

PROCEEDINGS of the PACIFIC DIVISION
of the
AMERICAN ASSOCIATION for the ADVANCEMENT of SCIENCE

Volume 38

18 June 2019

100th ANNUAL
MEETING
PROGRAM with ABSTRACTS



Southern Oregon
University
18 - 22 June 2019

*Think Globally,
Organize Regionally,
Act Locally*



Pacific Division



100th Annual Meeting Program at a Glance

Tuesday, 18 June

4:00 p.m. – 6:00 p.m. Registration Center Open
Schneider Museum of Art, SOU Campus

4:00 p.m. – 6:00 p.m. Opening Reception
Schneider Museum of Art, SOU Campus

6:00 p.m. Public Plenary Talk:

“Undamming the Klamath River – The path to Restoration”
Meese Auditorium SOU campus

Wednesday, 19 June

7:00 a.m. – 4:00 p.m. Registration Center Open
Science Building, SOU campus

8:00 a.m. Presidential Breakfast
SOU Music Hall

8:30 a.m. Meeting Opening and Day’s Announcements
SOU Music Hall

8:45 a.m. Plenary Speaker

Dr. Phillip Mote,
Dean of Graduate Studies, Oregon State University
“Coping with Climate Hazards in the 21st Century”
SOU Music Hall

9:30 a.m. – 4:00 p.m. Symposia, Workshops, Town Hall Meetings
All in the Science Building on the SOU Campus

9:30 a.m. – 4:00 p.m. Symposium: Influencing Local and Regional Public Policy on Climate Change
Room 161

9:30 a.m. – 5:00 p.m. Symposium: The History and Philosophy of Science
Room 233

9:30 a.m. – 4:00 p.m. Symposium: Boise Extravaganza in Set Theory (BEST)
Room 173

9:30 p.m. – 3:30 p.m. Contributed Oral Presentations: Earth Sciences Section
Room 210

9:45 a.m. - noon Symposium: Opportunities and Challenges for Large Data Sets and their Analysis in Contemporary and Future Science
Room 162

9:30 a.m. – noon Symposium: Active Learning in the Sciences: What really works and how to implement it.
Room 375

9:30 a.m. – 12:30 p.m. Symposium: Advances in Corrosion and Surface Modification
Room 236

9:30 a.m. – noon Symposium: Puttin’ the Public to Work – Community Science around the world!
Room 207

9:30 a.m. – noon Symposium: Interventions in Aging
Room 122

1:30 p.m. – 4:00 p.m. Symposium: How Core Equipment Facilities are Changing the Nature of Scientific Investigations in Universities
Room 110

1:30 p.m. – 4:00 p.m. Symposium: Transforming agriculture in the Rogue Valley: Moving from Mono-culture to “Agra-diversity”
Room 108

1:30 p.m. – 4:00 p.m. Symposium: Engaging the Public in Science: Where Are They and How Do We Get There
Room 236

1:30 p.m. – 4:00 p.m. Symposium: Artists and Scientists Respond to Climate Change with Science-Themed Works in Art, Literature, and the Humanities
Room 207

1:30 p.m. – 2:10 p.m. Contributed Oral Presentations: Evolution, Organismal Biology, and Biodiversity Section
Room 123

1:30 p.m. – 3:45 p.m. Contributed Oral Presentations: General and Interdisciplinary Section
Room 373

2:10 p.m. – 3:50 p.m. Contributed Oral Presentations Ecology, Environmental Sciences, and Sustainability Section
Room 123

1:30 p.m. – 1:50 p.m. Contributed Oral Presentations: Psychology Section
Room 218

1:50 p.m. – 2:10 p.m. Contributed Oral Presentations: Social, Economic and Political Sciences Section (including Health Services)
Room 218

3:50 p.m. – 4:10 p.m. Contributed Oral Presentations Mathematics Section
Room 123

2:00 p.m. – 4:00 p.m. Town Hall Meeting: Advancing STEM: Increasing Diversity in Academia and Industry
Room 122

2:00 p.m. – 4:00 p.m. Town Hall Meeting: What can Scientific Societies do for you?
Room 162

2:00 p.m. – 4:00 p.m. Workshop: Learn Calculus in 90 minutes with 3D prints
Room 220

4:00 p.m. – 6:00 pm Contributed Poster Session
CVA Galleries Schneider Museum of Art

6:00 p.m. Presidential Address: Meese Auditorium
Crystal Goldman
“Open Libraries, Open Science”

7:00 – whenever. Science Pub Crawl
Downtown Ashland Square

Thursday, 20 June

- 7:30 a.m. – 4:00 p.m. Registration Center Open**
Science Building, SOU campus
- 8:00 a.m. Coffee**
Science Building SOU
- 8:30 a.m. Meeting Opening and Day's Announcements**
SOU Music Hall
- 8:45 a.m. Plenary Speaker**
Dr. Brian Smith
Inaugural Trustee Professor and Associate Dean of the Graduate College, Arizona State University
"The Honey Bee as a Model for Reverse Engineering a Brain"
SOU Music Hall
- 9:30 a.m. – 4:00 p.m. Symposia, Workshops, Town Hall Meetings**
All in the Science Building on the SOU Campus
- 9:30 a.m. – 4:00 p.m. Symposium: Boise Extravaganza in Set Theory (BEST)**
Room 173
- 9:30 a.m. – 4:00 p.m. Symposium: Pollinators, Buzzways, Private Gardens and Creative Education: An Activated Grassroots Effort to Save Pollinators in the Rogue Valley Through Political Advocacy and Touching Hearts.**
Room 108
- 9:30 a.m. – 3:00 p.m. Symposium: Environmental and agricultural measuring and monitoring in the Rogue Valley**
Room 122
- 9:30 a.m. – noon Symposium: The Future of Precision Medicine**
Room 161
- 9:30 a.m. – noon Symposium: Seeing with New Eyes: The Role of New Scientific Techniques and Perspective in Revolutionizing the Search for the First Americans**
Room 207
- 9:30 a.m. – noon Symposium: Strategies for Active Learning in Undergraduate Education**
Room 373
- 9:30 p.m. – 10:50 p.m. Contributed Oral Presentations: Agriculture, Food, and Renewable Resources Section**
Room 220
- 9:30 a.m. – noon Contributed Oral Presentations: Cell and Molecular Biology Section**
Room 233
- 9:30 a.m. – 10:30 a.m. Contributed Oral Presentations: Pharmaceutical Sciences Section**
Room 218
- 9:30 a.m. – 11:15 a.m. Contributed Oral Presentations: Materials Science Section**
Room 236
- 10:00 a.m. – 11:30 p.m. Town Hall Meeting: Character, Illusion, Lighting, Sound and Madness as Viewed by the Oregon Shakespeare Festival**
Room 162
- 10:30 p.m. – 10:50 p.m. Contributed Oral Presentations: Chemistry and Biochemistry Section**
Room 220
- 10:30 a.m. – 10:50 a.m. Contributed Oral Presentations: Science and the Arts and Humanities Section**
Room 218
- 10:50 a.m. – 11:30 a.m. Contributed Oral Presentations: Engineering, Technology and Applied Sciences Section**
Room 218
- 11:30 a.m. – 12:10 p.m. Contributed Oral Presentations: Physics Section**
Room 218
- 1:30 a.m. – 4:00 p.m. Town Hall Meeting: Different Styles, Different Insights, Different Science: Using Maker Tech to Teach STEM**
Room 162
- 1:30 p.m. – 4:00 p.m. Town Hall Meeting: Citizen Science, Climate Change and Fire in Western North America.**
Room 122
- 4:00 p.m. – 6:00 p.m. Town Hall Meeting: A Glimpse into the Possible Climate Future of Oregon Wineries**
Room 207
- 7:00 p.m. – 9:20 p.m. Annual Banquet**
Science Works Hands on Science Museum
- Friday, 21 June
- 7:30 a.m. – 2:00 p.m. Registration Center Open**
Science Building, SOU campus
- 8:00 a.m. Coffee**
Science Building SOU
- 8:30 a.m. Meeting Opening and Day's Announcements**
Room 151 Science Building
- 9:00 a.m. – 11:30 Symposium: The Social, Economic and Political Impacts of Climate Change**
Room 108
- 9:00 a.m. – 11:30 Symposium: FIRES!!**
Room 161
- 9:00 a.m. – 11:30 Symposium: The Opioid Epidemic: Up close and Personal**
Room 162
- 9:00 a.m. – 11:30 Symposium: West Coast Fairs: China and Chinese American Participation, Indigenous Americans at the Fair, and United States Attitudes and Immigration Policies."**
Room 233
- 9:00 a.m. – 11:30 Symposium: Reduce, Reuse, recycle: SUSTAIN!!!'**
Room 236
- 11:45 – 12:15 Pacific Division Closing Review and Celebration**
Room 151

Meeting Program

100th meeting of the Pacific Division of the American Association for the Advancement of Science

Southern Oregon University

Ashland Oregon

June 18-22

TUESDAY June 18th

8:30 a.m. Radio Interview, Jefferson Public Radio

4:00 – 6:00 p.m. Opening Reception Schneider Museum of Art

“Inspired by Art” exhibit opening
Schneider Museum of Art

“STEAMy Relationships
CVA Gallery

6:00 p.m. opening plenary talk, Meese Auditorium

Frankie Myers, Vice Chairman, Yurok Tribe
Dave Meurer, Community Liaison, Klamath River Renewal Corporation
Dr. Mark Bransom, CEO Klamath River Renewal Corporation

“Undamming the Klamath River – the Path to Restoration”

The Klamath River Renewal Corporation (KRRC) is a private, independent nonprofit 501(c)(3) organization tasked with implementing the largest dam removal and river restoration effort ever performed in the United States – and possibly the world. KRRC is part of a cooperative effort to re-establish the natural vitality of the Klamath River so that it can support all communities in the basin. This presentation is broken into two parts: the *What* and the *How*.

Part one – the *How* – will summarize how decades of often bitter conflict over water allocation, ecosystem health, tribal trust issues, lawsuits, and several other complex matters turned into discussion, compromise, and political action leading to an historic and carefully balanced pact known as the Klamath Hydroelectric Settlement Agreement (KHSA). The session will outline how the States of California and Oregon, local governments, Tribal nations, dam owner PacifiCorp, irrigators, and several conservation and fishing groups, appointed KRRC to take ownership of the Lower Klamath Hydroelectric Project and oversee removal of four hydroelectric dams on the river. Part two – the *What* -- provides an overview of the dam removal program, the current status of the project, obstacles remaining, sources of the \$450 million funding pool, how river restoration will be accomplished, and the desired/expected outcome for endangered fish, native peoples, river communities, and the regional economy.

In the summary, the audience will be given a few “take away” tips on how to navigate the political arena, employ activism, build consensus and pursue what can appear to be impossible objectives.

Wednesday, 19th June 2019

7:00 a.m. – 4:30 pm registration SOU Science Building

OPENING SESSION: SOU MUSIC HALL

8:00 a.m. SOU President's Breakfast Reception SOU Music Hall

8:30 a.m. Meeting opening and the day's announcements: SOU Music Hall

8:45 a.m. Plenary speaker:

Dr. Phillip Mote, Dean of the Graduate School, Oregon State University

"Coping with Climate Hazards in the 21st Century"

Humans are fundamentally and dramatically altering the composition of the atmosphere, leading directly to changes in the planet's energy budget. In the western US, manifestations of these changes are becoming obvious: heat waves, floods, droughts, fires, coastal change, and other hazards. Formal attribution studies have demonstrated the role of human interference in the climate system on these hazards. Despite growing evidence that these hazards will become more frequent and/or intense, few proactive "adaptation" actions have been taken. Institutional barriers are only part of the reason for inaction on climate adaptation. Minimizing future climate disruption will require both reducing emissions of heat-trapping gases, and taking vigorous action to reduce exposure to these hazards.

WEDNESDAY ALL DAY SESSIONS SOU SCIENCE HALL

Symposium: Influencing Local and Regional Public Policy on Climate Change

Room 161
Wednesday
9:30 – 11:45

The overwhelming consensus in the scientific community is that climate change is not only happening, but it is already here. While more global questions about how to address the factors contributing to climate change are important, many believe that the cutting edge of both climate research and climate policy has to do with understanding, adjusting to, and even mitigating the regional and local effects of climate change by affecting public policy.

The presenters in this symposium are all involved directly in the process of influencing public policy with respect to climate change. Each will describe their current efforts as well as 'lessons learned' in the process and current challenges and opportunities. They will also address their efforts to engage the larger community in this effort.

9:30 Welcome to the symposium. **Dan Barry and James M. Bower**

9:45 *Engaging the membership of AAAS as effective advocates for the inclusion of scientific evidence in public policy decisions at state and local levels in the United States.* **Dan Barry**, Director of Local and State Advocacy, AAAS.

- 10:15** *Effective Legislation as a Collective Effort.* **Dr. Alan Journet**, Co-Facilitator, Southern Oregon Climate Action Now (SOCAN).
- 10:45** *The European lessons from the JRC PESETA projects on climate impacts and adaptation.* **Dr. Juan-Carlos Ciscar**, Joint Research Center for the European Commission.
- 11:15** *The making of history in Southern Oregon: Protecting seeds and the future of local agriculture in the Rogue Valley.* **Chris Hardy**, Rogue Valley Farmer
- 11:45** *Youth Lead the Way to Science-Based Climate Action in Ashland.* **Hannah Sohl** and Allie R., Rogue Climate
- 12:15 – 1:30 lunch**
- 1:30** *Not New York City? Influencing climate change resilience policies in smaller communities and at the national level,* **Tonya Graham**, Executive Director, GEOS Institute, Ashland Oregon.
- 2:00** *Translating grassroots cooperation into policy success,* **Dave Meurer**, Community Liaison Klamath River Restoration Corp.
- 2:30** *Policy + Technology: Evolving the Electric Grid in the Age of Climate Change,* **Alan Hickenbottom**, Founder and Principal Latitude45 Associates.
- 3:00** *Summary of Ashland's Bellview Grange Legislative Resolution Process, Does Legislation Help?* **Paul Sheldon, M.A.**, Author and Private Development Consultant.
- 3:30** *Ashland Oregon's Climate and Energy Action Plan: A City Confronts Climate Change:* **James McGinnis**, Ashland Conservation Commission

Symposium: Boise Extravaganza in Set Theory (BEST)

(TWO-DAYS)

Room 173

Wednesday

9:30 – 4:00

This symposium is a continuation of the well-known Boise Extravaganza in Set Theory (BEST) conference. BEST focuses on the mathematical discipline called Set Theory, and its applications in other disciplines in Mathematics. BEST has been a symposium of the AAAS Pacific Division since 2013; previously it was hosted at Boise State University in Boise, Idaho.

