HC, CEOAS, CAS & COF
Faculty Research Showcase

Jan. 24, 2024

Rachel Jones
College of Agricultural Sciences
Student Engagement Coordinator

Contact info:

rachel.jones@oregonstate.edu
Strand Ag Hall 148
541-737-7410

Schedule an appointment with me

My role:

- Coordinate 3 CAS undergraduate research programs:
  - Beginning Researchers Support Program
  - Continuing Researchers Support Program
  - Branch Experiment Station Research Internships
- Assist students with finding research opportunities in CAS
- Deliver workshops and trainings for CAS undergraduate students engaging in research

Learn more about CAS research programs

Oregon State University
College of Agricultural Sciences

FWCS VIEW Fellowship

"Vanguarding an Inclusive Ecological Workforce"
Dept. of Fisheries, Wildlife, and Conservation Sciences

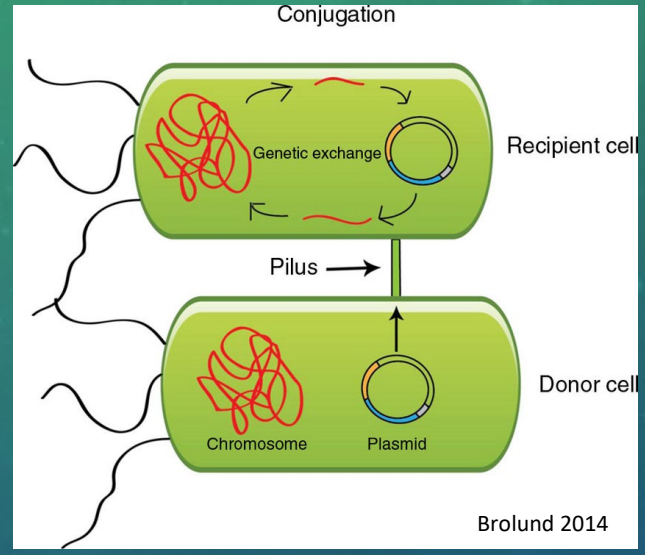
- Supports professional development of future ecologists from underrepresented communities
- 10-weeks of paid, mentored research with FWCS faculty + professional development activities with their cohort
- No previous experience required! Open to students of all majors who identify as from an underrepresented community, first gen, health conditions, LSAMP/TRIO/CAMP…
- Will host 8 students in 2024. $15/hr + housing!
- Submit your interest form now! Student applications open in February.

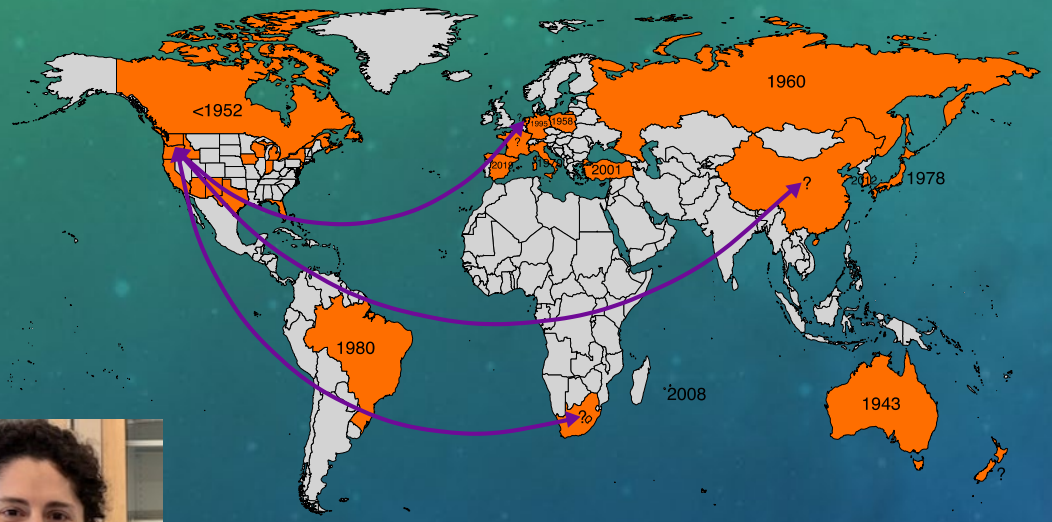
I would tell any students interested in the program to simply send it and apply. Your experience is valid, your background gives you character, and you have plenty to offer as a VIEW Fellow. - Nat, 2022 Fellow

fwcs.oregonstate.edu/view

Shalynn Pack, FW.internship@oregonstate.edu

How do bacteria exchange DNA?





How do pathogens spread?

Alexandra Weisberg
Assistant Professor, Department of Botany and Plant Pathology

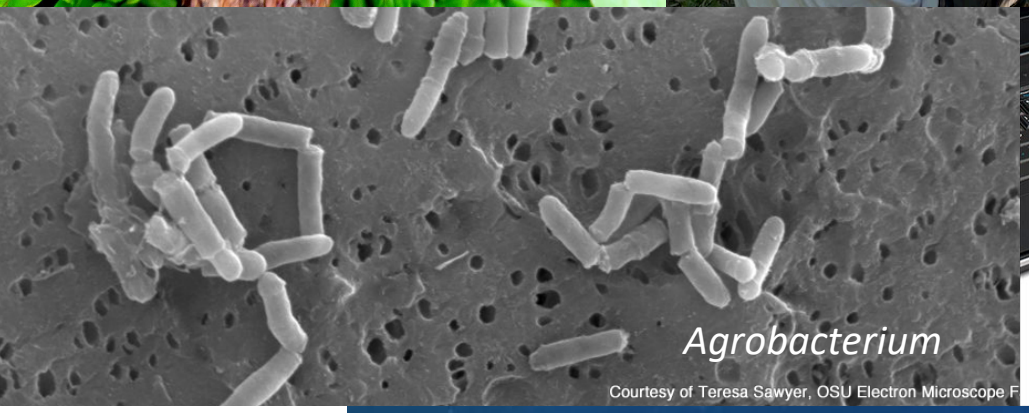
How do new pathogens emerge?

