tarka Wilcox, Pacific Lutheran University
H-11	*"Measuring Cloud Coverage Using Neural Networks"* - Zoe Harrington, Max Levin, and Jessica Kleiss; Peter Drake, Lewis & Clark College
H-12	*"Meltwater Discharge and Suspended Sediment Loads at Nisqually and Emmons Glaciers Mount Rainier, Washington"* - Sarah Webster-Olson; Dr. Claire E. Todd, Pacific Lutheran University
H-13	*"Quantifying relationships between rock hardness, shore platform topography, and intertidal biota: Oregon Coast"* - Shannon Hansell & Anna Wood-Gaines; Dr. Kristin Sweeney, University of Portland
H-14	*"Using structure from motion photogrammetry to measure glacier change on Eklutna Glacier, Alaska"* - James Pyeatt & Roman Dial; Jason Geck, Alaska Pacific University

Friday, November 9 | Heritage Ballroom

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

I - Microbiology

I-1	*"An Antimicrobial Approach to Investigating the Reduction of Hospital-Acquired Infections"* - Carla Boyle, Grady Arnzen, Sara Norwood, and Laura Ackerson; Dr. William Ettinger, Gonzaga University
I-2	*"Anaerobic Microbe Intestinal Colonization Dynamics in a Fish Model"* - Rachael Kramp; Dr. Kathryn Milligan-Myhre, University of Alaska Anchorage
I-3	*"Characterization of a novel fish retroviral gene"* - Faith Robichaud; Dr. Holly Basta, Rocky Mountain College
I-4	*"Characterization of class 1 integrons in soil and manure samples from organic and conventional farms"* - Brandon Hergert & Melia Mackenzie; Dr. Gyorgyi Nyerges, Pacific University
I-5	*"Characterization of Flathead Lake Bacteria Populations"* - Japhanna Burns; Dr. Christina L. Rush, Salish Kootenai College
I-6	*"Developing Specific 16S rRNA Gene Primers for Asgard Archaea"* - Monce Barajas Gomez; Dr. Rosa Leon Zayas, Willamette University
I-7	*"Extending the Host Range of Predatory Bacterium Ensifer adhaerens"* - Emily Grahn; Dr. Mark Martin, University of Puget Sound
I-8	*"Last Year's Microbes and this Year's Albedo"* - Kodi Haughn; Dr. Brandon Briggs, University of Alaska Anchorage
I-9	*"Orlistat, a fatty acid inhibitor, blocks Herpesvirus production"* - Anna Miller; Dr. Tracie Delgado, Northwest University
I-10	*"Phylogenetic analysis of the novel Wolbachia strain wNBre from carabid beetle Nebria brevicollis"* - Wyatt Eng; Dr. Joanne Odden, Pacific University
I-11	*"Prevalence of Wolbachia in Field Collected Coleoptera and Carabid Beetles in Oregon"* - Janice Parks; Dr. Joanne Odden, Pacific University
I-12	*"Role of MG032, MG096, and MG288 in Recombination in Mycoplasma Genitalium"* - Sum Yin Tung & Laarni Kendra Aguila; Dr. Gwendolyn Wood & Dr. Patricia Totten, University of Washington, Seattle Pacific University
I-13	*"The effect of an herbicide on the presence of class 1 integrons in manure and soil microbial communities"* - Melia McKenzie & Brandon Herbert; Dr. Gyorgyi Nyerges, Pacific University
I-14	*"The novel protein MG032 and its effects on genetic recombination in Mycoplasma genitalium"* - Laarni Kendra Aguila; Dr. Gwendolyn Wood & Dr. Patricia Totten, University of Washington, Seattle Pacific University