- 9:30** *Ramsey Theoretic Methods in Dynamics of Topological Groups,* **DANA BARTOŠOVÁ** (University of Florida, Gainesville, FL; dbartosova@ufl.edu).
- 10:30** *Combinatorics at the First Uncountable Cardinal under AD,* **WILLIAM CHAN*** and **STEPHEN JACKSON** (University of North Texas, Denton, TX; William.Chan@unt.edu).
- 11:00** *Representation of Functions and Total Antisymmetric Relations in Monadic Third Order Logic,* **M. RANDALL HOLMES** (Boise State University)..
- 11:30** *Formally Verifying Peano Arithmetic,* **MORGAN SINCLAIRE*** and **RANDALL HOLMES** (Boise State University, Boise, ID; morgansinclair@boisestate.edu). (STUDENT PRESENTER)

12:00 – 1:30 Lunch

- 1:30** *Borel Reducibility and Symmetric Models,* **ASSAF SHANI** (University of California, Los Angeles, Los Angeles, CA; assafshani@ucla.edu). (STUDENT PRESENTATION)

- 2:30** *Applications of the Gandy-Harrington Topology*, **SHAUN ALLISON** (Carnegie Mellon University). (STUDENT PRESENTER)
- 3:00** **BREAK**
- 3:30** *Realizations of countable Borel equivalence relations*, **FORTE SHINKO** and **ALEXANDER KECHRIS** (California Institute of Technology) (STUDENT PRESENTER)
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Contributed Oral Presentations

Earth Sciences Section

Room 210

Wednesday

9:30 p.m. – 4:30 p.m.

- 9:30** *Effects of Legalized Cannabis on Water Resources of Southwestern Oregon*, **MICHAEL THOMA***, **JAKE JOHNSTONE**, **SHAVON HAYNES**, and **JOE KEMPER** (Oregon Water Resources Department, Salem, OR; Michael.J.Thoma@oregon.gov).
- 10:00** *Commingleing of Columbia River Basalt Group Aquifers: A Challenging but Solvable Problem*, **KENNETH E. LITE, JR.** (Retired Hydrogeologist, Portland, Or 97239; crbgaqua10@gmail.com).
- 10:30** *Geology and Groundwater of the Williams Creek Watershed*, **CHARLES ROGERS**, (Department of Sciences, Rogue Community College, Riverside Campus, Medford, Oregon; crogers@roguecc.edu).
- 11:00** *Pseudotsuga (Douglas Fir): Oregon's Tree*, **JEFFREY A. MYERS¹**, **DIANE M. ERWIN²**, and **HOWARD E. SCHORN²** (¹Western Oregon University Department of Earth Science, Western Oregon University, Monmouth, OR, myersj@wou.edu; ²University of California, Berkeley, Museum of Paleontology, Berkeley, CA).
- 11:30** *Preliminary Volcanic Geology of the Northern Portion of the Extended Cascade-Siskiyou National Monument, Southwestern Oregon*, **JAD D'ALLURA** (STEM, Chemistry Department, Southern Oregon University, Ashland, OR; rockit526@gmail.com).
- 12:00** Lunch
- 1:30** *Recently Reported Oregon Dinosaurs*, **GREGORY J. RETALLACK** (Department of Earth Sciences, University of Oregon, Eugene, OR; gregr@uoregon.edu).
- 2:00** *Geology of the Mount Whitney Intrusive Suite, Eastern Sierra Nevada, California*, **WILLIAM HIRT** (Biological and Physical Sciences, College of the Siskiyous, Weed, CA; hirt@siskiyous.edu).
- 2:30** *Geology Controls the Landscape of the Rogue Valley, Southwest Oregon*, **KAREN GROVE** (Professor Emerita, Department of Earth AND Climate Sciences, San Francisco State University, San Francisco, CA, currently: Ashland, OR; kgrove@sfsu.edu).
- 3:00** *Using Custom-Built Parks and Climbing Walls to Teach Earth History*, **LEONARD I. EISENBERG** (223 Granite Street, Ashland, Oregon 97520; evogeneao@gmail.com).

Symposium: The History and Philosophy of Science

Room 233

Wednesday

8:20 – 5:00

To more fully understand science, we must know something about its history, its central concepts, and its methods – the domain of the history and philosophy of science. This session will examine topics in the biological sciences, the medical sciences, and more, from historical and philosophical perspectives, in order to enrich our understanding of these areas as well as serve as a springboard for broader contextual knowledge about science. We seek to promote dialogue among scientists, philosophers, and historians to work toward an interdisciplinary understanding of these sciences and science more generally. Topics include: The history of scientific and medical advancements and contemporary implications: Aldo Leopold's ecological thinking; Medical imaging and uncertainty; Notions of biodiversity; and Ecology and ecological functioning.

Morning Session Ecology, applications, and lessons from the history of medicine and medical imaging

8:20 *Introductory Comments:* Dr. Marco Nathan

8:30 *Where in the World is Aldo Leopold?: An Examination of "The Land Ethic" in Relation to the Animal Liberationists and the Environmentalists of the Late 20th Century*, **DENISE REGINA PERCEQUILLO HOSSOM** (University of California Davis, 1 Shields Avenue Davis, CA 95616; drhossom@ucdavis.edu). (STUDENT PRESENTER)

9:00 *Functions and Functioning in Aldo Leopold's Land Ethic and in Ecology*, **ROBERTA L. MILLSTEIN** (Department of Philosophy, University of California, Davis, One Shields Avenue, Davis, CA, 95616; RLMillstein@UCDavis.edu).

9:30 *Remembering Abandoned Places: The Human-Landscape Relation*, **SARAH M. ROE¹** and **ELYSE ZAVAR²** (¹Philosophy Department, **Southern Connecticut State University, New Haven CT**, roes1@southernct.edu; ²Department of Emergency Management and Disaster Science, University of North Texas, Denton, TX, elyse.zavar@unt.edu).

10:00 *Wildfire in the West: A Philosophical Exploration*, **JAY ODENBAUGH** (Department of Philosophy, Lewis & Clark College, Portland, OR; jay@lclark.edu).

10:30 BREAK

11:00 *Uncertainty and Medical Imaging*, **MEGAN DELEHANTY** (Department of Philosophy, University of Calgary, Calgary, AB, Canada; mdelehan@ucalgary.ca).

11:30 *The Anti-vaccine Movement*, **EDWARD J MOTICKA** (Emeritus Professor, AT Still University School of Osteopathic Medicine, Scottsdale, AZ; emoticka@cox.net).

12:00 *Opening Pandora's Box at the Roof of the World: Migrating Wild Birds and Influenza*, **BARBARA C. CANAVAN** (Independent Scholar; bcanavan@post.harvard.edu).

12:30 LUNCH

Afternoon Session Scientific concepts, tools, and their applications

1:50 Introductory Comments, Dr. Sarah M. Roe

2:00 *Biomarkers*, **MARCO J. NATHAN** (Department of Philosophy, University of Denver, Denver, CO; marco.nathan@du.edu).

2:30 *Lessons from Embedding in Animal Behavior Science*, **TIERNAN ARMSTRONG-INGRAM** (Philosophy Department, University of California, Davis, Davis, CA; tingram@ucdavis.edu).

3:00 *Public Science Writing, Public Trust, and Communication Ethics*, **SARAH TINKER PERRAULT** (University Writing Program, University of California Davis, Davis, CA; sperrault@ucdavis.edu).

- 3:30** *Three Lives: Biological, Internal, and Rational*, **LUCAS J MIX** (Department of Organismic and Evolutionary Biology, Harvard University, and Ronin Institute, Redmond, WA; lucasjmix@gmail.com).
- 4:00** *Geometric Configuration in Design and in Nature: Is There a Connection?* **SUSAN G. STERRETT** (Department of Philosophy, Wichita State University, Wichita, KS; susangsterrett@gmail.com).
- 4:30** *Representing the Natural World: A Coordinated Process between Artistic Design and Science*, **HANNAH HOWLAND¹ and VADIM KEYSER²** (¹Pyatok, Oakland, CA, hhowland@pyatok.com; ²Department of Philosophy, California State University, Fresno, Fresno, CA, vkeyser@csufresno.edu).
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WEDNESDAY MORNING ONLY SESSIONS SOU SCIENCE HALL

Symposium: Interventions in Aging

Room 122
Wednesday
9:30 – 11:35

In Act III scene 2 of Richard II, Shakespeare penned: “Woe, destruction, ruin, and decay; The worst is death, and death will have his day.” This symposium will consider the state of development of several modern interventions in aging intended to at least reduce the Woe, destruction, ruin and decay of the process, if not eventually perhaps to deny death its day altogether. The symposium will consider recent developments in drugs that have shown promise in expanding life span, what is known about nutrition and aging, as well as the growing application of technology to mitigate or even reverse the consequences of aging. In reviewing these technologies, the symposium will also consider the overall objectives of research into aging interventions, as well as possible limitations in these interventions.

- 9:30** Introductory remarks, Dr. Carolina Livi, Affiliate Professor, SOU and Agilent Technologies
- 9:45** *Clinical Research in Diseases of the Aging Brain*, **WALTER G. CARLINI** (Medford Neurology - Providence Medical Group, 920 Royal Avenue, Medford, OR 97504).
- 10:35** *Anti-aging intervention: what do we know and how do we know it?* **Dr. CAROLINA LIVI** (SOU and Agilent Technologies)
- 10:55** *Bioelectronic Medicine, Electroceuticals and other Theranostic Revolutions*, **Dr. ULRICH HOFMANN** (Head of the section for Neuroelectronic Systems of the University Medical Center, Freiburg Germany).
- 11:15** *Impact of Tooth Loss on Physical and Cognitive Impairments in the Elderly*, **Dr. ICHIRO NISHIMURA, DDS, DMSc, DMD, FAP, FAAAS** (Professor of Dentistry and Bioengineering, UCLA).
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Symposium: Opportunities and Challenges for Large Data Sets and their Analysis in Contemporary and Future Science

Room 162
Wednesday
9:45 -12:00

It is easy to argue that the growth of computational power combined with the ability to acquire and store massive amounts of data has turned all fields of science into a branch of data science. This symposium will explore the role of data and its analysis across a range of scientific and technology applications, while also considering current data related challenges and limitations in each. From analysis of complex biological systems, to the technical challenge presented by building truly autonomous vehicles, the symposium will consider commonalities and differences in the role of data and its analysis. The symposium will also consider likely future trends in data analysis, including machine learning and AI, being driven by these applications. Finally, we will consider how the human nervous system itself may manage its own big data challenges.

- 9:45** *Introductory remarks, Dr. Pierre Baldi, Chancellors Professor of Computer Science at University of California Irvine and the Director of the Institute for Genomics and Bioinformatics, and Dr. James Bower, Executive Director Pacific Division AAAS.*
- 10:00** *A Glance at Newfound Promises and Challenges Within Big Data -Omics Exploring Pancreatic Islets, ALEX M. MAWLA (Integrative & Genomics PhD Candidate, University of California, Davis) and MARK HUISING (Department of Neurobiology, University of California, Davis). (STUDENT PRESENTATION)*
- 10:30** *Data Handling Challenges in the Cores World, ANDREW CHITTY (Director of University Shared Resources at Oregon Health and Science University (OHSU) and current President of The Association of Biomolecular Resource Facilities (ABRF).*
- 11:00** *Artificial Intelligence in Medicine, Hype or Hope? Dr. Peter Halt, (President of Mount Shasta Radiology)*
- 11:30** *AI: Present and Future, Dr. PIERRE BALDI (Distinguished Professor of Computer Science at University of California Irvine and the Director of the Institute for Genomics and Bioinformatics).*

Symposium: Puttin' the Public to Work – Community Science Around the World!

Room 207
 Wednesday
 9:30 – 12:00

This Symposium considers collaborations between scientists and the public that have influenced a wide range of projects from the designation of marine parks in Australia, to daily measurements of precipitation in the U.S., Canada, Puerto Rico, the U.S. Virgin Islands and the Bahamas. The symposium will also consider how digital technology is driving citizen science projects around the world.

- 9:30** *Citizen Science Leads to the Creation of Marine Parks in Western Australia, ROBERT HICKEY (Department of Geography, Central Washington University, Ellensburg, WA; rhickey@cwu.edu).*
- 9:50** *CoCoRaHS—Citizen Scientists Measuring Precipitation in the Western Hemisphere, HENRY REGES (CoCoRaHS, Colorado State University, Fort Collins, CO; hreges@atmos.colostate.edu).*
- 10:10** *Scientific Literacy Through Cross-cultural Competency: The Student Opportunities for Biological Research En Mexico Program (SOBRE Mexico), SAMUEL GUTIERREZ* and DANIEL BECK (Department of Biology, Central Washington University, Ellensburg, WA; Samuel.Gutierrez@cwu.edu, BeckD@cwu.edu). (STUDENT PRESENTER)*
- 10:30** *Citizen Scientist Collaborations in Pacific Northwest Lepidoptery, DAVID LEE MYERS (Author of *Wings in the Light: Wild Butterflies in North America*, Yale University Press, 2019; david@DavidLeeMyersPhoto.com).*
- 10:50** *Go Play Outside! The Gamification of Mobile Citizen Science Apps, ERIC A. GRAHAM (Department of Biology, Central Washington, Ellensburg, WA; eric.graham@cwu.edu).*
- 11:10** *Invasive Species Mapping Tools for Citizen Scientists: EDDMapS and Wild Spotter, REBEKAH D. WALLACE^{1*}, RACHEL CARROLL¹, CHARLES BARGERON¹, MICHAEL IELMINI², and PAT CONZEMIUS³ (¹Center for Invasive Species and Ecosystem Health, University of Georgia, Tifton, GA, Rachel.Beyke@uga.edu, cbargero@uga.edu, bekahwal@uga.edu; ²USDA Forest Service, National Forest System Headquarters, Washington, D.C., mielmini@fs.fed.us; ³Wildlife Forever, White Bear Lake, MN, pconzemi@wildlifeforever.org).*
- 11:30** *Budburst: Observing Plants to Document Global Change and Inspire Conservation Action, JESSAMINE FINCH^{1,2}, CAROLYN MOHR^{1*}, JENNIFER SCHWARZ BALLARD¹, and KAY HAVENS² (¹Learning & Engagement and ²Conservation Science, Chicago Botanic Garden, Glencoe, IL; jfinch@chicagobotanic.org, cmohr@chicagobotanic.org, jschwarz@chicagobotanic.org, khavens@chicagobotanic.org).*

Symposium: Advances in Corrosion and Surface Modification

Room 236

Wednesday

9:30 – 12:15

The corrosion of metallic materials affects almost every conceivable industrial sector and is a matter of major economic concern. This symposium will provide an overview of the work on corrosion and protective coverings/ surface modification, from the Principle Investigators and students in several laboratories working on this problem on the west coast.

9:30 *Introductory Comments: Vilupanur Ravi and Michael F. Hurley*

9:35 *Nanoscale Corrosion Characterization of Surface Hardened Martensitic Stainless Steel: Resolving Local Contributions to Bulk Materials Performance, MICHAEL HURLEY*, COREY EFAW, PAUL DAVIS, ARMEN KVRAN, BRIELLE IBE, and NICK CARTER* (Micron School of Materials Science & Engineering, Boise State University, Boise, ID, 83725, mikehurley@boisestate.edu, coreyefaw@u.boisestate.edu, pauldavis2@boisestate.edu, armenkvryan@u.boisestate.edu, brielleibe@u.boisestate.edu, nickcarter@u.boisestate.edu).