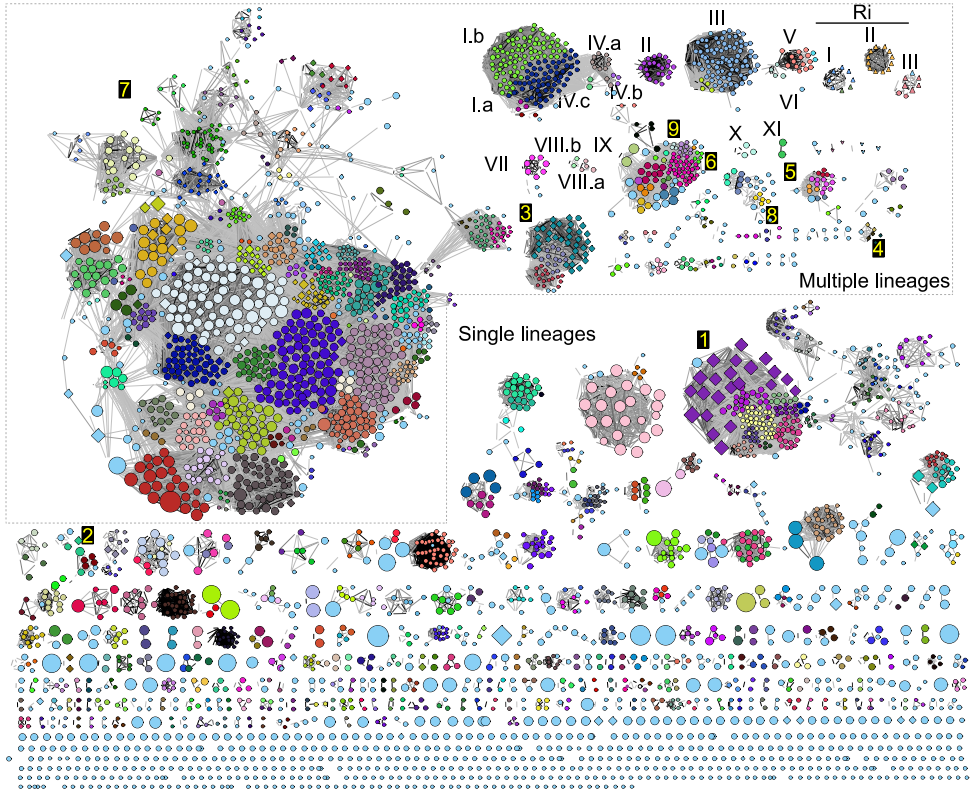
EVOLUTION OF PLANT-MICROBE INTERACTIONS

MOBILE GENETIC ELEMENTS

GENOMIC EPIDEMIOLOGY

PATHOGEN EMERGENCE





BOTANY & PLANT PATHOLOGY
OREGON STATE UNIVERSITY

WEISBERG LAB

Department of Agricultural Education and Agricultural Sciences

Whitney Stone, PhD
she/hers
Assistant Professor of
Agricultural Sciences
and Natural Resources
Communications

Research Interests:

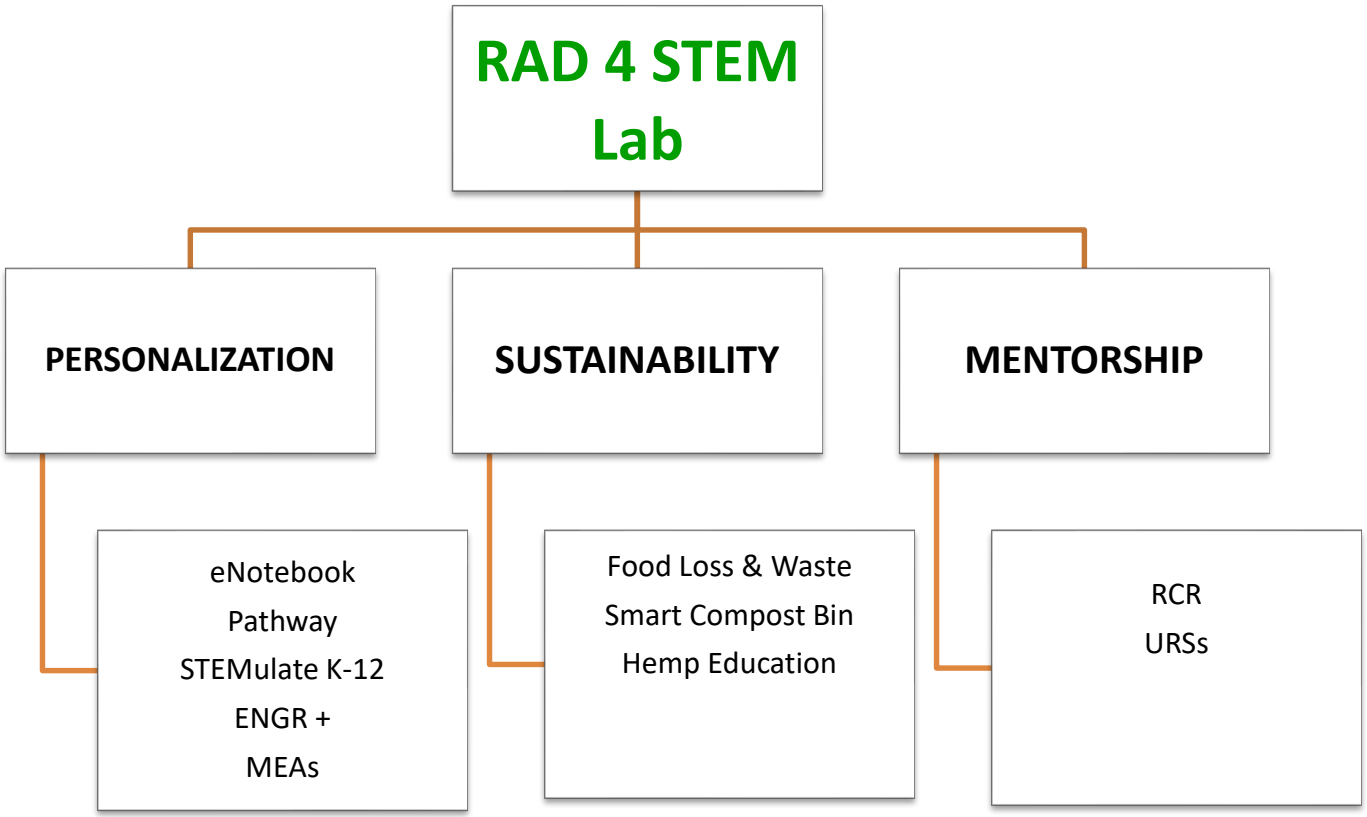
- Mental health in agricultural and natural resource communities
- Messaging about mental health/resources
- How we talk about the topic (social media, visuals, and interpersonal communication)
- Arts-based research methods

Email me: whitney.stone@oregonstate.edu

STEM Education Retention, Attraction, & Diversity

Oregon State University

Dr. Quincy Clark, Assistant Professor of STEM Education
College of Education and College of Agricultural Sciences
Quincy.Clark@OregonState.edu; www.RAD4STEM.com



Research Areas

- Problem Identification
- Problem Solving
- Personalization
- Educational Technology
- Behaviors and Attitudes
- Self-Regulation
- Indigenous Education
- What are your interests?

Courses Taught

- Introduction to Statistics
- Quant Research Design
- Critical Pedagogy
- Learning Theory
- Funds of Knowledge
- Multicultural Education
- eTeaching and eLearning
- Educational Methods

STEM Education Retention, Attraction, & Diversity

Oregon State University

Dr. Quincy Clark, Assistant Professor of STEM Education
College of Education and College of Agricultural Sciences
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Undergraduate and Graduate Research Opportunities

Ag Ed Undergrad Research Team

Food Loss and Waste Management

Research Objectives

- Examine the behaviors and attitudes towards household food loss and waste (FLW), identify the contextual factors influencing these attitudes and behaviors, and explore strategies to leverage these factors for encouraging FLW reduction and educational material

ENGR Ed Undergrad Research Team

First-Year Engineering Students

Research Objectives

- Investigate the impact of exposure to environmental and social issues on first-year engineering students' problem-identification and problem-solving abilities. Examining growth mindset development.

Graduate Research Team

Hemp-Based Education

Research Objectives

- Investigate the design, development, and field testing of a hemp-based K-20 curriculum, teacher development tools, and community education modules that support the development of a hemp-based economy with Northwestern Native American tribes.

