OREGON BIOENGINEERING SYMPOSIUM 2023

NOVEMBER 3, 2023

AT THE PHIL AND PENNY KNIGHT CAMPUS FOR ACCELERATING SCIENTIFIC IMPACT

TABLE OF CONTENTS

A special thank you to the 2023 OBS Planning Committee:

Gabriella Lindberg (UO)
Paul Dalton (UO)
Gabrielle Andrew (UO)
Julie Langenberg (UO)
Adam Higgins (OSU)
Elain Fu (OSU)
Peter Jacobs (OHSU)
Yan Li (OHSU)
Raj Kulkarni (OHSU)

LETTER FROM CONFERENCE ORGANIZERS

Welcome to the 5th Annual Oregon Bioengineering Symposium! The 2023 OBS planning committee is pleased to present a day of activities around this year's theme: Translating Ideas into Practice. We are looking forward to an exciting event filled with the latest research, clinical applications, opportunities to highlight the excellent work of students, and multi-institutional networking.

This symposium marks five years of collaboration between Oregon Health & Science University, Oregon State University, and the University of Oregon, bringing together scientists, clinicians, and industry from all over the state to meet and discuss topics in the field of bioengineering. We are grateful for the continued partnership, and delighted to see the symposium continue to expand both in participation and the innovative research that has come from these joint efforts.

For the first time, OBS will feature a keynote address by an invited speaker outside of Oregon. Jason Burdick joins us from the University of Colorado Boulder for a talk titled, "Advances in Biofabrication Methods to Process Biomedical Hydrogels." You can read more about Jason on page 13 of this booklet.

With 33 speakers and 115 posters representing research from around the state, there is something for everyone at this year's symposium. Please be sure to stick around for the catered reception following the awards session and take the opportunity to meet each other, discuss and put your ideas into practice!

Gabriella Lindberg & Paul Dalton
2023 Oregon Bioengineering Symposium Co-Chairs

Paul Dalton
Associate Professor
Bradshaw and Holzapfel Research Professor in Transformational Science and Mathematics
Knight Campus, UO