10:05 *Electrochemical Characterization of Titanium Alloys Subjected to an Atmospheric Pressure Plasma Treatment, KEVIN ROBLES^{1*}, SARA MARGALA², NINA ABRAMZON², and VILUPANUR RAVI¹* (¹Department of Chemical and Materials Engineering, ²Department of Physics and Astronomy, California State Polytechnic University, Pomona, Pomona, CA, 91768; krobles@cpp.edu, sgmargala@cpp.edu, nabramzon@cpp.edu, vravi@cpp.edu). (STUDENT PRESENTER)

10:35 *High Temperature Corrosion, VILUPANUR A. RAVI* (Department of Chemical and Materials Engineering, Cal Poly Pomona, vravi@cpp.edu).

11:05 **BREAK**

11:15 *Aluminizing Co-base Superalloys, KAILEY HANAN^{1*}, ANNETTE WAGNER¹, PRAFULL PANDEY², KAMANIO CHATTOPADHYAY², and VILUPANUR RAVI¹* (¹Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768; ²Department of Materials Engineering, Indian Institute of Science, Bangalore, Bengaluru, Karnataka 560012, India; kahanan@cpp.edu, alwagner@cpp.edu, prafull1011@gmail.com, kamanio@iisc.ac.in vravi@cpp.edu). (STUDENT PRESENTER)

11:45 *Early Stage Oxidation of UNS N06230 and UNS N07214 in Dry and Humid Conditions, NICHOLAS URY^{1*}, ANNETTE WAGNER¹, VINAY DEODESHMUKH² and VILUPANUR RAVI¹* (¹Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768, ²Haynes International 1020 W. Park Ave. Kokomo, IN, 46904 USA; neury@cpp.edu, alwagner@cpp.edu, vdeodeshmukh@haynesintl.com, vravi@cpp.edu). (STUDENT PRESENTER)

12:15 *Concluding Remarks*

Symposium: Active Learning in the Sciences: What really works and how to implement it

Room 375

Wednesday

9:30 – 12:00

This symposium explores different practices for actively engaging undergraduates in their science education, from small non-majors courses to large majors courses. Join us for a candid conversation about innovative techniques to improve the engagement of all undergraduates in science and ultimately improve their science quotient. The symposia speakers will also provide specific examples of techniques they use in their courses that can realistically be implemented in small and large college-level science courses. A demonstration of specific techniques will follow the formal presentations.

- 9:30** *Active Learning and Group Work in “Very” Large Introductory Biology Classes*, **LORI J. KAYES, DEVON QUICK, and NATHAN KIRK** (Department of Integrative Biology, Oregon State University, Corvallis, OR; lori.kayes@oregonstate.edu, Devon.quick@oregonstate.edu; Nathan.kirk@oregonstate.edu).
- 10:00** *How to make Introductory Biology Active: Activities and Course Design*, **NATHAN KIRK and LORI J. KAYES** (Department of Integrative Biology, Oregon State University, Corvallis, OR; Nathan.kirk@oregonstate.edu, lori.kayes@oregonstate.edu).
- 10:30** *Giving Our All to All Our Students: A “Capstone” Biology Experience for Non-Majors*, **ERIN BAUMGARTNER** (Department of Biology, Director of General Education, Interim Associate Provost, Western Oregon University, Monmouth, OR; baumgare@wou.edu).
- 11:00** *Implementing Studio-style Teaching in Non-Majors Biology Courses at Lane Community College*, **JENEVA ANDERSON** (Science Division, Lane Community College, Eugene, OR; andersonje@lanec.edu).
- 11:30** *The Lithia Water Springs Project: Active Learning for Analytical Chemists Using a Community Resource*, **STEVE PETROVIC** (Department of Chemistry, Southern Oregon University, Ashland, OR; petrovis@sou.edu).
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WEDNESDAY AFTERNOON SESSIONS SOU SCIENCE HALL

Symposium: Transforming agriculture in the Rogue Valley: Moving from Mono-culture to “Agra-diversity”

Room 108
Wednesday
1:30 – 4:00

For many years and continuing to this day, the agriculturally rich Rogue River Valley of Southern Oregon has produced a significant proportion of the pears consumed throughout the United States. In recent years, however, the Rogue valley has seen a dramatic increase in the diversity of agricultural products produced as well as a growing interest and public concern regarding the local consequences of GMO and pesticide laden conventional agricultural processes. Several years ago, for example, Jackson County banned the growing of GMO crops. The valley is also seen as a national leader in farm to table initiatives and local sourcing of agricultural product including organic seed crops, vineyards and wines, and hemp. Such products commonly derive from organic, agroecological and regenerative farming practices.

The speakers in this symposium will each describe different aspects of the ongoing transformation of agriculture in the Rogue Valley, including the growing emphasis on organic and regenerative farming methods including those farming practices that have the potential for regenerative farming, as well as farming practices that have the potential to mitigate climate change.

- 1:30** *Seed Sanctuary: Making History & Protecting the Future*, **RHIANNA SIMES** (Our family farms, Jackson County).
- 2:00** *Adapting a bio-regional seed system to regenerative and climate resilient farming methods to better serve a healthy, local food system*, **CHRIS HARDY** (Rogue Valley Farmer).
- 2:30** *Encouraging Climate Change Resilience through Plant Breeding*, **DON TIPPING** (Syskiyou seeds).
- 3:00** *Regenerative Agriculture and Agroecology: Beyond the Buzz*, **SCOTT GOODE** (Geoscientist and regenerative farming researcher and instructor, Rogue Valley).
- 3:30** Kathy Keeseey, United Farm Workers (not certain) ####

*Symposium: How Core Equipment Facilities are Changing the Nature
of Scientific Investigations in Universities*

Room 110

Wednesday

1:30 – 4:00

Twenty-Five Years ago, the National Science Foundation launched a new funding program for biological science designed to encourage universities to build core equipment facilities that could serve the laboratories of multiple principle investigators. While a large part of the motivation for this program was the impracticality of supporting increasingly complex and expensive equipment in many individual laboratories, the NSF also recognized that core facilities also provided an opportunity for new forms of collaboration and cooperation. Now, 25 years later, core facilities are a central feature of scientific research throughout the world. The speakers in this symposium will consider the current consequences and future opportunities represented by this relatively new form of scientific organization. Topics will include the modern structure and management of core facilities, their impact on the way science is conducted, and the opportunities for collaboration and cooperation provided by core facilities, with a particular focus on the development of new software systems that use core facilities to develop more sophisticated scientific work flows. The symposium will also consider efforts to link data collection to more sophisticated systems of data analysis and ultimately to the construction of models of biological processes, with examples taken from bioinformatics, immunology and computational neuroscience.

- 1:30** *Cores are core*, **ANDREW CHITTY** (Director of University Shared Resources at OHSU (the Oregon Health and Science University) and current President The Association of Biomolecular Resource Facilities (ABRF)).
- 2:00** *Elucidating the molecular basis of cancer through biobanking*, **Dr. ROBIN LEACH** (Professor Department of Cell Systems and Anatomy, University of Texas Health Science Center, San Antonio and Co-leader, Biobanking & Genome Analysis for the Cancer Therapy and Research Center (CTRC)).
- 2:30** *The Shared Economy for Scientists*, **CAROLINA B. LIVI, PhD** (Affiliate Professor of Biology, SOU, Academic Segment Manager, Disease Research and Toxicology, Agilent).
- 3:00** *Biomarker Discovery in Type 1 Diabetes: Merging Clinical and Cutting-Edge Methods*, **HOWIE SEAY, BD**.
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Town Hall Meeting: Advancing STEM: Increasing Diversity in Academia and Industry

Room 122

Wednesday

2:00 – 4:00

Diverse communities create a more satisfying and productive learning and working environment. Despite this repeatedly reported research finding, and acknowledgement of the value of diversity in the mission statement of many organizations, increasing STEM workforce diversity continues to be a challenging goal for academia and industry alike. Reasons given to explain this slow change in STEM discipline demographics include low numbers of qualified candidates, resistance to targeted searches, and poor "fit". Beyond recruitment, retention of underrepresented groups in STEM must also be addressed. The workplace environment is a key factor in attracting *and* retaining underrepresented groups. Full integration requires consideration of racial, gender, cultural, social, economic, interactional, structural, and climate influences and sufficient "critical mass" to support a diverse community. This town hall-style session will provide an opportunity to share and discuss current data, persisting obstacles to and inequities in career advancement, and successful strategies to directly address the commonly expounded reasons for the lack of diversification in STEM.

Moderators: Dr. Hala Schepmann, Department of Chemistry, Southern Oregon University, schepmah@sou.edu and Dr. Maria Bertagnolli, Department of Biology, Gonzaga University, bertagnolli@gonzaga.edu

Contributed Oral Presentations
Evolution, Organismal Biology, and Biodiversity Section
Ecology, Environmental Sciences, and Sustainability Section
Mathematics Section
Room 123
Wednesday
1:30 p.m. – 4:10 p.m.

Evolution, Organismal Biology, and Biodiversity Section

- 1:30** *DNA Barcoding of Invertebrates from the Great Salt Lake Ecosystem*, **SABRINA HANEY*** and **JONATHAN CLARK** (Department of Zoology, Weber State University, Ogden, UT; sabrinahaney19@gmail.com, jclark1@weber.edu). (STUDENT PRESENTATION)

Ecology, Environmental Sciences, and Sustainability Section

- 1:50** *Further Characterization of Some Extended-Spectrum Beta-Lactamase-Producing Coliforms and Their Plasmids*, **JORDAN M. CLAWSON***, **JACOB McWHORTER**, **ANNAKARINA THORNOCK**, **JEREMY ORELLANA**, **ABIGAIL KOVASH**, and **RUHUL KUDDUS** (Department of Biology, Utah Valley University, Orem, UT; jomarclaw@gmail.com, 10732844@my.uvu.edu, akthornock@gmail.com, jeremy.orellana@yahoo.com, 10791804@my.uvu.edu, ruhul.kuddus@uvu.edu). (STUDENT PRESENTATION)
- 2:10** *Habitat–Community Ecology Value Rigidity Traps*, **STEVEN P. FERRARO** (Retired, Newport, OR; steveferraro@peak.org).
- 2:30** *Five Ideas To De-Carbonize The Global Economy*, **PHILIP W. KITHIL** (CEO Ocean-based Climate Solutions, Inc., Santa Fe, NM; ocean.based.pk@gmail.com).
- 2:50** *Engaging Students in Social Science Research Practice through a Local Environmental Movement*, **JESSICA PIEKIELEK*** and **WALLACE BAKER** (Department of Sociology and Anthropology, Southern Oregon University, Ashland, OR; piekielj@sou.edu, bakerw2@sou.edu).

Mathematics Section

- 3:10** *Thermosetting the Earth: Partial Solution to Climate Change*, **DAVID BLACKMAN¹** and **DANIEL ALRICK²** (¹Department of Mathematics, Southern Oregon University, Ashland, OR; ²Ashland, OR; gribear@mac.com, danielalrick@hotmail.com).

Symposium: Engaging the Public in Science: Where Are They and How Do We Get There

Room 236
Wednesday
1:30 – 4:00

There is no question that the growing complexity of important national issues, including those involving climate change and the environment will require an increased level of scientific understanding by policy makers and the public. Yet, a recent survey conducted by the University of Nevada found that only 14% of the American Public had a great deal of confidence in academic science, while a survey by the Pew Research Center in 2015 found that the number of respondents who said that science had “made life more difficult” rose 50% from 2009 to 2015. Keeping with these trends, a recent survey conducted by the US Government found that 35% of respondents indicated “a lot” of trust in scientists, while the number who did not trust scientists at all increased by over 50% compared to a similar poll in 2013. The symposium will consider programs and projects intended to bridge these gaps and working to deepen the public understanding and involvement in these complex and important societal issues.

- 1:30** *The European experience in the JRC PESETA projects on climate impacts*, **Dr. JUAN-CARLOS CISCAR** (Joint Research Center for the European Commission).
- 2:00** *SOCAN's Master Climate Protector - A Primer for Action*, **Dr. ALAN JOURNET** (Co-Facilitator, SOCAN, (retired) Professor of Biology and Environmental Science, Southeast Missouri State University).
- 2:30** *Vesper Meadow: re-envisioning our land-human relationship and demonstrating community-powered rewilding*, **JEANINE MOY** (Director of Vesper Meadow Education Program).
- 3:00** *Forest for the Trees*, **DAN RUBY** (Executive Director, Science Works, Ashland, Oregon).
- 3:30** *Whyville.net 20 years engaging millions of children in game-based science learning on line*, **Dr. JAMES M. BOWER** (CEO Numedeon Inc.).

Town Hall Meeting: What can Scientific Societies do for you?

Room 162

Wednesday

2:00 – 4:00

The American Association for the Advancement of Science was founded on September 20th, 1848 and is therefore 171 years old. Sigma Xi, the scientific research honor society, was founded in 1886, 133 years ago. This symposium will take place during the 100th annual meeting of the Pacific Division of AAAS and will consider the current and future value of scientific societies. How have changes in the structure of science and scientific careers changed the role that scientific societies play within science and for individual scientists? What are the current challenges facing scientific societies and how might we imagine their roles changing in the future?

Participants:

Michael Savelli: American Association for the Advancement of Science (AAAS)

Eman Ghenem: Sigma Xi

Ken Gordon: Northwest Association for Biomedical Research

Dr. Phillip Mote: American Geophysical Society

Andrew Chitty: The Association of Biomolecular Resource Facilities

Symposium: Artists and Scientists Respond to Climate Change with Science-Themed Works in Art, Literature, and the Humanities

Room 207

Wednesday

1:30 – 3:00

Public acceptance of human-caused climate change has increased by direct and indirect experience of well-publicized calamities throughout the nation. Fires, droughts, floods, hurricanes, debris flows, excessive heat and cold have alerted people to the radically changed conditions on the planet.

Yet, many in the arts and humanities have continued to depict the physical world in general and nature in particular in traditional ways. Landscapes, nature poems, novels often avoid the new harsh realities that would undermine the use of nature as a background setting rather than a dangerous protagonist in the current human drama. Even the familiar calendar art of environmental organizations stays focused on glorious, almost pristine images of nature. As radical as climate disturbance has become, the underlying western paradigm in the arts and humanities of a beneficent and supportive nature is hard to change.

The Arts and Humanities centered on climate change can help propel this necessary ideological shift. This interdisciplinary symposium invites papers on this topic from artists, humanists, and scientists alike. We would also welcome poems and excerpts of fiction that would be read in the symposium, along with the papers. If enough poets and writers contribute, we could set up a separate reading during lunch or another convenient time.