Smoke, Wine, and Grapes (SWAG) Analytical Chemistry Lab

D. Cole Cerrato, Ph.D.

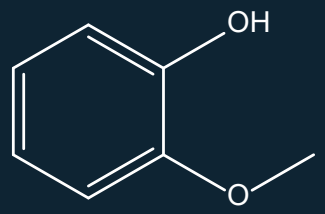
Assistant Professor Senior Research

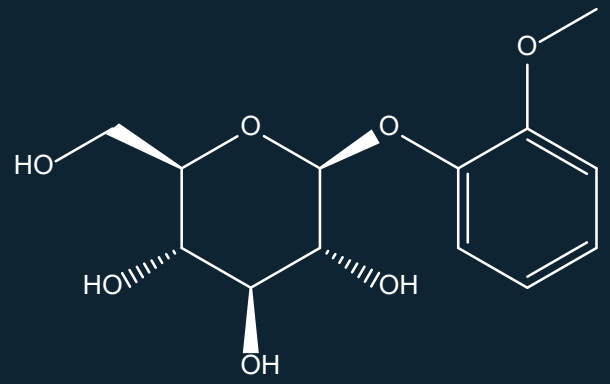
Department of Food Science and Technology

Oregon State University

The SWAG Lab

- In 2020 Portland had the worst air quality in the world for metropolitan regions!
- Wineries and grape growers had nowhere to send their samples or had exorbitant wait times to measure smoke impacts





Oregon State University

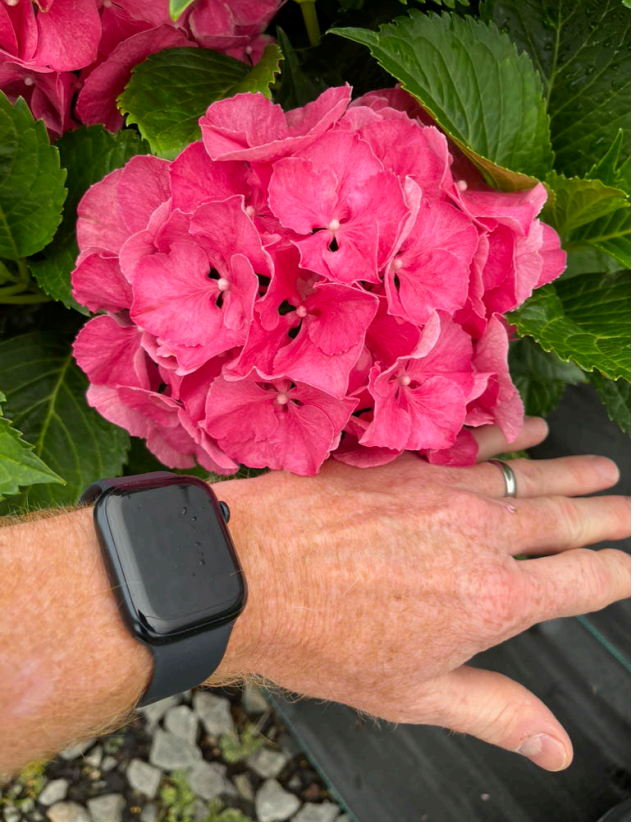
The SWAG Lab

- Measure chemicals making Oregon wine taste smoky using state-of-the-art instruments
- Find **new** chemicals making wine taste smoky
- Field work to make smoky wine and ferment that wine
- Measure and find chemicals in a variety of foods and beverages, such as nutraceuticals, flavor and aroma chemicals, faults that make foods/beverages taste unpleasant

Jay W. Pscheidt - Extension Plant Pathologist
Dept. of Botany and Plant Pathology
Jay.Pscheidt@oregonstate.edu

Saving Oregon's Vibrant Hazelnut Industry

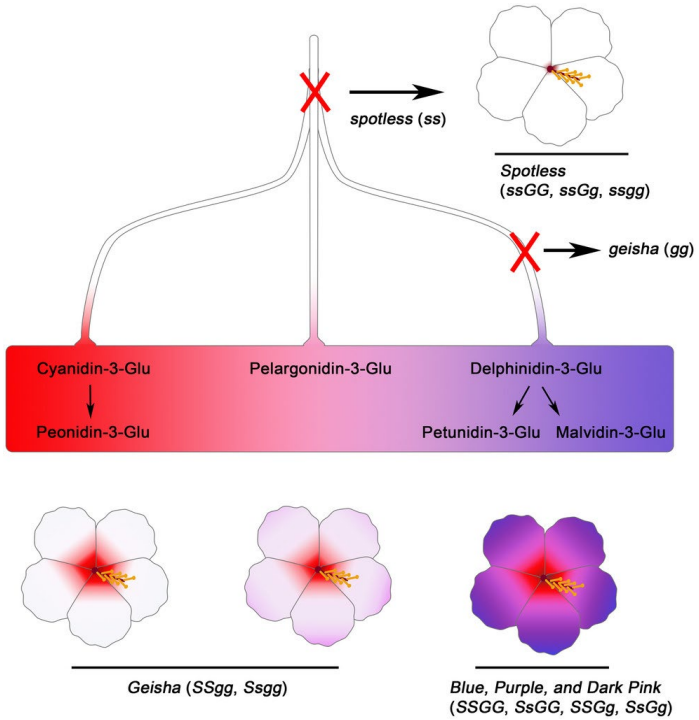
Game Changing Nursery Research

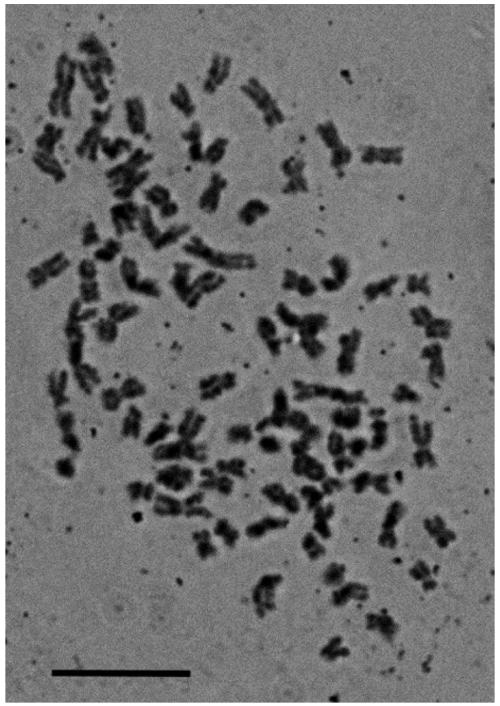


Landscape Plant Breeding

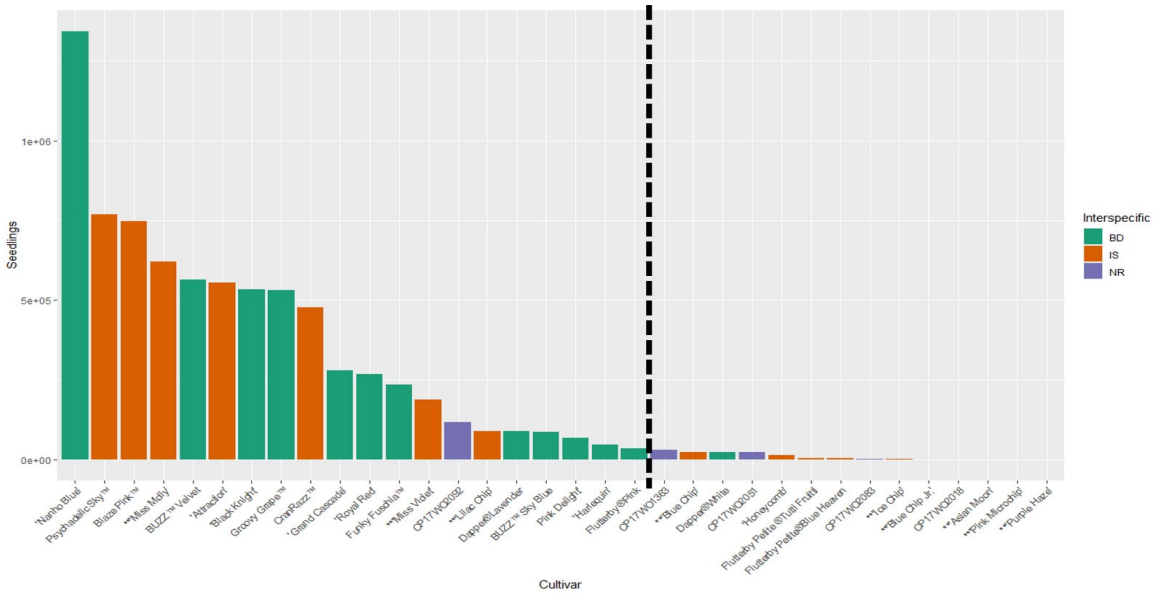
- Objectives
  - Reduced seedling production
  - Market/consumer appeal
  - Resilience to climate change
  - Disease resistance
  - Production efficiency
- Methods
  - Ploidy manipulation
  - Mutagenesis
  - Molecular genetics
  - Crossing