Friday, November 9 | Heritage Ballroom

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

J - Physics

J-1	*"3D kinematics of the bulge RR Lyrae stars: a centrally located, retrograde bulge population"* - Dylon Maertens; Dr. R. Michael Rich, University of California at Los Angeles, Dr. Alistair R. Walker, Cerro Tololo Inter-American Observatory, Dr. Giuseppe Bono, Rome Astronomical Observatory, Dr. David M. Nataf, The Johns Hopkins University, Dr. Andreas Koch, University, and Dr. Andrea Kunder, Saint Martin's University
J-2	*"Bound States of Dark Matter"* - Alexander Shaw; Dr. Moira Gresham, Whitman College
J-3	*"Bound States of Self-Interacting Dark Matter"* - Henrique Lovisi Ennes; Dr. Moira Gresham, Whitman College
J-4	*"Characterization of MHD Intermediate Shocks"* - Benjamin Kraske; Dr. Robert Hamilton, George Fox University
J-5	*"Compactified QCD"* - Brian Smith; Mohamed Anber, Lewis & Clark College
J-6	*"The relic of a disrupted stellar system in the center of the Galaxy?"* – Alex Tilton; Dr. R. Michael Rich, University of California at Los Angeles; Dr. Alistair R. Walker, Cerro Tololo Inter-American Observatory; Dr. Giuseppe Bono, Rome Astronomical Observatory; Dr. David M. Nataf, The Johns Hopkins University; Dr. Andreas Koch, University of Heidelberg; Dr. Christian I. Johnson, Harvard-Smithsonian Center for Astrophysics; Dr. Jesper Storm, Leibniz-Institut for Astrophysik (AIP); Dr. Roberto De Propris, Finnish Centre for Astronomy with ESO, Finland; Dr. Andrea Kunder, Saint Martin's University
J-7	*"Does Flowing Water Change Cell Body Orientation in Vorticella convallaria?"* - Olivia Perotti; Dr. Rachel Pepper, University of Puget Sound
J-8	*"Fabricating 2-dimensional Devices"* - Joseph Murphy, Joel Toledo-Urena, William Shannon, and Byron Greenlee; Dr. Jennifer Heath, Linfield College
J-9	*"Field Electron Emission of Hafnium Carbide"* - Morgan Chamberlain; Dr. William Mackie, Linfield College
J-10	*"Looking for the BAO Signal in the 2MRS Using the Wavelet Transformation"* - William Kwako; Dr. Richard Watkins, Willamette University
J-11	*"Looking for the Baryon Acoustic Oscillations by Calculating the Density Autocorrelation Function"* - Annie Wang; Dr. Richard Watkins, Willamette University
J-12	*"Magnetomechanics of Magnetic Shape Memory Micropumps"* - Annika Thomas, The College of Idaho, Sierra Sandison & Andrew Armstrong, Boise State University; Dr. Peter Mullner, Boise State University
J-13	*"Measurement of Polymerization Rate in Capillary Waveguides"* - Jasper Riogeist; Dr. James Butler, Pacific University
J-14	*"Measuring Fluorescence Lifetimes using Upconversion Spectroscopy"* - Patrick Wigger; Dr. Amy Spivey, University of Puget Sound
J-15	*"Phagocytosis of Photoreceptor Outer Segments by the Retinal Pigment Epithelium"* - Reagan Dreiling; Dr. David Altman, Willamette University
J-16	*"Physics of Lead Climbing"* - Arik Espineli; Dr. Lane Seeley, Seattle Pacific University

J-17	*"Producing Bouncing Oil Droplets to Macroscopically Model Single-particle Diffraction"* - Trent Jones; Dr. Daniel Borrero-Echeverry, Willamette University
J-18	*"Rotational Anisotropy Second Harmonic Generation for Broken Inversion Symmetry Detection"* - Jesus Alvarez, Pacific University, Yufei Li & Thuc Mai, Ohio State University; Dr. Rolando Valdes-Aguilar, Pacific University
J-19	*"Simulation of Plasma Waves in Pair-Ion Flows"* - Cannon Coats & Rebecca Tucker; Dr. Kamesh Sankaran, Whitworth University
J-20	*"Sub-Classification of Blip Glitches Using Convolutional Neural Networks"* - Melissa Kohl; Janet Davis, Whitman College
J-21	*"The behavior of active matter within various forms of quenched disorder"* - Adrian Martin; Dr. Danielle McDermott, Pacific University
J-22	*"The Motion of Giant Stars in the Inner Galaxy"* - Thomas Moore; Dr. Payel Das, Oxford University; Dr. Christian Johnson, Harvard-Smithsonian Center for Astrophysics, and Dr. Andrea Kunder, Saint Martin's University
J-23	*"The Relation and Interaction Between MHD Shocks and Solitons"* - David Bacher; Dr. Robert Hamilton, George Fox University
J-24	*"Transferring power through magnetic coupling"* - Nickolas Villalobos; Dr. Tianbao Xie, Linfield College
J-25	*"Using a Cloud Chamber to Measure the Rate of Apha Decay in the Atmosphere"* - Crystal Murray-Weston & Aaron Wong; Dr. Matthew Geske, Gonzaga University
J-26	*"Using Machine Vision to Study the Subcritical Transition to Turbulence in Taylor-Couette Flow"* - Katherine LaChasse; Dr. Daniel Borrero-Echeverry, Willamette University