- 1:30** *Climate Disturbance and the Human Prospect: Art, Literature, the Humanities Respond to Social and Cultural Change*, **ROBERT CHIANESE** (Department of English (Emeritus), California State University Northridge, Northridge, CA; rlchianese@gmail.com).
- 2:00** *Frederick Law Olmsted, Aesthetics and the Urban Commons*, **CARL A. MAIDA** (Institute of the Environment and Sustainability, University of California, Los Angeles, Los Angeles, CA; cmaida@ucla.edu).
- 2:30** *Innovation and Entrepreneurship Policy for Performing, Visual Arts, and Design (PAVAM-D): The Iconic Case of Ashland's Shakespeare Festival and Cultural Cluster*, **HENRY ETZKOWITZ^{1*}**, **LEILA M. KEHL^{1*}**, and **TATIANA SCHOFIELD^{2*}** (¹International Triple Helix Institute, Palo Alto, CA, henry.etzkowitz@triplehelix.net; ²Royal College of Arts, Department of Knowledge Exchange, Kensington Gore, South Kensington, London, tatianaschofield@yahoo.co.uk).
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Contributed Oral Presentations

Psychology Section

Social, Economic and Political Sciences Section (including Health Services)

Room 218

Wednesday

1:30 – 2:10

Psychology Section

- 1:30** *Autonomous Sensory Meridian Response (ASMR). What is it? And Why Should We Care?* **DAVID J HARDY** (Department of Psychology, Loyola Marymount University, Los Angeles, CA; david.hardy@lmu.edu).

Social, Economic and Political Sciences Section (including Health Services)

- 1:50** *Increasing Capacity Building in Science and Health Literacy in Rural Nigeria by Buttressing Human Rights Through Education*, **MARK J. JOHNSON^{1,2Δ*}**, **NATALIE FLORES^{1,2Δ}**, **MIBENGE BAGUNDA²**, **IKORO MADUKA²**, **MARIA ALEJANDRA MARTINEZ²**, and **SQUIRE BOONE²** (¹Department of Health & Behavior Studies and Department of Curriculum and Teaching, Teachers College, Columbia University, New York, NY, mjj2143@columbia.edu, nyf2104@columbia.edu; ²Refugee and Migrant Workgroup, Global Health Section, Asset Procurement Group, Brooklyn, NY, mibenge@assetprocurementgroup.org, maduka@assetprocurementgroup.org, mmartinez@assetprocurementgroup.org). (STUDENT PRESENTATION)
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Workshop: Learn Calculus in 90 minutes with 3D Prints

Room 220

Wednesday

2:30 p.m. – 4:00 p.m.

When Isaac Newton developed calculus in the 1600s, he was trying to tie together math and physics in an intuitive, geometrical way. But over time math and physics teaching became heavily weighted toward algebra, and less toward geometrical problem solving. Thus, students are taught reams of algebra and formalisms that can completely obscure the elegance and simplicity of many core calculus concepts.

What might Isaac Newton and later mathematicians have created if they had owned 3D printers? The organizers' forthcoming book, *Hacker Calculus*, uses 3D printed math models to teach calculus without (much) algebra. We will use some of the 3D printed models from the book, some PowerPoint, and maybe some paper and scissors to go through key concepts of calculus conceptually.

Workshop organizers: Joan Horvath and Rich Cameron, Nonscriptum LLC, Pasadena, CA. joan@nonscriptum.com

Contributed Oral Presentations
General and Interdisciplinary Section
Room 373
Wednesday
1:30 – 3:45

General and Interdisciplinary Section

- 1:30** *Designing Single Guide RNAs for CRISPR/Cas9*, **NEHA BHAGWAT**^{1*}, NATALIA KHURI² and SAMI KHURI¹ (¹Department of Computer Science, San Jose State University, San Jose, CA, pratikshya.mishra@sjsu.edu, sami.khuri@sjsu.edu; ²Department of Bioengineering, Stanford University, Stanford, CA, natalia.khuri@stanford.edu). (STUDENT PRESENTATION)
- 1:50** *An Unorthodox view of Belief – Why People Believe What They Do and How to Change Beliefs*, **DAVID RABINOWITZ** (Corvallis, OR; rabinowd@oregonstate.edu).
- 2:10** *The Pendulum, the Pyramid, the Parthenon, and the Pound: The Pendulum and Standards of Measure in the Ancient World*, **ROLAND A. BOUCHER** (Irvine, CA; rolandfly@sbcglobal.net).
- 2:30** *Structure, Culture, and Agency: Library Succession Planning in the California State University System*, **CRYSTAL GOLDMAN**, (Geisel Library, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0175, clgoldman@ucsd.edu).
- 2:55** *Assessing Library Instruction: Aligning Accreditation Competencies with Professional Standards*, **DOMINIQUE TURNBOW**, **CRYSTAL GOLDMAN***, and **KAREN HESKETT**, (Geisel Library, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0175; clgoldman@ucsd.edu).
- 3:20** *Beyond Coding: Building Research Data Management Skills Using The Carpentries*, **KATHERINE E. KOZIAR**, (Orbach Science Library, University of California, Riverside, P.O. Box 5900, Riverside, CA 92517, katherine.koziar@ucr.edu).
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Wednesday Afternoon
June 19th
CONTRIBUTED POSTER SESSION
CVA GALLERIES
Adjacent to Schneider Museum of Art
4:00 – 6:00

Agriculture, Food, and Renewable Resources Section

Poster # 1 *A Bottleneck for Microbes in Seeds of Ventenata dubia, Bromus tectorum, and Boechera stricta*, **MARYAM MOHAMMED ALOMRAN**^{1,3*}, **GEORGE NEWCOMBE**², and **TIMOTHY PRATHER**¹ (¹Department of Plant Sciences and ²Department of Forest, Rangeland and Fire Sciences, University of Idaho, Moscow, ID, USA; ³College of Science, Department of Biology, Princess Nora Bint AbdulRahman University, Riyadh, Kingdom of Saudi Arabia; alom4874@vandals.uidaho.edu, georgen@uidaho.edu and tprather@uidaho.edu). (STUDENT PRESENTATION)

Poster # 2 *In-field Trench Composting*, **SCOTT GOODE** (Desert Research Institute, Reno, NV; P.O. Box 5083, Central Point, OR 97502; nourishing.systems@gmail.com).

Poster # 3 *Metagenomic Analyses across Pest-Host Environments of Invasive Shot Hole Borer (Euwallacea sp.)*, **ANDREW E. NEISESS**^{1*}, **VALERIE J. MELLANO**¹, **SHELDON E. MURINDA**², and **AKIF ESKALEN**³ (Departments of ¹Plant Science and ²Animal and Veterinary Sciences, California State Polytechnic University, Pomona, CA, USA, aeneiss@gmail.com, vjmellano@cpp.edu, semurinda@cpp.edu; ³Department of Plant Pathology, University of California, Davis, CA, USA, askalen@ucdavis.edu). (STUDENT PRESENTATION)

Poster # 4 *Sex-dependent Lifespan Extension by Curcumin Treatment in Drosophila melanogaster*, **T. REZENDES, J.C. DOUGLAS, A. ESQUIVEL, P. VIDEAU, and B.E. PADDOCK** (Southern Oregon University, Ashland Oregon). (STUDENT PRESENTATION)

Poster # 5 *A Bottleneck for Microbes in Seeds of Ventenata dubia, Bromus tectorum, and Boechera stricta*, **MARYAM MOHAMMED ALOMRAN**^{1,3*}, **GEORGE NEWCOMBE**², and **TIMOTHY PRATHER**¹ (¹Department of Plant Sciences and ²Department of Forest, Rangeland and Fire Sciences, University of Idaho, 875 Perimeter Drive, Moscow, ID 83844 USA, and ³College of Science, Department of Biology, Princess Nora Bint AbdulRahman University, Riyadh, Kingdom of Saudi Arabia; alom4874@vandals.uidaho.edu, georgen@uidaho.edu and tprather@uidaho.edu). (STUDENT PRESENTATION)

Poster # 6 *Ventenata dubia's Native Range Provides Insight into its Potential Distribution in North America and Directs Search Efforts to Areas that may Contain Pathogens Useful for Biological Control*, **MARYAM MOHAMMED ALOMRAN**^{1,3*}, **GEORGE NEWCOMBE**², and **TIMOTHY PRATHER**¹ (¹Department of Plant Sciences and ²Department of Forest, Rangeland and Fire Sciences, University of Idaho, 875 Perimeter Drive, Moscow, ID 83844 USA, and ³College of Science, Department of Biology, Princess Nora Bint AbdulRahman University, Riyadh, Kingdom of Saudi Arabia; alom4874@vandals.uidaho.edu, georgen@uidaho.edu and tprather@uidaho.edu). (STUDENT PRESENTATION)

Anthropology and Archaeology Section

Poster # 7 *Examining Evidence of Repurposing and Recycling of Milling Stone Equipment from San Clemente Island*, **DEBBIE BALAM** (Department of Anthropology, California State University Northridge, Northridge, CA; debbiesue.balam@gmail.com). (STUDENT PRESENTATION)

Poster # 8 *Finding the Dirt of the Right Age: Uncovering the Late Pleistocene Landscape of the Oregon State University Campus*, **SAMUEL R BURNS**^{A*} and **LOREN WHITE**^A (Department of Applied Anthropology, Oregon State University, Corvallis, OR; burnsamu@oregonstate.edu, whitelo@oregonstate.edu). (STUDENT PRESENTATION)

Poster # 9 *Geometric Morphometric Assessment of Skull Symmetry in 6-8.0 Year Old Humans*, **JESSICA M. CRONIN**^{*1}, **ANA SHAUGHNESSY**², **JANE VANNAHEUANG**³, **LAURA E. CIRILLO**⁴, **GARY D. RICHARDS**⁵, and **REBECCA S. JABBOUR**⁶ (¹Department of Integrative Biology, jessc221@berkeley.edu, ²Department of Molecular and Cell Biology, ana.shaughnessy@berkeley.edu, and ³Department of Public Health, University of California, Berkeley, Berkeley, CA, janevannaheuang@berkeley.edu; ⁴Department of Anthropology, University of Nevada, Reno, Reno, NV; ⁵Department of

Biomedical Sciences, A.A. Dugoni School of Dentistry, University of the Pacific, San Francisco CA, grichard@pacific.edu; ⁶Department of Biology, Saint Mary's College of California, Moraga, CA. (STUDENT PRESENTATION)

Poster # 10 *New Age Colonialism: Biopiracy and Bioprospecting as Colonialism in the Global Order*, **CORINNE M. GIBSON** (Department of Anthropology, California State University, Fresno, Fresno, CA; corinnemarie@mail.fresnostate.edu). (STUDENT PRESENTATION)

Cell and Molecular Biology Section
(including Medical and Dental research in these areas)

Poster # 11 *The Jekyll and Hyde of Inflammation: Cytokines as Metastatic Promotors with Suppressive Qualities in Breast Cancer*, **JOSEPH A. CHRISTIANSON^{1*}** and **CHERYL L. JORCYK²** (Department of Biological Sciences, Boise State University, Boise, ID; jochristianson@u.boisestate.edu) (STUDENT PRESENTATION)

Poster # 12 *The Effect of Curcumin on Neural Function, Development and Response to Oxidative Stress in *Drosophila**, **A.R. ESQUIVEL^{*}**, **C. MORAN**, **P. VIDEAU**, and **B.E. PADDOCK** (Department of Biology, Southern Oregon University, Ashland, OR; esquiveal@sou.edu, moranc@sou.edu, videaup@sou.edu, paddockb@sou.edu). (STUDENT PRESENTATION)

Poster # 13 *Expression of Insulin Receptor Isoforms during the Reproductive Cycle in the American Mink*, **CHASELYN RHINEHART^{*}** and **AYOKUNLE HODONU^{*}** (Northwest Nazarene University, Nampa, ID; crhinehart@nnu.edu, ahodonu@nnu.edu). (STUDENT PRESENTATION)

Poster # 14 *Potential for a Pro-Metastatic Prostate Tumor Microenvironment Created by the Generation of a Positive Feedback Loop from Cytokine-Induced CXCL1 Expression*, **CASSANDRA L. WIGFALL^{*}**, **CODY L. WOLF**, and **CHERYL L. JORCYK** (Department of Biological Sciences, Boise State University, ID; cassiewigfall@u.boisestate.edu, codywolf@u.boisestate.edu, cjorcyk@boisestate.edu). (STUDENT PRESENTATION)

Poster # 15 *Computational Modeling of Carbohydrate Allocation in a Mink Endometrial Cell Line (GMMe) to Understand Hormone Regulation of Fertility*, **ANGELIQUE YANG^{*}**, **HUNTER BAIN**, and **JENNIFER CHASE** (Department of Biology, Northwest Nazarene University, Nampa, Idaho; ayang@nnu.edu). (STUDENT PRESENTATION)

Poster # 16 *Pancreatic Cancer Patient's NK Cells and How They are Defective in the Production of IFN- γ* , **MARIANA AMARILLAS^{1*}**, **LARRY WITCHER^{1*}**, **MENG-WEI KO²**, **TAHMINEH SAFAEI²**, **MAJED BAMATRAF²**, and **ANAHD JEWETT²** (¹UCLA Pre-College Science Education Program, UCLA School of Dentistry, Los Angeles, CA, mariana.amarillas@hotmail.com, blackmagickid28@gmail.com; ²UCLA School of Dentistry, Los Angeles, CA, mengwei@g.ucla.edu, tahmineh_saf@yahoo.com, mbamatraf@ucla.edu, ajewett@ucla.edu). (STUDENT PRESENTATION)

Poster # 17 *Inhibition of GRHL2 Protein Enhances Bortezomib-induced Apoptosis in Oral Squamous Cell Carcinoma (OSCC) by Reducing Autophagy*, **AMALIA DE LEON^{1*}**, **AMELIA LOPEZ^{1*}**, **YATENDRA MULPURI²**, **TORU YAMAMOTO²**, and **IGOR SPIGELMAN²** (¹UCLA Pre-College Science Education Program, UCLA School of Dentistry, Los Angeles, CA, amaliajasminedeleon@yahoo.com, amelia.lopez2598@gmail.com; ²UCLA School of Dentistry, Los Angeles, CA, yatendra@g.ucla.edu, toruyamamoto@g.ucla.edu, ispigelman@dentistry.ucla.edu). (STUDENT PRESENTATION)

Poster # 18 *Inhibition of GRHL2 Protein Enhances Bortezomib-induced Apoptosis in Oral Squamous Cell Carcinoma(OSCC) by Reducing Autophagy*, **TEMI JEKAYINFA^{1*}**, **WEI CHEN²**, **ABDULLAH ALSHAIKH²**, and **MO KANG²** (¹UCLA Pre-College Science Education Program, UCLA School of Dentistry, Los Angeles, CA, temijek@gmail.com; ²UCLA School of Dentistry, Los Angeles, CA, chenwei304@g.ucla.edu, abdullah.alshaikh@hotmail.com, mkang@dentistry.ucla.edu). (STUDENT PRESENTATION)

Poster # 19 *Stemness of Bone Marrow Stromal Cells for Regenerative Properties*, **KAITLYN QUESADA^{1*}**, **BRIAN CARTER^{1*}**, **HIROKO OKAWA²**, and **ICHIRO NISHIMURA²** (¹UCLA Pre-College Science Education Program, UCLA School of Dentistry, Los Angeles, CA, quesadakaitlyn@gmail.com, briancarter0003@gmail.com; ²UCLA School of Dentistry, Los Angeles, CA, hiroko.okawa01@gmail.com, inishimura@dentistry.ucla.edu). (STUDENT PRESENTATION)

Poster # 20 *The Role of NFAT in Ethanol-Treated Oral Cavity Squamous Cell Carcinoma*, **EMILY SAAVEDRA^{1*}**, **LELA BENNETT^{1*}**, **CHARLOTTE MARTIN²**, and **KI-HYUK SHIN²** (¹UCLA Pre-College Science Education Program, UCLA School of Dentistry, Los Angeles, CA, saavedraemily0@gmail.com, lcapbennett@gmail.com; ²UCLA School of Dentistry, Los Angeles, CA, lottmartin@ucla.edu, kshin@ucla.edu). (STUDENT PRESENTATION)

Poster # 21 *All of Us and the Future of Medical Research*, **PRISCILLA OPPENHEIMER^{*1,2}** and **ALAN OPPENHEIMER^{*2}** (¹Department of Computer Science, Southern Oregon University, 1250 Siskiyou Boulevard, Ashland, OR 97520, oppenheip@sou.edu; ²The Alan and Priscilla Oppenheimer Foundation, 110 South Laurel, Ashland, OR 97520, alan@oppenheimerfoundation.org).