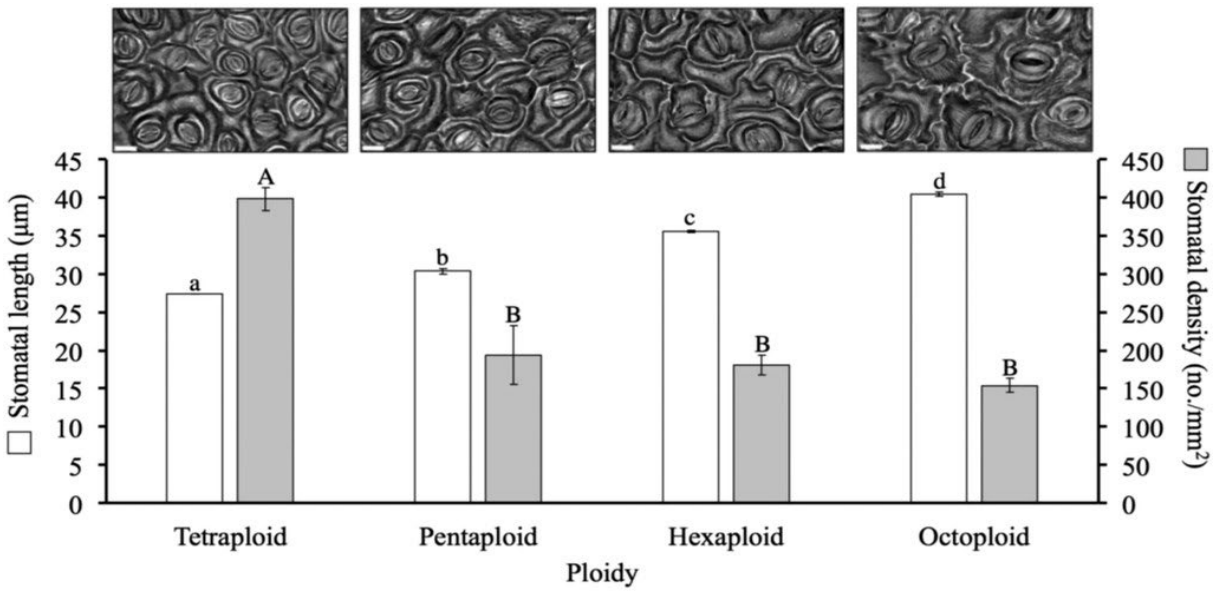
Ryan Contreras
Horticulture
Ryan.Contreras@oregonstate.edu


spotless (ss)
Spotless
(ssGG, ssGg, ssgg)
geisha (gg)
Cyanidin-3-Glu
Pelargonidin-3-Glu
Delphinidin-3-Glu
Peonidin-3-Glu
Petunidin-3-Glu
Malvidin-3-Glu
Geisha (SSgg, Ssgg)
Blue, Purple, and Dark Pink
(SSGG, SsGG, SSGg, SsGg)



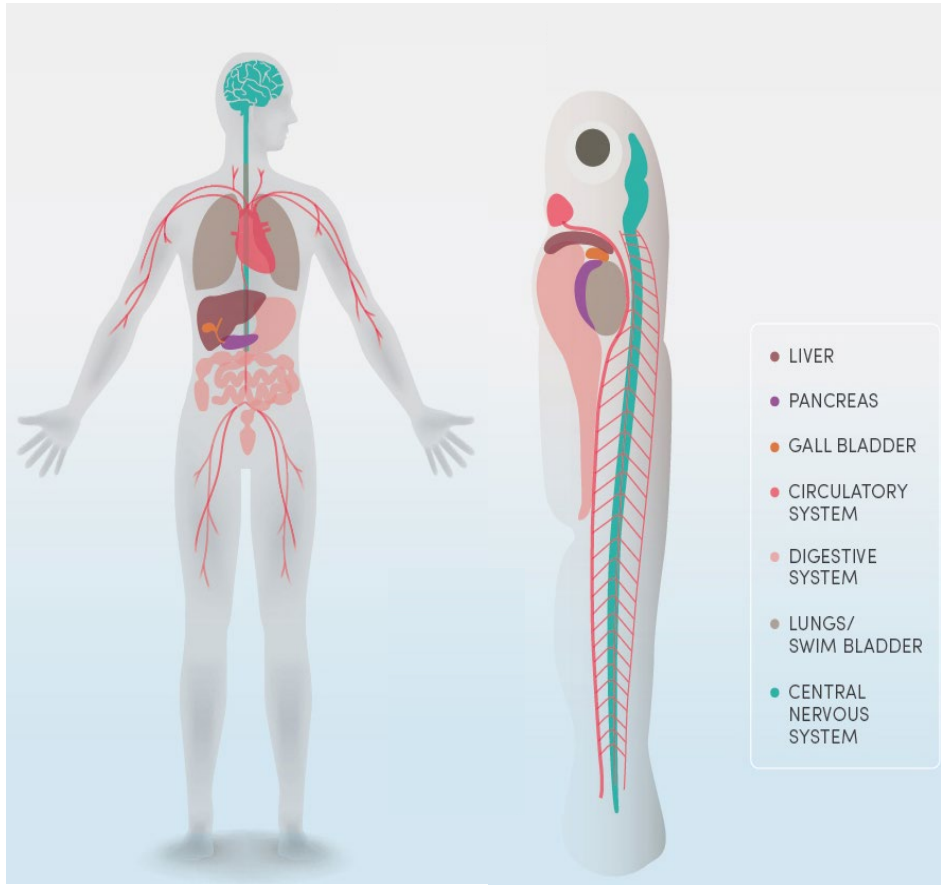
$2n = 4x = 80$


Seedlings
1e+06
5e+05
0e+00
Cultivar
Interspecific
BD
IS
NR

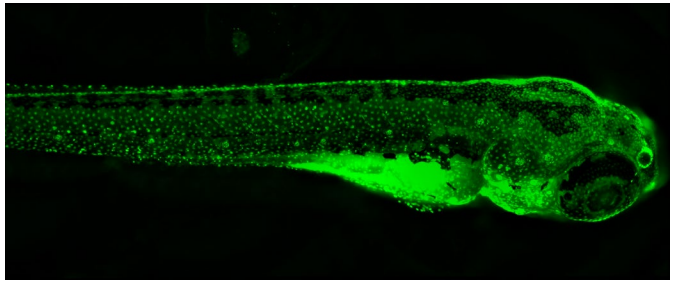

Stomatal length (μm)
Stomatal density (no./mm²)
Tetraploid
Pentaploid
Hexaploid
Octoploid
Ploidy

TANGUAY LAB
THINKING OUTSIDE THE TANK

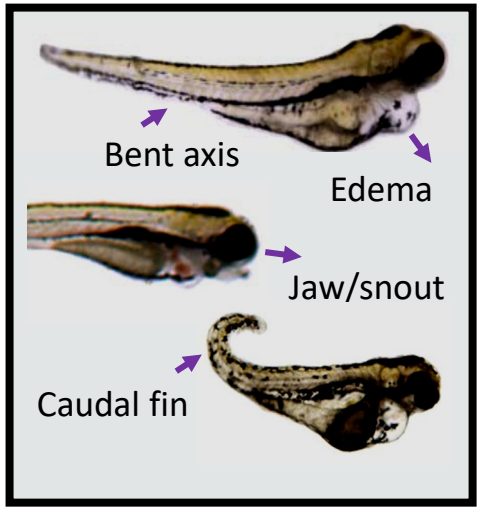
Determining chemical toxicity
By all means zebrafish
To protect humans and the environment



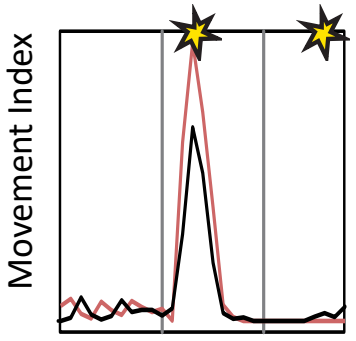
Transgenic Lines

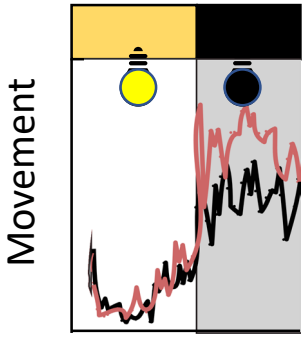


Morphology



Behavioral Assays





Contacts:
Dr. Robyn Tanguay - PI
robyn.Tanguay@oregonstate.edu
Dr. Lisa Truong - Director
Lisa.truong@oregonstate.edu
Christian Rude – grad student
Christian.rude@oregonstate.edu

2023 Faculty Research Showcase

Oregon State University

Sustainable Groundwater Quantity and Quality Innovation Lab

Dr. Salini Sasidharan

(Assistant Professor | Sustainable Groundwater Management Engineer)

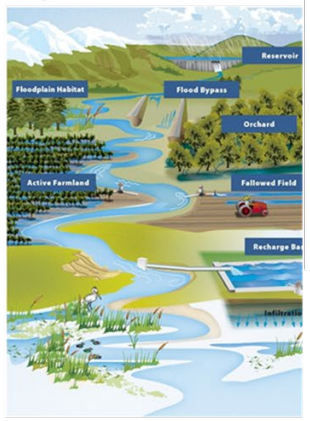
Department of Biological & Ecological Engineering, College of Agriculture Science and College of Engineering

Salini.Sasidharan@Oregonstate.edu

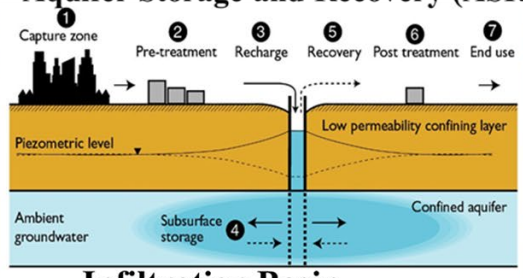
Research for Building a Climate-Resilient Water Resource Management

Design Innovative Managed Aquifer Recharge (MAR) Engineering Systems

Ag and Flood MAR



Aquifer Storage and Recovery (ASR)



Infiltration Basin

Drywells

Sustainable groundwater management	Secure water supply	Compensate climate change
Maintain the quality of groundwater bodies	Limit the pollution of surface water	Improved reservoir design to limit evaporation losses
Passive management of saltwater intrusion	Groundwater–stream water exchanges	Mitigate flooding

Oregon State University

Potential Research Topics

- Development pre- and post treatment systems
- Groundwater modeling for drywell-MAR
- Comparison of various MAR techniques
- Alternative water for groundwater recharge
- Use of geophysical tool for site characterization

The OWRI Erath Family Foundation Undergraduate Scholars Program

- **Potential Research Areas** – Viticulture, Enology, Wine Economics, and supporting disciplines
- **Paid** undergraduate research experience
- **Includes travel** to one research conference
- **Nine scholars** will be selected this year
- **Apply** Feb. 12 to March 15
- **Funding timeframe** – July 1, 2024 to June 30, 2025
- **To learn more - QR code** for link to program website

Oregon State University
Oregon Wine Research Institute

Weed Science Research and Extension
Perennial Horticultural Crops
Moretti Lab

INNOVATIVE

- Electric
- Steam
- Pulse Electric Field

Crop

- Tree Fruit & Nuts
- Hops
- Ornamentals
- Small Fruit
- Vineyards
- Cover crops & pollinator habitat

IR-4 PROJECT &
New Solutions for Growers

HERBICIDE RESISTANCE MANAGEMENT

- Selection for resistance begins with the first spray
- Quality and profit

Linda.brewer@oregonstate.edu

College of Forestry
Undergraduate Research & Mentoring Programs

- **Mentored Employment Program (MEP)**
  - Paid undergraduate student research with a faculty mentor
  - Fall application & hire; winter and spring work
- **Summer Undergraduate Assisted Research (SUGAR)**
  - Paid undergraduate research with a graduate student mentor (summer term work)
- **Experiential Learning Funds**
  - Limited college funds awarded to undergraduate and graduate students who would like to attend a conference, seminar, training, or similar experience.

Oregon State University
College of Forestry

Brooke Harrington
Student Engagement
&
Scholarship Programs
116 Peavy Forest Science Center
brooke.Harrington@oregonstate.edu
(541) 737-1593

College of Forestry
Faculty Research Showcase
Randy Rosenberger

Oregon State University
College of Forestry

Teaching

- TRAL 432: Economics of Recreation & Tourism

Contact Information

Professor
Applied Economics
Email: r.rosenberger@oregonstate.edu
Room 201H, Richardson Hall

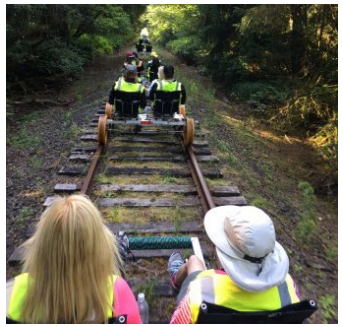
Research Foci

- Economic tools and concepts applied to:
  - Recreation & Tourism
  - Environmental Conservation
  - Community Development
  - Health Benefits

Undergraduate Research Opportunities

- Health Benefits Estimator Tool
  - Pending grant application

Health Benefits Conceptual Model



"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

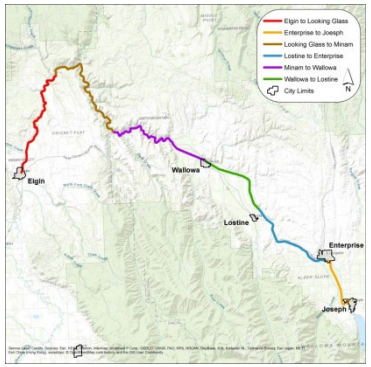
Environment
- New trail system

Behavior
- Increased walking / biking on trails

Exposure
- Reduces relative risks of diseases

RR

Health Outcome
- Decrease in health care expenditures



College of Forestry
Faculty Research Showcase
John D. Bailey

Oregon State University
College of Forestry

Teaching

FOR 346 *Topics in Wildland Fire*
FOR 436 *Wildland Fire Science and Mgt*
FOR 441 *Silviculture Principles*