Chemistry and Biochemistry Section

Poster # 22 *Histidine Protonation in Epoxide Hydrolase B*, **DANIELLE ADLER^{*}** and **GREG SMITH** (Department of Chemistry, Southern Oregon University, Ashland, OR; danielle.adler21@gmail.com, smithg5@gmail.com). (STUDENT PRESENTATION)

Poster # 23 *Regulation of Glycolytic Enzymes by Progesterone and Estrogen in a Mink Uterine Cell Line Does Not Affect Glycolytic Flux*, **JENNIFER CHASE^{*}** and **HAYDEN HOLMLUND** (Department of Biology, Northwest Nazarene University, Nampa, ID; jrchase@nnu.edu).

Poster # 24 *Computational Analysis of Histidine Protonation in the Enzyme Human Soluble Epoxide Hydrolase*, **BRIAN LEE^{*}** and **GREG SMITH** (Department of Chemistry, Southern Oregon University, Ashland, OR; lee.briansh@gmail.com). (STUDENT PRESENTATION)

Poster # 25 *Vasoactive Hormones Identified as Efficient Nitric Oxide Donors: Implications for Enhanced Opioid Induced Antinociception*, **VUSUMUZI LEROY SIBANDA^{1*}** and **REUBEN H. SIMOYI^{1,2}** (¹Department of Chemistry, Portland State University, Portland, OR, vsibanda@pdx.edu; ²School of Chemistry and Physics, University of KwaZulu-Natal, Westville Campus, Durban, South Africa, rsimoyi@pdx.edu). (STUDENT PRESENTATION)

Poster # 26 *A Deep Recurrent Network Learns Complex Rules to Quantify Protein-Coding Potential and the Impact of Synonymous Codon Usage*, **NATHAN WAUGH^{*}** and **DAVID HENDRIX** (Biochemistry and Biophysics, Oregon State University, Corvallis, OR; waughn@oregonstate.edu, David.Hendrix@oregonstate.edu). (STUDENT PRESENTER)

Computer and Information Sciences Section

Poster # 27 *Preliminary Comparison between a Novel Multilayer-Perceptron Ensemble Technique and the Mixture-of-Experts Algorithm*, **JOHN WILEY^{1*}**, **MEHMET VURKAÇ²**, **SHUAI YUAN³** (¹Independent Scholar, Grants Pass, OR, johnwprofessional@gmail.com; ²Department of Electrical and Computer Engineering, ³Department of Computer Science, Seattle University, Seattle, WA, vurkacm@seattleu.edu, yuans2@seattleu.edu).

Ecology, Environmental Sciences, and Sustainability Section

Poster # 28 *Marine Bacterioplankton Consortia Follow Deterministic, Non-Neutral Community Assembly Rules*, **KEVIN L VERGIN^{1*}**, **NICHOLAS JHIRAD¹**, **JONATHON DODGE²**, **CRAIG A CARLSON³**, and **STEPHEN J GIOVANNONI¹** (¹Department of Microbiology and ²Department of Computer Sciences, Oregon State University, Corvallis, OR, kevin_vergin@yahoo.com, shapenaji@gmail.com, dodgej@onid.orst.edu, steve.giovannoni@oregonstate.edu; ³Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara, Santa Barbara, CA, craig_carlson@ucsb.edu).

Poster # 29 *Effects of Baycrete Texture and Tidal Elevation on Recruitment of Native *Ostrea lurida* and Nonindigenous *Balanus amphitrite* in San Diego Bay, CA*, **SABRINA LI^{1*}**, **BRYCE PEROG²**, and **DANIELLE C. ZACHERL²** (¹Walnut High School, Walnut, CA, sli321876@gmail.com; ²Department of Biological Science, California State University, Fullerton, Fullerton, CA, bryceperog@csu.fullerton.edu, dzacherl@fullerton.edu). (STUDENT PRESENTATION)

Poster # 30 *Thermal Dependence of Metabolic Rate in Ringed Crayfish*, **MARIANA STOWASSER** (Biology Department, Southern Oregon University, Ashland, OR; satlerm@sou.edu).⁹ (STUDENT PRESENTATION)

Education Section

Poster # 31 *A Comparison of Two Styles of Flipped Classrooms in an Undergraduate Statistics Course*, **TRISTEN ASAY GORDER^{*}**, **PAUL CONDON**, and **JOHN TAYLOR** (Department of Psychology, Southern Oregon University, Ashland, OR; condonp@sou.edu). (STUDENT PRESENTATION)

Engineering, Technology and Applied Sciences Section

Poster # 32 *Exoskeleton Leg Brace*, **EVELYN ORTIZ***, **MILENKA SERRANO***, **KONNYE ZAVALA***, and **FARHANA ABEDIN** (Department of Electromechanical Engineering Technology, California State Polytechnic University, Pomona, CA; fabedin@cpp.edu). (STUDENT PRESENTATION)

Evolution, Organismal Biology, and Biodiversity Section

Poster # 33 *The Effects of Larval Population Density and Social Interactions on Adult Fecundity in *Drosophila melanogaster**, **EVA BATENHORST***, **GRACE KNAPP***, **NICHOLAS WANDERSHEID**, **SYDNEY THOMAS**, **MICHAEL BALTZLEY**, and **KRISTIN LATHAM-SCOTT** (Department of Biology, Western Oregon University, Monmouth, Oregon; baltzleym@wou.edu, lathamk@wou.edu). (STUDENT PRESENTATION)

Poster # 34 *Aging Hawaiian Spinner Dolphins (*Stenella longirostris longirostris*, HSD) with Two Techniques of Dentinal Aging, the Sanding Method and Decalcification & Staining Method, to Gain Population Demographic Information*, **JESSIE HOFFMAN^{1*}**, **ILSE SILVA-KROTT²**, and **KRISTI WEST³** (¹Department of Natural Sciences, Hawai'i Pacific University, Kailua, HI, jhoffma4@my.hpu.edu; ²University of Phoenix, Hawaii Campus, Kapolei, HI, isilvakrott@email.phoenix.edu; ³Hawai'i Institute of Marine Biology, University of Hawai'i Mānoa, Honolulu, HI, kristiw@hawaii.edu). (STUDENT PRESENTATION)

General and Interdisciplinary Section

Poster # 35 *Broader Impacts: The NSF-CREST Center for Cellular and Biomolecular Machines at UC Merced*, **CARRIE KOUADIO^{1*}**, **VICTOR MUÑOZ^{1,2}**, **AJAY GOPINATHAN^{1,3}**, **SAYANTANI GHOSH^{1,3}**, **KARA McCLOSKEY^{1,4}**, and **NORA M. COLE¹** (¹NSF-CREST Center for Cellular and Biomolecular Machines (CCBM), ²Bioengineering Department, ³Physics Department, ⁴Materials Science and Engineering Department, University of California, Merced, Merced, CA; ckouadio@ucmerced.edu, vmunoz3@ucmerced.edu, agopinathan@ucmerced.edu, sghosh@ucmerced.edu, kmccloskey@ucmerced.edu, ncole2@ucmerced.edu).

Materials Science Section

Poster # 36 *Effect of Heat Treatment on Selective Laser Melted Alloy 625: Microstructure and Corrosion Behavior*, **CHRISTOPHER FARAJ^{1*}**, **SAMAD FIRDOSY²** and **VILUPANUR RAVI¹** (¹Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, cjfaraj@cpp.edu, Samad.A.Firdosy@jpl.nasa.gov, vravi@cpp.edu; ²Jet Propulsion Laboratory / California Institute of Technology, Pasadena, CA) (STUDENT PRESENTER)

Poster # 37 *Electrochemical Evaluation of Ti-13Nb-13Zr-B Alloys for Knee Implants*, **JACOB GIACOMI***, **THU NGUYEN**, **ARMANDO SHEHI**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA; jggiacom@cpp.edu, tanguyen@cpp.edu, ashehi@cpp.edu, vravi@cpp.edu). (STUDENT PRESENTER)

Poster # 38 *High Temperature Corrosion of High Entropy Alloys*, **STEVEN PIERCE***, **DOMINIC DINH**, **SAMUEL NAVARRETE**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA; stpierce@cpp.edu, dddinh@cpp.edu, sjnavarrete@cpp.edu, vravi@cpp.edu). (STUDENT PRESENTER)

Pharmaceutical Sciences Section

Poster # 39 *An Indigenous Approach to Studying the Medicinal Effects of 'Awa (*Piper methysticum*)*, **TIFAINÉ N. CRIVELLO^{1*}**, **DANA-LYNN KO'OMOA-LANGE¹**, **KERRI INGLIS²**, and **INGO KO'OMOA-LANGE¹** (¹Department of Pharmaceutical Sciences and ²Department of History, University of Hawai'i at Hilo, Hilo, HI; tifaine@hawaii.edu, danalynn@hawaii.edu, inglis@hawaii.edu, ingo@hawaii.edu). (STUDENT PRESENTER)

Poster # 40 *Analysis of the Antimicrobial Properties of Zinc Oxide Nanoparticles*, **CORRINAH SCHAEFER***, **KOURTNEY GWIN**, and **JAMEE C. NIXON** (Department of Biology, Northwest Nazarene University, Nampa, ID; cschaefer@nnu.edu, kgwin@nnu.edu, jnixon@nnu.edu). (STUDENT PRESENTER)

Psychology Section

Poster # 41 *Translating the Testing Effect: From Lab to Neuroscience Classroom*, **MELISSA BIRKETT^{1*}** and **NATASHA DMITRIEVA²** (¹Department of Psychology, Southern Oregon University, Ashland, OR, birkettm@sou.edu; ²Department of Psychological Sciences, Northern Arizona University, Flagstaff, AZ, Natasha.Dmitrieva@nau.edu).

Poster # 42 *The Effect of Varying Reward Treatments on Performance and Learning Acquisition in Mice*, **JOHN J FRANCIS***, **PAUL STEFFAN**, **LAURA BODDINGTON**, and **DAVID MCCORMICK**, (Department of Biology and Institute of Neuroscience, University of Oregon, 1585 E 13th Ave, Eugene, OR, 97403, jfranci2@uoregon.edu). (STUDENT PRESENTER)

Poster # 43 *Chemosensory Responses to Chemical Prey Cues in Checkered Garter Snakes (*Thamnophis marcianus*)*, **ARLENE SIELER^{1*}**, **XAVIER ARTHUR¹**, **MARK DAVIS III¹**, **VIRGINIA FUHRMARK²**, and **MARK KRAUSE¹** (Departments of ¹Psychology and ²Biology, Southern Oregon University, Ashland OR; sielera@sou.edu, arthurx@sou.edu, davism3@sou.edu, krausema@sou.edu, fuhrmarkv@sou.edu). (STUDENT PRESENTER)

Poster # 44 *Protection Against Compassion Collapse*, Aubrey Green, Trinity Leonis, Alexandra Young, Donovan Baldwin, Solomon Bailey, Paul Condon, Department of Psychology, Southern Oregon University, Ashland Oregon, gordert@sou.edu

Science and the Arts and Humanities Section

Poster # 45 *Stress Response and Resiliency of Circus Performers*, **ELLIOTT GITTELSON*** and **MELISSA BIRKETT-GREENE** (Department of Psychology, Southern Oregon University, Ashland, OR; ellgitt@gmail.com, birkettm@sou.edu). (STUDENT PRESENTER)

Social, Economic and Political Sciences Section (including Health Services)

Poster # 46 *Effects of the Cambodian Genocide Regarding Disparities in Public Healthcare and Cancer Treatment: Seeking Solution*, **CAITLIN DIEFENDORF** (Honors College, Southern Oregon University, Ashland, OR; cmdiefendorf@gmail.com). (STUDENT PRESENTER)

Poster # 47 *Urbanization and its Effects on the Processes of Globalization and Associated Social Alienation*, **RAAM RAVI** (Sociology Department, California State University, Los Angeles, Los Angeles, CA; rravi2@calstatela.edu). (STUDENT PRESENTER)

Poster # 48 *Factors Influencing Trust Underserved Populations Place on Artificial Intelligence*, **SRIHARI YAMANOOR^{A1}** and **NARASIMHA SAI YAMANOOR^{A2*}** (¹DesignAbly, San Jose, CA, yamanoor@stanfordalumni.org; ²DesignAbly, Kenmore, NY, yamanoorsai@gmail.com).

Poster # 49 *Understanding behaviors and attitudes towards snakes in rural northeastern Tanzania*, **SAMANTHA L. THOMAS** and **DADAIRE ALPHAR** (2610 Beaver Ave, Des Moines Iowa, 50312 Sam.paints1313@gmail.com). (STUDENT PRESENTATION)

Poster # 50. *Driving Sustainability with Fungi*, **Bashira Muhammad^{1*}** and **Katharine Mattaliano²** (Zoom Out Mycology, 1565 Siskiyou Blvd #27 Ashland, OR 97520, shroom@zoomoutmycology.com).

**Wednesday Evening
June 19th
AAAS, Pacific Division Presidential Address
MEESE AUDITORIUM
6:00 – 6:30
(Adjacent to poster session)**

Crystal Goldman (President, Pacific Division of AAAS)

Open Libraries, Open Science

Libraries have long been at the forefront of the making information accessible, and have played an increasing role in Open Access, Open Science, Open Data, and Citizen Science. The varied ways in which librarians enable these social and scientific movements include advocating and creating awareness, providing support for infrastructure and digitization, and training and supporting researchers. From digitizing keys works in the history of science to facilitating cutting edge research data curation, this presentation will discuss the role of libraries and librarians in making science more accessible to students, researchers, and citizen scientists.

**FIRST ANNUAL SCIENCE PUB CRAWL
DOWNTOWN ASHLAND
7:00 – 11:00 p.m.**

Oberon's Restaurant and Bar – Climate Change Poetry Jam

The Black Sheep – The Economic, Political and Social Consequences of Climate Change

Harvey's Place – FIRES!!!