Title & Discipline
Contact Information

Professor of Silviculture and Fire Management
john.bailey@oregonstate.edu
541-737-1497

Research Foci

Sustainable Forest Management
Fuels Treatments
Prescribed Fire
Wildland Fire Risk

Undergraduate Research Opportunities

Summer field technicians
Dendrochronology lab

College of Forestry
Faculty Research Showcase
Gerald Presley

Oregon State University
College of Forestry

Teaching

WSE 111- Wood Innovations for Sustainability
WSE 240- Fungal Decay in your World
WSE 544- Wood Chemistry

Title & Discipline
Contact Information
Assistant Professor
Department of Wood Science and Engineering
gerald.presley@oregonstate.edu

Research Foci

- Wood Durability
- Liquid Fuels from wood
- Bioremediation
- Wood composites durability

Undergraduate Research Opportunities

- Conversion of plant biomass using fast pyrolysis
- Remediation of plastics from agriculture using physical and biological treatments

Current Research Opportunities

Fast pyrolysis of slash for renewable liquid fuels

- Carbon Intensity?
- Feedstock and process variables effects on products?
- Pyrolysis oils alternative uses?

Fast pyrolysis

Bio Oil

Hydrotreating, distillation

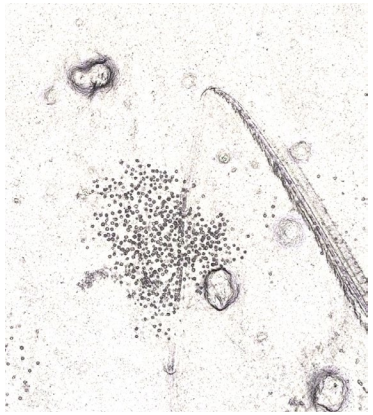
Wood Treating

Degradation of polyethylene films using physical/chemical pretreatments and decay fungi

Sonication

Fungal treatment

Decomposition



College of Forestry
Faculty Research Showcase
Wenjia Wang

Oregon State University
College of Forestry

Teaching
WSE 250 Computer Aided Design of Wood Products

Title & Discipline
Contact Information
Assistant Professor in Advanced Manufacturing
Department of Wood Science and Engineering
Office: Richardson Hall 114
Email: wenjia.wang@oregonstate.edu

Research Foci
3D printing of renewable materials (e.g., wood-based composites):
- use extrusion-based 3D printing technique,
- control of printing process,
- study the quality of the printed products,
- process optimization and modeling

Damage behavior of wood structures, etc.

Undergraduate Research Opportunities
- Setup a 3D printer
- Printing of fungi-wood composites, optimize the process parameters, e.g., mixture content, waiting time, extrusion pressure, layer height, nozzle size, etc.
- Control fungal growth and drying of composites
- Properties testing/characterization of the final products

College of Forestry

Faculty Research Showcase

Vahid Nasir & Laurence Schimleck

Oregon State University
College of Forestry

Teaching

- Wood Products Manufacturing
- Advanced Manufacturing II
- Wood Structure
- Anatomy of Woody Plants
- Biology, Structure, and Utilization of Woody Plants

Vahid Nasir, PhD
Courtesy Faculty, Wood Sci. & Eng.
Vahid.nasir@oregonstate.edu

Laurence Schimleck, PhD
Professor, Wood Sci. & Eng.
laurence.schimleck@oregonstate.edu

Research Foci

- Nondestructive wood characterization
- Applied machine learning
- Smart quality control
- Data-driven manufacturing
- Wood quality

Undergraduate Research Opportunities

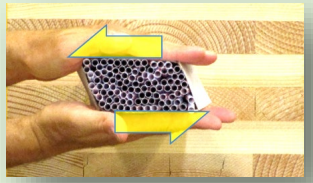
- Testing and characterization of thermally modified wood (TMW)
- Performing mechanical test on TMW
- Nondestructive assessment of TMW
- Developing predictive models using data analytics and machine learning tools

College of Forestry
Faculty Research Showcase
Lech Muszynski

Oregon State University
College of Forestry

Teaching

WSE322 Physical & Mechanical Properties of Wood
WSE465 Wood Products Field School
WSE543 Scientific Methodology & Planning for Grads



Title & Discipline
Contact Information

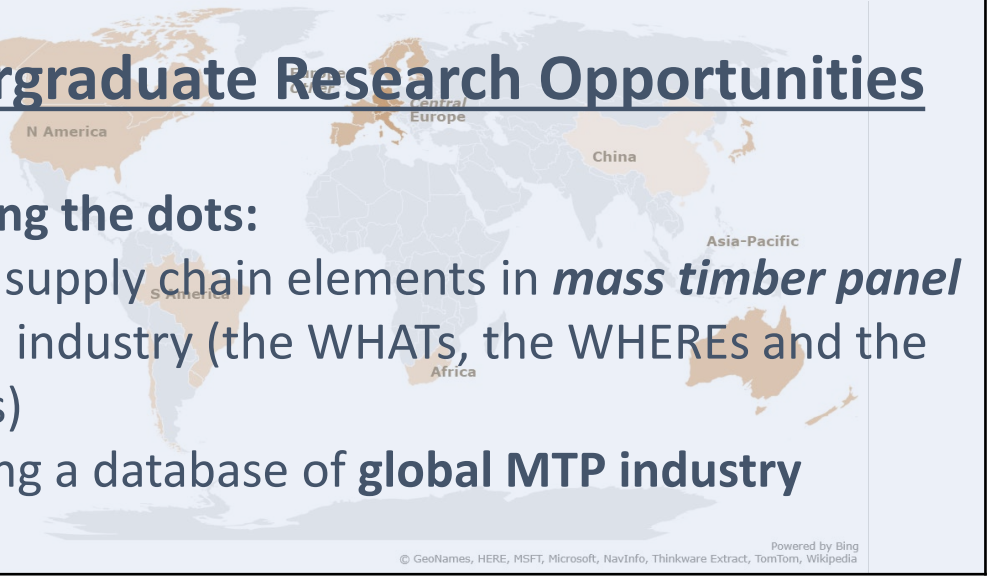
Professor in Wood Science & Engineering

T +1 541 737-9479
E lech.muszynski@oregonstate.edu
LI lech-muszynski-356001b3

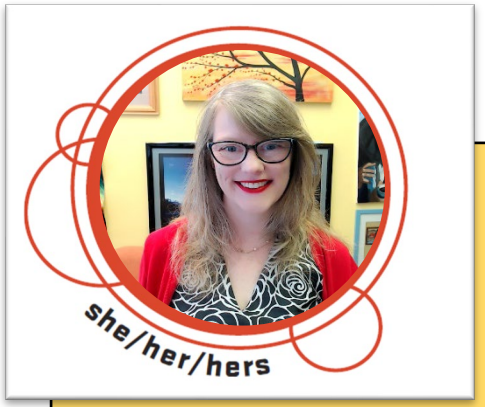
Research Foci

Sustainable bio-based materials (wood & al.)
Structure-property relations in bio-based composites
Mechanics of wood and wood composites
Wood-water relations in products & structures
Mass timber panels (MTP): technology, supply chains, use in structures, opportunities, barriers, future (CLT, MPP & al.)

Undergraduate Research Opportunities



Connecting the dots:
Mapping supply chain elements in ***mass timber panel*** (MTP) industry (the WHATs, the WHEREs and the HOWs)
Developing a database of **global MTP industry**



Erin Lieuallen, M.S.

CEOAS
College of Earth, Ocean, and Atmospheric Sciences

Courses

Internship credit
Internship non-credit
Research credit
Research non-credit
Thesis credit

CEOAS Undergraduates

See ‘Beyond the Classroom’

CEOAS Experiential Learning

- Internships
- Research
- CEOAS ELF (Experiential Learning Funding)
- Mentoring Programs

Deadlines

- **ELF** Funding for research costs
  due Friday Week 2
- **Academic credit** for research or internship
  due Wednesday Week 1
- **Non-credit** for research or internship
  due Wednesday Week 1
- **Mentor of the Year Nominations**
  due Feb 15

Jay Alder

USGS science for a changing world

CEOAS College of Earth, Ocean, and Atmospheric Sciences

Title & Contact Information

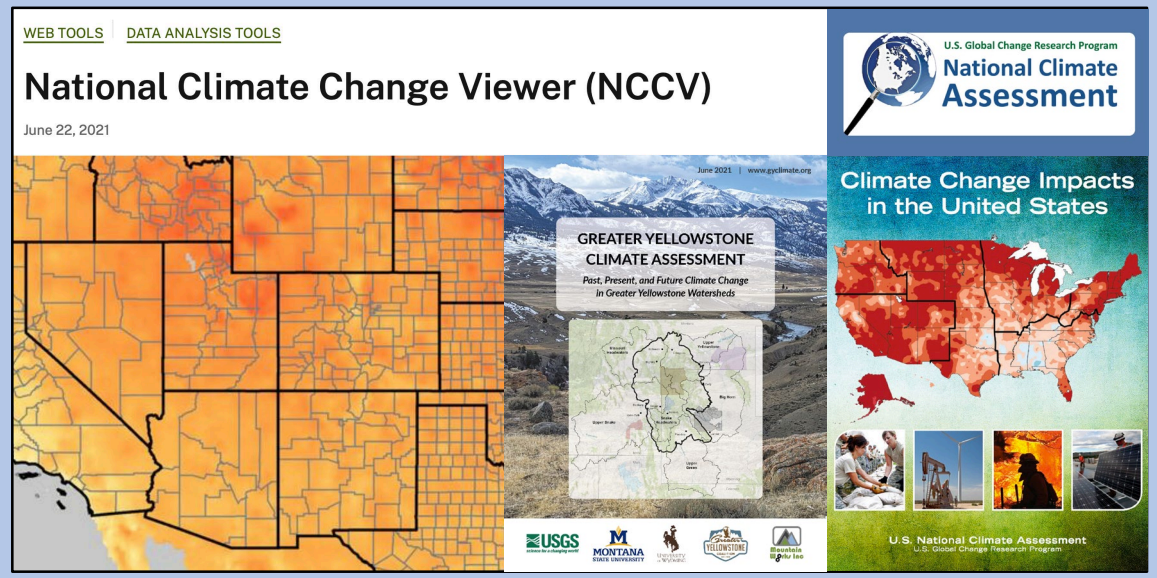
- USGS: Research Physical Scientist
- OSU: Courtesy Research Associate
- jay.alder@oregonstate.edu
  Burt 108

Undergraduate Research Opportunities

- Data mining large climate projection datasets for novel impact assessments (changes in extreme events and hydroclimatology)
- Using climate models to interpret paleo proxies
- All require coding experience

Research Foci

- *All things climate modeling*
- Climate model data analysis and best practices (Dept of Interior guidance)
- Climate projection visualization
- Regional modeling and downscaling
- Paleoclimatology modeling and data-model comparison



Andrea Jenney

College of Earth, Ocean, and Atmospheric Sciences

Assistant Professor, Atmospheric Science
Andrea.jenney@oregonstate.edu
Burt 316

Teaching

Climate Science (ATS 201)
Climate Modeling (ATS 421/521)

Research Foci

Clouds & storms in the tropics
Climate
Weather forecasting 2-4 weeks ahead*

Undergraduate Research Opportunities

2 full-time paid summer research positions:

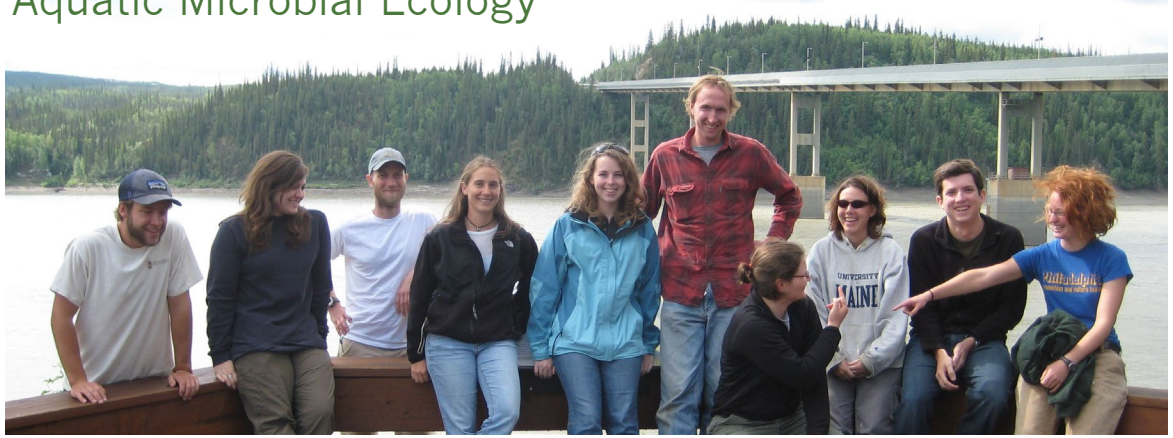
(1) Looking for a computer science student or a student with equivalent experience to help optimize a python software package

(2) Looking for a climate science student (or student interested in climate science) with at least one term of coding experience to explore changes in model forecast skill

Byron Crump

CEOAS
College of Earth, Ocean, and Atmospheric Sciences

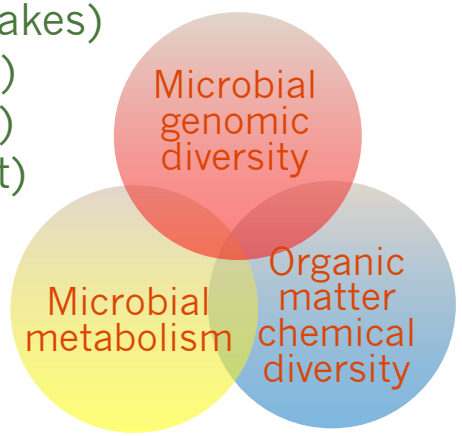
Teaching: Estuarine Ecology, Biological Oceanography, Aquatic Microbial Ecology



Weniger 518A, 529
Byron.Crump@oregonstate.edu

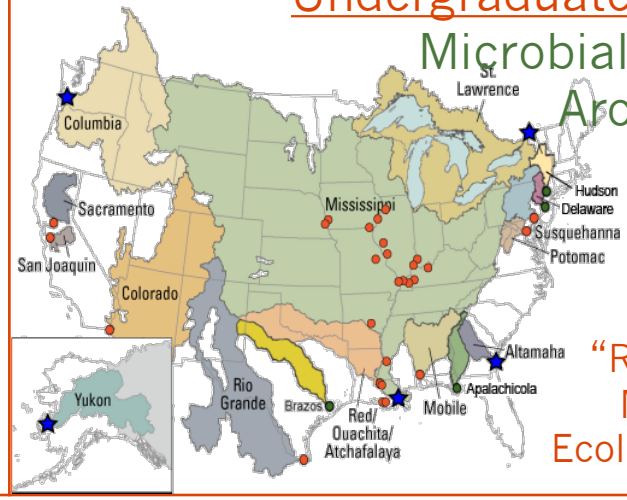
Research: Microbial communities in aquatic systems (coastal ocean, estuaries, rivers, lakes)