Thursday, 20th June 2019

7:00 a.m. – 4:30 pm registration SOU Science Building

OPENING SESSION: SOU MUSIC HALL

8:30 a.m. Meeting opening and the day's announcements: SOU Music Hall

8:45 a.m. Plenary speaker:

Dr. Brian Smith
Inaugural Trustee Professor and Associate Dean of the Graduate College
Arizona State University

“The Honey Bee as a Model for Reverse Engineering a Brain”

Understanding how the human brain works is one of the important problems in biomedicine. This understanding is fundamental to treating patients who suffer from brain injury or neurodegenerative disease. In this research neuroscientists are effectively faced with a reverse engineering problem. This problem is analogous to a computer scientist being handed a complex computer and figuring out how it works by disassembling it instead of designing it from the ground up. A human brain contains on the order of 8.6×10^{10} neurons which collectively make 1.5×10^{14} connections called synapses. One basic research strategy that has been enormously successful for understanding how brains work has been to use invertebrate animal ‘models’ that show complex behavior but have much smaller, more accessible brains. This strategy is effective because all brains largely work on the same principles as the human brain. Invertebrate central nervous systems range in size from just over 300 neurons and 7,500 synapses in a small roundworm to the honey bee with approximately 10^6 neurons and 10^9 synapses. Honey bees are a good model for neuroscience research because of a variety of sophisticated behaviors they show under natural conditions, and which can be studied under controlled experimental conditions both in the field and in the laboratory. For example, honey bee foragers learn about the location, color, shape, texture and odors of flowers that contain the nectar and pollen resources their colony needs for survival. When they return to the colony they communicate the direction, distance and odor of flowers to their nestmates via a ‘dance language’. This talk will review principles of learning and memory in honey bees and how they are implemented in changes in brain neural activity and connectivity.

THURSDAY ALL DAY SESSIONS SOU SCIENCE HALL

*Symposium: Pollinators, Buzzways, Private Gardens and Creative Education:
An activated grassroots effort to save Pollinators in the Rogue Valley
through political advocacy and touching hearts*

Room 108
Thursday
9:30 a.m. – 4:00 p.m.

In August 2014, Talent Oregon became the second designated 'Bee City USA' in the United States. Very quickly, Talent was joined by Ashland, Phoenix, and Gold Hill, and just this year, Medford become one too. At the same time, Southern Oregon University became the first 'Bee Campus USA' in the country! Starting with a few private gardens, expanding to public spaces, pollinator gardens in the Rogue Valley are now being mapped by Pollinator Project Rogue Valley and SOU, to identify locations of 'Buzzways' for pollinators.

This symposium will describe the development of the public awareness and public commitment to pollinators, as well as the stresses and challenges to pollinators here and elsewhere. The symposium will also consider the complexities of human behavior on pollinators, as well as its consequences.

Symposium Organizer: Kristina Lefever, Pollinator Project Rogue Valley

- 9:40** *Welcome and introductory comments!* **KRISTINA LEFEVER** (Pollinator Project of Rogue Valley)
- 9:45** *Conserving Biodiversity: Ruminations of a State Fish and Wildlife Commissioner,* **KIM THORBURN** (kthorburn@msn.com).
- 10:10** *Sub-lethal levels of heavy metals, pesticides and fungicides have adverse impacts on honey bee behavior,* **BRIAN H SMITH¹, GLORIA DEGRANDI-HOFFMAN², NICOLE DESJARDINS¹, JENNIFER FEWELL¹, ADRIAN FISHER¹, JON HARRISON¹, and CAHIT OZTURK¹** (¹School of Life Sciences, Arizona State University, Tempe, AZ, brian.h.smith@asu.edu, ndesjard@asu.edu, j.fewell@asu.edu, afishe16@asu.edu, j.harrison@asu.edu, Cahit.Ozturk@asu.edu; ²Carl Hayden Bee Research Center, USDA-ARS, Tucson, AZ, gloria.hoffman@ars.usda.gov).
- 10:35** *Bee City USA Talent and Beyond,* **Dolly Warden** (Pollinator Project of Rogue Valley).
- 11:00** *Monarchs and Milkweeds: Creating Habitat to Attract Monarch Butterflies and Other Pollinators,* **Dr. TOM LANDIS** (Native Plant Nursery Consulting).
- 11:40** *Bees in Public Places,* **SHARON SCHMIDT** (Executive Director, Cascade Girl Organization and Chair, Bee City USA, Phoenix).
- 12:00 – 1:00** **Lunch**
- 1:00** *Panel: Pollinating Bee City USAs in the Rogue Valley and Beyond!*
Dolly, Kristina, Sharon, Amrita (Lee Finney, Mike Oxendine, Jamie Hickner)
- 1:30** *A Rogue Valley Girl and Her Bees: Past, Present, and Future (video,)* **SARAH RED LAIRD**
- 1:50** *Buzzway: Connecting Gardens and Communities.* **KRISTINA LEFEVER and SETH CAMPBELL** (Student Presenter)
- 2:15** *Creating Public Pollinator Gardens,* **GERLINDE SMITH** (Talent Oregon Garden Club).
- 2:40** *What is Good for Bees is Good for Humanity: Fun Facts, Motivating Metaphors and Tender Touchstones. Why we can and must see the Pollinator as Nature's Greatest Emissary,* **LAURA BEE FERGUSON** (Talent Garden Club).
- 3:05** *Adventures with the Oregon Bee Atlas (video,)* **SARAH RED LAIRD**
- 3:15** *Thank you, Appreciation, Comments/Q&A, Adjourn* **KRISTINA LEFEVER**

Symposium: Environmental and agricultural measuring and monitoring in the Rogue Valley

Room 122
Thursday
9:30 a.m. – 3:00 p.m.

The geology and geography of Southern Oregon is highly diverse with significant variations in soil composition, hydrology, and climate. In addition, the Rogue Valley has been a major agricultural producer for more than 100 years, providing, for example, a significant percentage of the pears consumed in the United States. In recent years, the rich soils, relative abundance of water and agriculturally friendly climate has resulted in a considerable increase in the diversity of local agricultural products, with a growing emphasis on organic production and regenerative agriculture. In addition, Southern Oregon is a significant producer of cannabis as well as hemp.

This symposium will consider the challenges and opportunities presented for sophisticated measurement and monitoring of the chemical composition of the Rogue Valley's soil, water, and air, as well as the chemical composition of the foods and agricultural products it produces. The symposium will specifically consider the importance of this effort in the context of an environment long subjected to the use of agricultural chemicals (pesticides for example), as well as the growing economic importance of food products being marketed for their health benefits.

- 9:30** *Introduction and Welcome*: James M. Bower, Pacific Division AAAS
- 9:45** *The challenge of data in multi-sector climate impact assessment: the European JRC PESETA experience and lessons*, **JUAN-CARLOS CISCAR** (European Union office of Economics of Climate Change).
- 10:15** *Nutrient measuring of the soil and crops*, **ROCKY COWIE** (Rancher Rogue Valley).
- 10:45** *Data Driven Decision Making for the City of Talent, Oregon*, **MICHAEL HOCH** (Energy Efficiency Coordinator, City of Talent).
- 11:15** *Chemical and Molecular Analysis of Grapes and Wine*, **CAROLINA B. LIVI, PhD** (Affiliate Professor of Biology, SOU, Academic Segment Manager, Disease Research and Toxicology, Agilent).
- 11:35** *Carbon phases in the Rogue Valley's Serpentine Soils*, **SCOTT GOODE** (Geoscientist and regenerative farming researcher and instructor, Rogue Valley).
- 12:00 – 1:30** **LUNCH**
- 1:30** *Hemp Cultivation and Related Industries are Expanding Rapidly*, **EMILY GOGOL** (CEO, Infinite Tree).
- 2:00** **CHRIS HARDY**

Symposium: Boise Extravaganza in Set Theory (BEST)

(Second day of symposium)

Room 173
Thursday
9:30 a.m. – 4:00 p.m.

This symposium is a continuation of the well-known Boise Extravaganza in Set Theory (BEST) conference. BEST focuses on the mathematical discipline called Set Theory, and its applications in other disciplines in Mathematics. BEST has been a symposium of the AAAS Pacific Division since 2013; previously it was hosted at Boise State University in Boise, Idaho.

- 9:30** *Selection Principles in Mathematics*, **PIOTR SZEWCZAK and CARDINAL STEFAN WYSZYŃSKI** (Univeristy in Warsaw, Poland).
- 10:30** *Inaccessible Jónsson Cardinals*, **SHEHZAD AHMED** (Ohio University). (STUDENT PRESENTER)

- 11:00** *Computable Reducibility of Equivalence Relations and a Jump Operator*, **GIANNI KRAKOFF** (Boise State University, Boise, ID; giannikrakoff@u.boisestate.edu). (STUDENT PRESENTER)
- 11:30** *100 Years of the Borel Covering Property*, **MARION SCHEEPERS** (Department of Mathematics, Boise State University, Boise, ID; mscheepe@boisestate.edu).
- 12:00 – 1:30** **LUNCH**
- 1:30** *Weak Computability in the κ -Turing Degrees*, **REESE JOHNSTON*** and **NOAH SCHWEBER** (University of Washington Robinson Center, University of Washington, Seattle, WA; reesej2@gmail.com).
- 2:30 – 2:55** **BREAK**
- 3:00** *The Determinacy of Some Games Arising in Topology and Number Theory*, **STEPHEN JACKSON***, **LOGAN CRONE**, **LIOR FISHMAN**, and **NATHANIEL HIERS** (University of North Texas, Denton, TX; Stephen.Jackson@unt.edu).

THURSDAY MORNING ONLY SESSIONS SOU SCIENCE HALL

Symposium: The Future of Precision Medicine

Room 161
Thursday
9:30 a.m. – noon

With the development of new molecular methodologies, evidence based medicine began enabling patients to get more individualized care. . Clearly individual variation including genetic differences and environmental exposures play a role in disease risk, progression and also in treatment response. Technology now enables precise genomic assessment and mass spectrometry based assay measurements of drugs, proteins and endogenous metabolites with high sensitivity and specificity. Knowledge from biomedical research can be used, not only to discover and develop new biomarkers and treatments, but also to identify patients most likely to benefit from intervention and for longitudinal monitoring of responses. In this symposium, a number of examples of how the promise of precision medicine is changing the approach to translational research will be covered.

- 9:30** *Welcome and Introduction: Dr. ROBIN LEACH* (Department of Cell Systems and Anatomy, University of Texas Health Science Center, San Antonio).
- 9:45** *All of Us and the Future of Medical Research*, **PRISCILLA OPPENHEIMER*^{1,2}** and **ALAN OPPENHEIMER*²** (¹Department of Computer Science, Southern Oregon University, Ashland, OR, oppenheip@sou.edu; ²The Alan and Priscilla Oppenheimer Foundation, Ashland, OR, alan@oppenheimerfoundation.org).
- 10:15** *All of Us Research Program: Community Engagement*, **Dr RUBIN BASKIR** (National Institutes of Health, All of Us Research Program).
- 11:00** *Multi-modal testing for precision medicine*, **Dr. CAROLINA LIVI** (Academic Segment Manager, Disease Research and Toxicology, Agilent Technologies, Inc.).
- 11:30** *Precision Medicine's Impact on Risk Assessment*, **Dr. ROBIN LEACH** (University of Texas Health Science Center, San Antonio).
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*Symposium: Seeing with New Eyes: The Role of New Scientific Techniques and Perspective
in Revolutionizing the Search for the First Americans*

Room 207
Thursday
9:30 a.m. – noon

The geographic origins and initial travel routes of the first human communities to migrate from the Old World into the twin continents of North and South America have been subject to intense interest by scholars around the world for over 500 years. Following the dramatic discoveries of the early 20th Century that firmly established the Terminal Pleistocene (~13,000 calendar years before present) occupation of the Americas by sophisticated big game hunters bearing the iconic Clovis points, major changes in perspective did not become salient until the beginning of the 21st Century. In the last 20 years, however, game-changing discoveries have occurred across the hemisphere, ranging from new dates from remarkably old sites such as Monte Verde in Chile, to detailed paleolandscape reconstructions, to greater understanding of the genetic structure of these early migrant communities from finds in Oregon, Montana, and several sites in Latin America. In fact, it has often been discoveries in Latin America that have forced a change in perspective within this constellation of research agendas. Now, armed with new scientific techniques and a perspective no longer bound by decades of status quo thinking, scholars across the hemisphere are changing not only what we know, but how we know it in fascinating and revolutionary ways.

- 9:30** *Welcome and Introduction* **Dr. Claudia Garcia-Des Lauriers**, California State Polytechnic University
- 9:45** *A Pedoarchaeological Approach to the Holocene Period of the Central Desert, Baja California, Mexico*, **SAMUEL C. WILLIS** (Oregon Department of Parks and Recreation, Oregon Parks and Recreation Department, Stewardship Section, Salem OR; Samuel.Willis@oregon.gov).
- 10:05** *The Submerged Paleoamerican Cave Site of Hoyo Negro, Mexico: Recent Advances in Virtual Taphonomy*, **DOMINIQUE RISSOLO¹**, **VID PETROVIC¹**, **ALBERTO NAVA BLANK²**, **JAMES C. CHATTERS³**, **BLAINE SCHUBERT⁴**, **PILAR LUNA ERREGUERENA⁵**, and **FALKO KUESTER¹** (¹Cultural Heritage Engineering Initiative (CHEI), Qualcomm Institute, UCSD Division of Calit2, University of California, San Diego, La Jolla, CA, drissolo@ucsd.edu, vpetrov@ucsd.edu, fkuester@ucsd.edu; ²Global Underwater Explorers, Seaside, CA, betonavab@gmail.com; ³Applied Paleoscience and DirectAMS, Bothell, WA, USA, paleosci@gmail.com; ⁴Center of Excellence in Paleontology and Department of Geosciences, East Tennessee State University, Johnson City, TN, schubert@etsu.edu; ⁵Subdirección de Arqueología Subacuática, INAH, Mexico City, Mexico).
- 10:25** *Gender and Settlement Patterns during the Terminal Pleistocene Migrations in Western North America*, **RAFAELLA LISBOA** (California State University, Northridge, Department of Anthropology, Northridge, CA; rafaella.lisboa.98@my.csun.edu).
- 10:55** *Ancient DNA Analyses, Long Term Research Collaborations and the Yukisma Mound from Central California*, **CARA MONROE^{1,2}**, **ALAN LEVENTHAL³**, **CHARLENE NIJMEH⁴**, **MONICA V. ARELLANO⁴**, and **ROSEMARY CAMBRA⁴** (¹University of Oklahoma, Laboratories of Molecular Anthropology and Microbiome Research; ²Department of Anthropology, University of Oklahoma, monroecara14@gmail.com; ³San Jose State University, Department of Anthropology, College of Social Sciences; ⁴Muwekma Ohlone Tribe of the San Francisco Bay).
- 11:15** *Haskett, Clovis, and a Case for a Two-Tradition Colonization of North America*, **DARON DUKE¹** and **DAN STUEBER²** (¹Far Western Anthropological Research Group, Inc., Desert Branch, Henderson, NV, daron@farwestern.com; ²University of Victoria, Department of Anthropology, Portland, OR, dan@thunderstones.com).
- 11:35** *Technological Legacies and Innovations in the Context of the Late Pleistocene Peopling of the Americas*, **MATTHEW R. DES LAURIERS** (California State University, Northridge, Department of Anthropology, Northridge, CA; mdeslaur@csun.edu).
- 11:55** *Tracking Late Pleistocene Technologies in the Americas with Digital 3D Geometric Morphometrics*, **LOREN G. DAVIS** (Oregon State University, Department of Anthropology, Corvallis, OR; loren.davis@oregonstate.edu).
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Contributed Oral Presentations
Pharmaceutical Sciences Section
Science and the Arts and Humanities Section
Engineering, Technology and Applied Sciences Section
Physics Section
Room 218
Thursday
9:30 a.m. – 11:50

Pharmaceutical Sciences Section

- 9:30** *Would an Anti-inflammatory Therapeutic Prevent Metastatic Breast Cancer?* **CHERYL L. JORCYK** (Department of Biological Sciences, Biomolecular Sciences Program, Boise State University, Boise, ID; cjorcyk@boisestate.edu).
- 9:50** *Ophthalmic (Pseudo) Drug Delivery Using a Mucoadhesive Polymer in Man*, **JERRY R. PAUGH^{1*}** and **RONALD C. CHATELIER²** (¹Southern California College of Optometry at Marshall B. Ketchum University, Fullerton, CA, jpaugh@ketchum.edu; ²Universal Biosensors, Mt. Waverly, Victoria, Australia, ron.chatelier@gmail.com).
- 10:10** *Inhibition of Fatty Acid Amide Hydrolase (FAAH) as Indirect Approach to Regulation of Endocannabinoid System*, **JOZEF STEC¹**, **SARAH CRAMER²**, **JACKLYN JOHNSON²**, **THANH NGO²**, and **ABIR EL-ALFY³** (¹Marshall B. Ketchum University, College of Pharmacy, Department of Pharmaceutical Sciences, Fullerton, CA, USA; ²Chicago State University, College of Pharmacy, Department of Pharmaceutical Sciences, Chicago, IL, USA; ³Medical College of Wisconsin School of Pharmacy, Department of Biopharmaceutical Sciences, Milwaukee, WI, USA; jstec@ketchum.edu).