- Microbial diversity (who they are)
- Microbial function (what they do)
- Microbial ecology (why they do it)



Undergraduate Research Opportunities

Microbial metagenomics of rivers
Arctic permafrost microbes
Seagrass microbiomes



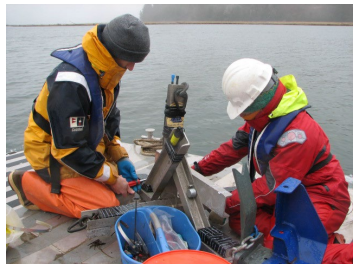
ROMEO
"River Organic Matter and Ecological 'Omics"

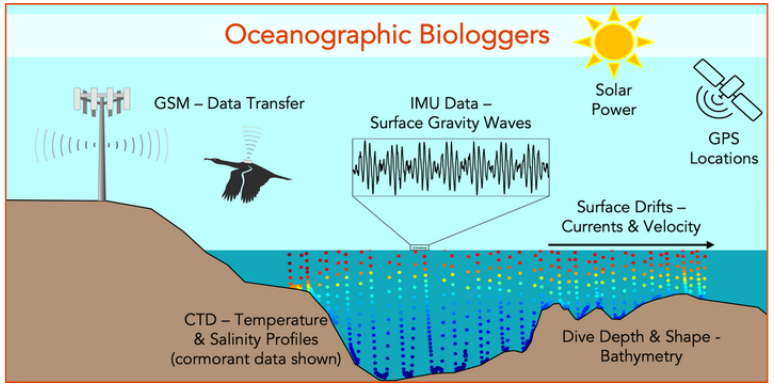
Jim Lerczak

Physics of Oceans & Atmospheres (POA)
Coastal & Estuarine Oceanography
Jim.Lerczak@oregonstate.edu

CEOAS
College of Earth, Ocean, and Atmospheric Sciences

- Estuary Physics & Estuary Health,
- Field Measurements, Data Analysis, Numerical Modeling.





Credit: Brendan Higgins

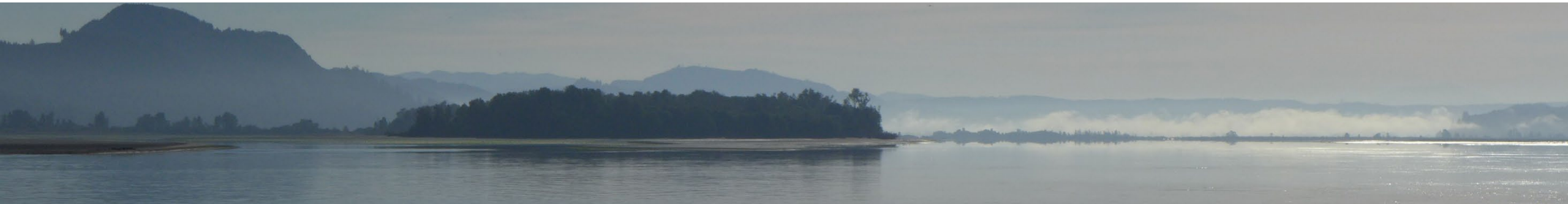
***Two Undergraduate Opportunities*:**

1. Research in Yaquina Bay estuary (physical oceanography, biogeochemistry, habitat health).

- Data analysis, possible field work,
- Interdisciplinary collaborations.

2. Cormorant Oceanography Project (https://www.osudashcams.com)

- Oceanographic measurements from tagged birds,
- Measurements made around the world,
- Analysis of diverse data sets, and possible field work.



Matthew Goslin

CEOAS
College of Earth, Ocean, and Atmospheric Sciences

Intro to Geospatial Sciences (Geog 201)
Geographic Information Systems I (Geog 360)
Cartography (Geog 370)
Conflict, Cooperation & Control of Water in the U.S. (Geog 440)

Instructor: Geospatial Sciences (Geography)
Matthew.Goslin@oregonstate.edu

Research:

Plant-river interactions & river restoration
How can plants drive river evolution?
How does river hydrology & environment drive plant species patterns?
Middle Fork John Day River, Santiam Basin, Willamette, McKenzie, Umpqua

Undergraduate Research Opportunities

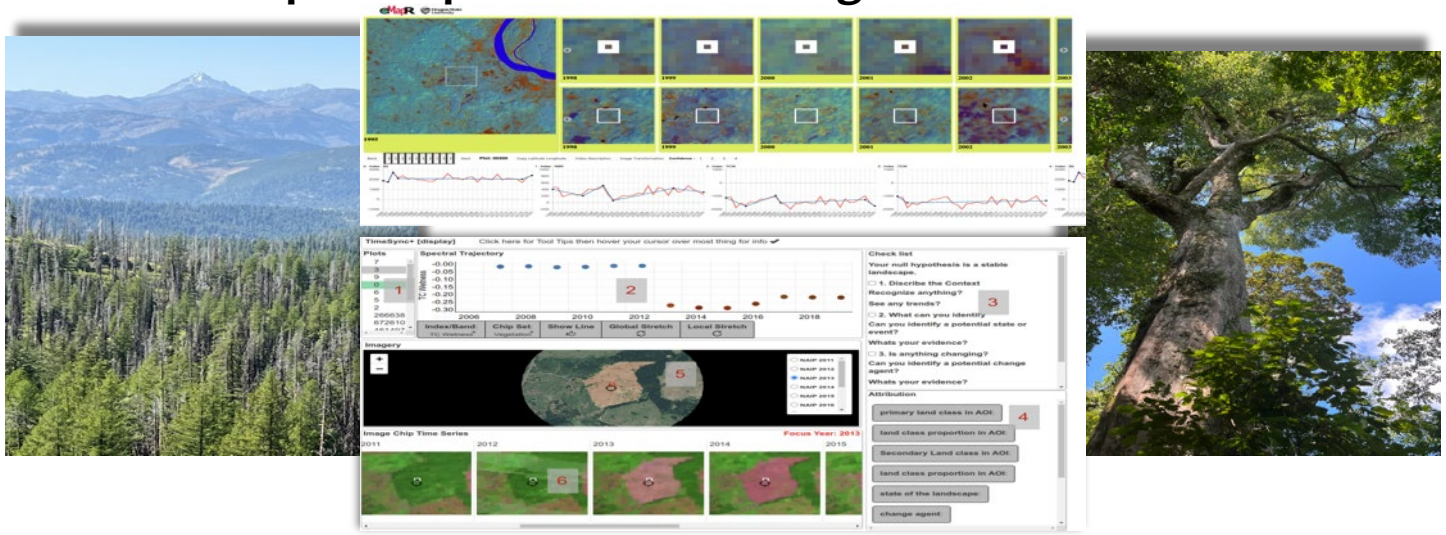
Topo-bathymetric channel surveys
Riparian plant surveys
Remote sensing of key species expansion
Monitoring of river restoration projects using aerial imagery & field sampling
Your ideas?

Robert Kennedy

Student jobs with an OSU research lab

College of Earth, Ocean, and Atmospheric Sciences

Help us map forest cover change with satellites!



Work remotely on your own schedule $17 / hr – 10-20 hrs / week

Apply on OSU's student employment site

Position closes 1/26/24 Apply now!

check out our lab web page: emapr.ceoas.oregonstate.edu for more information