Science and the Arts and Humanities Section

- 10:30** *Performing Arts Medicine: An Inter-Professional Research Using Multimodalities to Examine a Professional Pianist with Focal Dystonia*, **SANG-HIE LEE^{1*}**, **JUAN SANCHEZ-RAMOS²**, **RYAN MURTAGH²**, **TUAN VU²**, **DUSTIN HARDWICK³**, and **STEPHANIE CAREY⁴** (¹School of Music, University of South Florida, Tampa, FL; ²Department of Neurology, Morsani College of Medicine, University of South Florida, Tampa, FL; ³School of Physical Therapy & Rehabilitation Sciences, Morsani College of Medicine, University of South Florida, Tampa, FL, USA; ⁴Department of Mechanical Engineering & Center for Assistive, Rehabilitation & Robotics Technologies (CARRT), University of South Florida, Tampa, FL, USA; slee@usf.edu or sanghielee@gmail.com).

Engineering, Technology and Applied Sciences Section

- 10:50** *On Lagrangian and Eulerian Accelerations in Turbulent Stratified Shear Flows*, **FRANK G. JACOBITZ^{1*}** and **KAI SCHNEIDER²** (¹Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA, USA, jacobitz@sandiego.edu; ²Institut de Mathématiques de Marseille, Aix-Marseille Université, 13453 Marseille Cedex 13, France, kai.schneider@univ-amu.fr).
- 11:10** *The Development of an Analysis Tool for the Comparison of the Microcirculation in Rat Spinotrapezius Muscle and Muscle Fascia*, **AMANDA C. KENNEDY^{Δ*}**, **JAYDEN R. YEOMAN^{Δ*}**, and **FRANK G. JACOBITZ** (Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA, USA; amandakennedy@sandiego.edu, jyeoman@sandiego.edu, and jacobitz@sandiego.edu). (STUDENT)

Physics Section

- 11:30** *Perception of Gravity by Living Cells*, **ANTONIO B. NAFARRATE** (Deputy Editor Website animalnav.org, Walnut Creek, CA; antonionafarrate314@gmail.com).
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Contributed Oral Presentations
Agriculture, Food, and Renewable Resources Section
Chemistry and Biochemistry Section
Room 220
Thursday
9:30 – 10:50

Agriculture, Food, and Renewable Resources Section

- 9:30** *Aspergillus tubingensis* is a Pre-emergent Pathogen of Date Palm Seedlings, **MARYAM MOHAMMED ALOMRAN**^{1,4*}, **JOS HOUBRAKEN**³, and **GEORGE NEWCOMBE**² (¹Department of Plant Sciences and ²Department of Forest, Rangeland and Fire Sciences, University of Idaho, Moscow, USA; ³Department of Applied and Industrial Mycology, Westerdijk Fungal Biodiversity Institute, Utrecht, Netherlands, ⁴College of Science, Department of Biology, Princess Nora Bint AbdulRahman University, Riyadh, Kingdom of Saudi Arabia; alom4874@vandals.uidaho.edu, j.houbraken@westerdijkinstitut.nl, and georgen@uidaho.edu). (STUDENT PRESENTATION)
- 9:50** *Improving Nutrient Use and Reducing Greenhouse Gas Emissions of Dairy Manure through Chemical Coagulation Processes*, **RYLIE ELLISON***, **XIA ZHU-BARKER**, and **WILLIAM R. HORWATH** (Department of Land, Air, & Water Resources, University of California, Davis, Davis, CA; rjellison@ucdavis.edu, wyzhu@ucdavis.edu, wrhorwath@ucdavis.edu). (STUDENT PRESENTATION)
- 10:10** *Factors of Resilience and Adaptation to Climate Change that Contribute to Food Security*, **CHRISTIAN FRANCO-CRESPO*** and **VERONICA GARCÍA** (Dirección de Investigación y Desarrollo, DIDE, Technical University of Ambato, Ambato, Ecuador, 180104 Huachi, cd.franco@uta.edu.ec).
- 10:30** *Aspergillus tubingensis* is a pre-emergent pathogen of date palm seedlings, **MARYAM MOHAMMED ALOMRAN**^{1,4*}, **JOS HOUBRAKEN**³, and **GEORGE NEWCOMBE**² (¹Department of Plant Sciences and ²Department of Forest, Rangeland and Fire Sciences, University of Idaho, 875 Perimeter Drive, Moscow, ID 83844 USA; ³Department of Applied and Industrial Mycology, Westerdijk Fungal Biodiversity Institute, Utrecht, Netherlands, ⁴College of Science, Department of Biology, Princess Nora Bint AbdulRahman University, Riyadh, Kingdom of Saudi Arabia; alom4874@vandals.uidaho.edu, j.houbraken@westerdijkinstitut.nl, and georgen@uidaho.edu). (STUDENT PRESENTER)

Chemistry and Biochemistry Section

- 10:50** *Changes in Arsenic, Copper, Iron, Manganese, and Zinc Levels Resulting from the Application of Poultry Litter to Agricultural Soils*, **RICHARD D. FOUST, JR**^{1Δ*}, **MICHAEL PHILLIPS**^{2Δ}, **KILLIAN HULL**¹ and **DARIIA YEHOVA**¹ (¹Department of Chemistry and Biochemistry, James Madison University, Harrisonburg, VA 22807; ²Natural Resources Conservation Service, Virginia, United States Department of Agriculture, Harrisonburg, VA 22801; foustrd@jmu.edu, mike.phillips@va.usda.gov, killian.hull@gmail.com, yehorodx@dukes.jmu.edu).
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Contributed Oral Presentations

Materials Science Section

Room 236
Thursday
9:30 – 12:10

Materials Science Section

- 9:30** *Introductory Comments*
- 9:35** *Constitutive Model of PLG 10-90 for Anterior Cruciate Ligament Reconstruction*, **PETER KUETZING***, **TEHREEM RAZA**, **ALBA DELGADILLO**, and **MEHRDAD HAGHI** (¹Department of Mechanical Engineering, California State Polytechnic University, Pomona, 3801 W Temple Ave, Pomona, CA 91768, pmkuetzing@cpp.edu, taraza@cpp.edu, aldelgadillo@cpp.edu, mhaghi@cpp.edu). (STUDENT PRESENTER).
- 9:55** *Electrochemical Studies of Titanium Alloys for Dental Implants*, **JAEWAN BAE***, **JACOB BENOUN**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768; jjbae@cpp.edu, jmbenoun@cpp.edu, carlosp@cpp.edu, vravi@cpp.edu). (STUDENT PRESENTER)
- 10:15** *Effects of Nitinol Purity and Surface Finish on Corrosion Susceptibility*, **GRAZZIELA SENA^{1*}**, **ALAN PELTON²**, **CHRIS BRAEUNER³**, **MATTHEW DI PRIMA⁴**, **PHILIP STAFFORD⁵**, **SRINIDHI NAGARAJA²** and **VILUPANUR RAVI¹** (¹Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768; gmsena@cpp.edu, vravi@cpp.edu; ²G. Rau Inc. 3350 Scott Boulevard, Suite 37b, Santa Clara, CA 95054; ³ADMEDES GmbH 2800 Collier Canyon Road, Livermore, CA 94551; ⁴Food and Drug Administration 10903 New Hampshire Avenue, Silver Spring, MD 20993; ⁵Food and Drug Administration – Winchester Engineering and Analytic Center, 109 Holton Street, Winchester MA 01890). (STUDENT PRESENTER)
- 10:35** *Corrosion Behavior of 304L Stainless Steel Produced by Laser Powder Bed Fusion*, **CHRISTOPHER FARAJ¹**, **JACOB BENOUN^{1*}**, **ADAM TEOH¹**, **HO LUN CHAN¹**, and **ZACHARY HILTON²** (STUDENT PRESENTER)
- 10:55** BREAK
- 11:10** *Corrosion Studies of Open-Cell Aluminum Foams in Simulated Marine Environments*, **HO LUN CHAN**, **KEVIN GUO***, **ROGINE GOMEZ**, **ADAM TEOH**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768; kguo@cpp.edu, holunchan@cpp.edu, ragoomez@cpp.edu, ateoh@cpp.edu, vravi@cpp.edu).
- 11:30** *Corrosion and Erosion Studies of Ceramic and Metal Matrix Composites*, **SPENCER SWARTZBAUGH***, **JOSH DIAZ**, **HOOMAN KASRAEI**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California Polytechnic University, Pomona, Pomona, CA, 91768; sswartzbaugh@cpp.edu, vravi@cpp.edu).
- 11:50** *The Effect of Pre-Oxidation of Ni-Fe-Cr-Mn Alloys On Their Resistance to Coke Formation*, **ISABELLA CHU***, **NICHOLAS URY**, and **VILUPANUR RAVI** (Department of Chemical and Materials Engineering, California State Polytechnic University, Pomona, Pomona, CA, 91768; yichu@cpp.edu, vravi@cpp.edu).

Symposium: Strategies for Active Learning in Undergraduate Education.

Room 373
Thursday
9:30 a.m. – noon

The process of engaging students in active learning is connected to positive learning outcomes. Many science departments in higher education are embracing this phenomenon by encouraging instructors to use more active learning in their courses. However, many instructors would benefit from increased knowledge of active learning methods and their usefulness for

covering different content in their courses. Instructors benefit when they can learn from others about appropriate teaching strategies and methods along with their potential drawbacks, and this in turn benefits students. This symposium aims to engage faculty and students who are interested in promoting active learning in college science classrooms. We will hear from different presenters about the methods they use, what has worked well for their courses and potential hurdles to utilizing active learning in undergraduate education. The information in the presentations can be applied to inform instructional decision-making and future research about active learning in college science courses.

- 9:30** *Introduction and Welcome*, **JULIA RUPPELL** (University of Portland)
- 9:45** *Strengthening Oral Communication Skills in STEM Students*, **VERONICA V. GALVÁN** (Psychological Sciences, University of San Diego, San Diego, CA; vgalvan@sandiego.edu).
- 10:15** *An Analysis of Successful Strategies for Active Learning in an Introductory Biology Course*, **JULIA C. RUPPELL** (Department of Biology, University of Portland, Portland, OR; ruppell@up.edu).
- 10:45** *Three-Dimensional Learning: Applications of Cross-Curricular Teaching Strategies in High School Science Education*, **CAROLINE H. TSUYUKI** (Science Department, Carondelet High School, Concord, CA; ctsuyuki@carondeleths.org).
- 11:15** *Using Free Apps and Online Resources to Enhance Teaching and Learning Process in Chemistry Courses*, **JOZEF STEC** (Department of Pharmaceutical Sciences, College of Pharmacy, Marshall B. Ketchum University, Fullerton, CA; jstec@ketchum.edu).

*Town Hall Meeting: Character, Illusion, Lighting, Sound and Madness
as Viewed by the Oregon Shakespeare Festival*

Room 162
Thursday
10:00 a.m. – 11:30 a.m.

This Town Hall Meeting will consider the science, engineering and psychology that goes into the success of Ashland's world-famous Oregon Shakespeare Festival. The symposium will consider how actors create the inner world of the character, how what we say affects what we hear and perceive, including how voice and text change the perception of characters, of region, of class and space. The symposium will describe the smoke and mirrors being how artisans create illusion including illusions created by the automation team, as well as how sound designers create an auditory landscape, and lighting designers sculpt the air. Finally, a panel of actors and neurobiologists will talk about how they represent madness as well as other aspects of the human condition.

Town Hall Organizers, Ms. Doreen O'Skea, Director of Legacy and Leadership Giving, Oregon Shakespeare Festival, and James M. Bower, Department of Biology, Southern Oregon University

Participants from the Oregon Shakespeare Festival:

Rebecca Clark Carey - voice and text - what we hear changes what we perceive.

Ryan Callahan - automation technician. Making wooden boats glide on wooden floors making it look like water.

Tasia Simon - Master Carpenter - using found items and different textures to create the world of the play. Did you know that old screen doors can be twisted to become clouds and then the waves in the ocean.

Josh Hovath - Sound designer - what is the sound scape of life? What is the sound scape of the world of the play. What is that affect that makes it feel like it is raining in the theatre right now and we feel like we should be looking for shelter?

Mac Vaughney - Lighting Designer - sculpting air. It's one of my favorite things.

William Thomas Hodgson - actor

Neurobiologists from AAAS:

Dr. James M. Bower, Department of Biology, Southern Oregon University

Dr. Stuart Firestein, Chairman Department of Neurobiology, Columbia University

Dr. Brian Smith, Inaugural Trustee Professor and Associate Dean of the Graduate College, Arizona State University

Contributed Oral Presentations
Cell and Molecular Biology Section
Room 233
Thursday
9:30 – noon

Cell and Molecular Biology Section
(including Medical and Dental research in these areas)

- 9:30** *CC-NBS-LRR Gene Resistance to WPBR in Western White and Whitebark Pine*, **CAITLIN DIEFENDORF^{A*}**, **JASSMINE REILL^A**, and **RONA CAMPBELL^A** (Department of Biology, Southern Oregon University, Ashland, OR; cmdiefendorf@gmail.com, campbelr3@sou.edu, reillj@sou.edu). (STUDENT PRESENTER)
- 9:50** *Inflammatory Cytokines Play a Novel Role in Extracellular Matrix Remodeling of the Breast Tumor Microenvironment that May Promote Metastasis*, **SIMION C. DINCA^{1*}**, **DANIEL GREINER²**, and **CHERYL L. JORCYK^{1,2}** (¹Department of Biomolecular Sciences and ²Department of Biological Sciences, Boise State University, Boise, ID; simiondinca@u.boisestate.edu, danielgreiner@u.boisestate.edu, cjorcyk@boisestate.edu). (STUDENT PRESENTER)
- 10:10** *Estrogen Receptor and HER2 Status Play a Role in Cytokine-induced Breast Cancer Metastasis*, **CODY WOLF^{*}**, **KEN TAWARA**, and **CHERYL L. JORCYK** (Department of Biological Sciences, Boise State University, Boise, ID; codywolf@u.boisestate.edu, kentawara@u.boisestate.edu, cjorcyk@boisestate.edu). (STUDENT)
- 10:30** *Clinical Research in Diseases of the Aging Brain*, **WALTER G. CARLINI** (Medford Neurology - Providence Medical Group, Medford, OR; walter.carlini@providence.org).
- 10:50** *Navigating the Depths and Avoiding the Shallows of Pancreatic Islet Cell Transcriptomes*, **ALEX M. MAWLA^{1*}** and **MARK O. HUISING^{1,2}** (¹Department of Neurobiology, Physiology & Behavior, College of Biological Sciences, University of California, Davis, CA, USA, ammawla@ucdavis.edu, mhusing@ucdavis.edu; ²Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, CA, USA). (STUDENT PRESENTATION)
- 11:10** *Is Fecal Matter an Appropriate Proxy for the Intestinal Tract in Studies of the Gut Microbiome?* **ENRIQUE REYES^{*}** and **HOLLY PINKART** (Department of Biology, Central Washington University, Ellensburg, WA; ReyesEn@cwu.edu, Pinkarth@cwu.edu). (STUDENT PRESENTER)
- 11:30** *Effects of 5 α -Dihydrotestosterone (DHT) on Mouse Gut Microbiome – A Study of Sex Differences and Hormonal Effects on Gut Microbiome Composition*, **BIKESH SHRESTHA^{*}** and **HOLLY C. PINKART** (Department of Biological Sciences, Central Washington University, Ellensburg, WA; bshrestha1987@gmail.com, Pinkarth@cwu.edu) (STUDENT PRESENTER)
- 11:50** *Computational Modeling of Carbohydrate Allocation in a Mink Endometrial Cell Line (GMMe) to Understand Hormone Regulation of Fertility*, **ANGELIQUE YANG^{*}**, **HUNTER BAIN**, and **JENNIFER CHASE** (Department of Biology, Northwest Nazarene University, Nampa, ID; ayang@nnu.edu). (STUDENT PRESENTER)

THURSDAY AFTERNOON SESSIONS SOU SCIENCE HALL

Town Hall Meeting: Citizen Science, Climate Change and Fire in Western North America.

Room 122
Thursday
1:30 p.m. – 4:00 p.m.

This round table discussion will consider subjects addressed by Stephen J. Pyne, *The Fire Age*: “The traditional view of the Great Plains generally divides it into humid east and arid west with the border between them running roughly along the 100th meridian. It’s a division by water but it works for fire as well. It also marks a potential boundary between Pleistocene and Anthropocene... East and west represent two kinds of fires and two kinds of future for humanity as keeper of the planetary flame. One is a Promethean narrative that speaks of fire as technological power, as something abstracted from its setting, perhaps by violence, certainly as something held in defiance of an existing order. The other is a more primeval narrative in which fire is a companion on our journey and part of a shared stewardship of the living world. Sometime over the past century, we crossed the 100th meridian of Earth history and shed an ice age for a fire age. Landscape flames are yielding to combustion in chambers, and controlled burns, to feral fires. The more we burn, the more the Earth evolves to accept still further burning.”

Town Hall meeting organizer: Carl Maida, UCLA Schools of Dentistry and Medicine, University of California,

*Town Hall Meeting: Different Styles, Different Insights, Different Science:
Using Maker Tech to Teach STEM*

Room 162
Thursday
1:30 p.m. – 4:00 p.m.

Maker Fairs have been drawing huge crowds worldwide as people flock to explore how they can learn subjects like electronics, 3D printing, coding and traditional trades in a do-it-yourself fashion. Yet this energy has been slow to penetrate traditional STEM teaching even though there are significant overlaps.

The organizers will start off with brief remarks about their experiences developing maker-style STEM materials in formal and informal educational settings, including teaching the visually impaired. They have found that coming at teaching science and math hands-on often brings new insights and will bring along some examples.

Attendees who have done their own explorations in teaching this way are encouraged to attend to share their successes and lessons learned. Those who are thinking about it will be welcome to join in the discussion about how they might adopt some of these ideas as well.

Town hall meeting organizers: Joan Horvath, Rich Cameron, Nonscriptum LLC, Pasadena, CA. and Lindsay Yazzolino, Touch Graphics. joan@nonscriptum.com,

Town Hall Meeting: A Glimpse into the Possible Climate Future of Oregon Wineries

Room 207
Thursday
4:00 p.m. – 6:00 p.m.

Vignerons and Vintners must manage the grapes they grow on relatively long-time scales. After planting, it typically takes 3 years before a new grape vine produces grapes, and grape vines have been known to produce grapes in vineyards for up to 120 years. This means that managing vineyards, in principle, takes place on long time scales. Grapes are also well known to be highly sensitive to soil and climactic conditions, even on a year to year basis. Accordingly, the additional variation now related to climate change, itself unpredictable has added an additional uncertainty to the management of wineries. In this Town Hall meeting, Vignerons and Vintners will discuss with climate experts the possible implication of climate change for the multi-billion dollar wine industry.

Town Hall organizer: Michael Moore, Quail Run Vineyards, and James M. Bower, Department of Biology, Southern Oregon University: bowerj@sou.edu

Participating Vintners:

Jason Cole:	Pacific Vineyard Management
Steve Hall	Troon
Michael Moore	Quail Run Vineyards
John Pratt	RVHPA
Nicole Shulte:	Barrel 42
Terry Sullivan	Upper Five
Mark Tarlov:	24 Chapter Wines

Participating Scientists

At the international level:

Dr. JUAN-CARLOS CISCAR, member of the Joint Research Center of the European Commission and an expert on assessing the economic consequences of climate change (<http://piamddi.stanford.edu/pi/juan-carlos-ciscar>).

Dr. STUART FIRESTEIN, Chairman of Neuroscience, Columbia University, and an expert on the relationship between chemical components found in wine and wine flavors (<https://biology.columbia.edu/people/firestein>).

At the national level:

Dr. CAROLINA LIVI, Global Academic Segment Manager, Disease Research and Toxicology, Agilent Technologies Inc. (<https://www.linkedin.com/in/carolinalivi/>).

At state and local levels:

Dr. ALAN JOURNET and Dr. KATHY CONWAY, co-facilitators of SOCAN (Southern Oregon Climate Action Now – <https://socan.eco>).

HANNAH SOHL (Rogue Climate – <https://www.rogueclimate.org>).

ALAN HICKENBOTTOM, Regional director for the national Lean Energy Coalition (<http://leanenergyoregon.org/oregon-team/>).

THURSDAY EVENING SESSIONS

PACIFIC DIVISION COUNCIL MEETING

Room 175

SOU SCIENCE HALL

PACIFIC DIVISION ANNUAL BANQUET SCIENCE WORKS HANDS ON SCIENCE MUSEUM

7:00 p.m. – 10 p.m.

FRIDAY 21st June 2019

8:00 a.m. Coffee 2nd Floor Science Building

8:30 a.m. Meeting Announcements, room 151 Science Hall

FRIDAY MORNING SESSIONS SOU SCIENCE HALL

Symposium: The Social, Economic and Political Impacts of Climate Change

Room 108

Friday

9:00 a.m. – 11:30

Much of the conversation surrounding climate change, to date, has focused on "hard science" measures like the abundance of greenhouse gases, global changes in air and sea temperatures, rates of polar ice melting, increased intensity of storms, and expected the global rise in sea levels. With climate change now largely regarded as an established fact, attention has begun to turn to what might be considered more local and 'softer science' influences on the social, economic and political fabric of society. The speakers in this symposium will consider the consequences of climate change from this "softer science" perspective.

Symposium organizer: Dr. Juan-Carlos Ciscar, The Institute of Prospective Technological Studies (IPTS) of the Joint Research Center (JRC) in the European Commission: Juan-Carlos.CISCAR@ec.europa.eu

9:00 *Climate Impacts in Europe and EU Climate Policy (Vision of Zero GHG Emissions by 2050, JUAN-CARLOS CISCAR (Joint Research Center for the European Commission).*

9:50 *Five Ideas To De-Carbonize The Global Economy*, **PHILIP W. KITHIL** (CEO Ocean-based Climate Solutions, Inc., Santa Fe, NM 87501, ocean.based.pk@gmail.com).

10:50 *Hoist By My Own Petard: The Oregon Legislative District Summarie*, **Dr. ALAN JOURNET** (Co-Facilitator, SOCAN, (retired) Professor of Biology and Environmental Science, Southeast Missouri State University).

Symposium: FIRES!!

Room 161

Friday

9:00 a.m. – 11:30

Climate models have been predicting for many years that expected changes in climate will be manifest not only through climate measures (temperature, rain fall, sea water rise, etc.), but also through associated changes in the dynamics of the environment, including the incidence and severity of forest fires. While one can argue that forest fires have always been a component of life especially in the Western United States, the combination of climate change with forest management practices over the last 100 years has now put the west at considerable economic and environmental risk.

This symposium will consider the likely impact of forest fires on the economy and quality of life in the Western United States in general and in the Rogue Valley in particular. The symposium will include information on how local municipalities and businesses are seeking to accommodate or mitigate the threat from forest fires, as well as the outstanding concerns and challenges of forest fires going forward.

9:00 *Introduction and Welcome*: **Dr. JAMES M. BOWER**, Department of Biology, Southern Oregon University

9:15 *How Climate Change Will Impact Our Landscapes...and What We Can Do About It!* **JOSEPH VAILE** (Executive Director, KS Wild).

10:00 *Flight of the Phoenix: Out of the Ashes Wildfires Rejuvenate Western Forests*, **DOMINICK A. DELLASALA, Ph.D.** (Chief Scientist, Geos Institute).

10:30 Discussion

Symposium: The Opioid Epidemic: Up close and Personal.

Room 162

Friday

9:00 a.m. – 11:30

According to the National Institutes of Drug Abuse, at present, more than 130 people die in the United States every day as a result of overdosing on Opioids. As most Americans are now aware, the misuse and addiction of opioids, including prescription pain relievers, heroin and synthetic opioids such as Fentanyl is a serious national crisis that affects public health as well as social and economic welfare.

This symposium will consider the global structure and nature of the crisis, using mathematical modeling tools, as well as it's on the ground, local impact. The symposium will also seek to put the current crisis in the larger context of the history of drug addiction in the United States.

9:00 *Opioids: Understanding the Current Epidemic and the Evolving Science of Pain and Addiction Co-Morbidity*, **Dr. DARRYL INABA, PharmD. CATC-V, CADC III**

9:50 *Which Opioid is Best: A Mathematical Approach*, **SAM RIVAS and ALEX TESSNER** (Department of Mathematics, University of Portland). (STUDENT PRESENTATION)

10:10 *Why Decreasing Prescriptions has Increased Overdoses: A Mathematical Approach*, **ELI E GOLDWYN** (Department of Mathematics, University of Portland)

10:30 – 10:45 **BREAK**

10:45 *Quantifying the Impact of the Opioid Epidemic in Native American Communities*, **K.E. FISCHER^{1,2} and HON. A. ABINANTI¹** (¹Yurok Tribe, Klamath, CA; ²Department of Biology, University of Alabama at Birmingham, Birmingham, AL).

Symposium: “West Coast Fairs: China and Chinese American Participation, Indigenous Americans at the Fair, and United States Attitudes and Immigration Policies.”

Room 233
Friday
9:00 a.m. – 11:45

During the first two decades of the twentieth century four expositions were held on the Pacific Coast, Portland (1905 Lewis and Clark Exposition), Seattle (1909, Alaska-Yukon-Pacific Exposition), San Francisco (1915, Panama-Pacific International Exposition), and Diego (1915-1916, Panama-California Exposition). In the context of these fairs, this symposium will consider how the American West thought of itself and its conscious effort to dispel eastern perceptions of the West as an untamed, wild, and uncivilized frontier shaped the four fairs and the exposition promoters’ efforts in what they displayed. Themes of economic opportunity, the natural world and environment, and race, were shown throughout the fairs, proclaiming to visitors that the region west of the Rockies represented the future of the United States.

9:00 *Introductory Comments*, **ALAN BAIN**

9:10 *1905 – The Chinese No-Show at Portland’s Exposition*, **CHUIMEI HO** (Chinese in Northwest America Research Committee, Seattle).

10:55 *Chinese in Seattle’s First World’s Fair*, **BENNET BRONSON** (Chinese in Northwest America Research Committee, Seattle).

11:10 *Questions and Answers/General Discussion*.

11:20 *Portrayals of Native Peoples at the Panama-Pacific International Exposition*, **LAURA A. ACKLEY** (Independent Researcher, San Francisco, CA).

Symposium: Reduce, Reuse, recycle: SUSTAIN!!!

Room 236
Friday
9:00 – 11:30

While many attribute the movement to recycle to the start of the modern environmental movement in the 1970’s, in fact, it can be argued that creative reuse of materials by humans almost certainly dates back thousands of years, especially for scarce commodities. However, in the 1960s and 70’s, the focus shifted from getting the most out of materials to an effort to deal with the massive amounts of waste produced during the second half of the 20th Century. 50 years later, the focus appears to be shifting again towards the larger and more complex task of resources sustainability, with its many interrelated components and parts.

This symposium will consider current efforts to achieve resource sustainability as applied to several different types of institutions both public and private. Presentations will specifically focus on the challenges and opportunities represented in several local efforts to promote long term resource sustainability.

9:00 *Real World Recycling - Challenges and Opportunities Working Towards Zero Waste in Retail Grocery*, **RIANNA KOPPEL** (Sustainability Coordinator at the Ashland Food Co-op).

9:30 *Clean and Green: Increasing Sustainability and Security in US Prisons and Jails*, **PAUL SHELDON**

- 10:00** *Climate Action at SOU and the City of Ashland, ROXANE BEIGEL-CORYELL* (Sustainability and Recycling Manager, Southern Oregon University).
- 10:30** *Food Waste Reduction for Climate Mitigation, ANGELINA COOK* (Ashland Drawdown).
- 11:00** *Recycle, Re-Use, Reduce, Refuse and Remove: Obstacles and Answers to Creating a new Materials Recycling Movement, CATIE FARYL*
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Pacific Division Review and Celebration Meeting
Room 151 Science Building
11:45 – 12:15