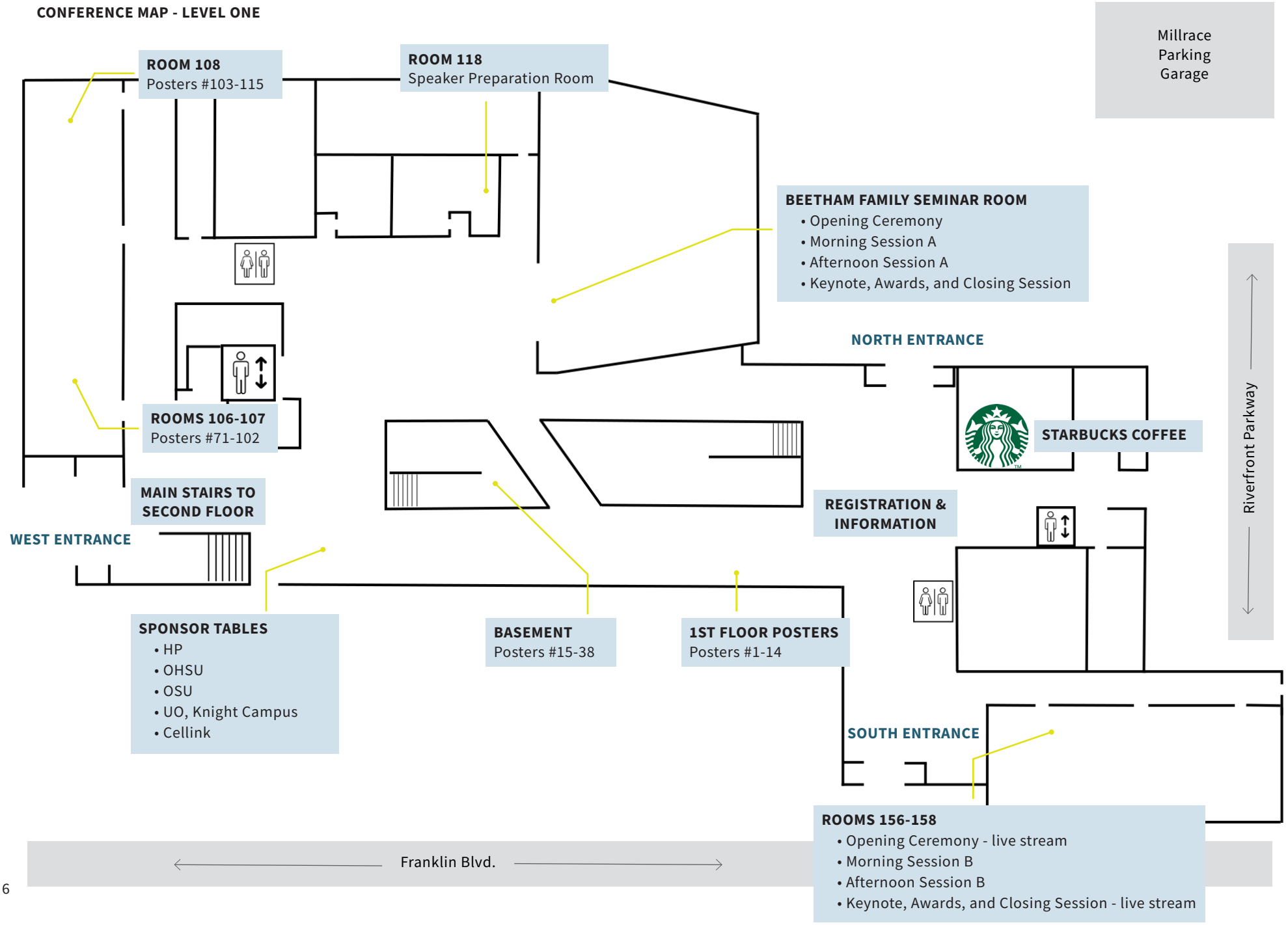
Gabriella Lindberg
Assistant Professor
Knight Campus, UO

Time	Activity	Location
8:30-9:00am	**Registration / Coffee**	**Knight Campus Lobby**
9:00-10:00am	**Opening Ceremony**	**Beetham Seminar Room / Live-streamed in Seminar Room 156-158**
Welcome from OBS Chairs Gabriella Lindberg and Paul Dalton		
Combined Presentation by Danielle Benoit, Adam Higgins, and Owen McCarty: *"From Labs to Lifesaving: Oregon's Vision for Collaborative Bioengineering"*		
10:00-10:30am	**BREAK**	
10:30am-12:00pm	**Morning Session A**	**Beetham Seminar Room**
Session Chairs: Peter Jacobs (OHSU) and Sanique South (UO)		
Lightning Talks:		
Iman von Briesen*, "The MEWron-Transforming biomedical research with an affordable, open-source high-resolution printing platform"*		
Haylie Helms*, "Building Tissues with Single Cell Spatial Resolution Using Microfluidic Bioprinting"*		
Cameron Sugden, *"Microfluidic UV-C Treatment of Human Milk to Inactivate Pathogens"*		
Mary Kylene Lowrey, *"Ultrasound-Controlled Genetic Manipulation of Cells and Spheroids in 3D-Bioprinted Tissue Constructs"*		
Jarod Forer, *"Microcirculation Dynamics in the Rat Achilles Tendon"*		
Excellence in Research Award Nomination Talks:		
Yan Carlos Pacheco, *"Hyaluronic Acid Hydrogels Aid in BMP-2 Mediated Bone Formation Subcutaneously"*		
Krista Habing, *"Regenerative Engineering and Rehabilitation in Musculoskeletal Injury- Considering Age"*		
Sruthi Ranganathan*, "Bone-binding PEG-4MAL microparticles for a targeted therapeutic approach to treating post-traumatic osteoarthritis"*		
Angel-Rose Villegas, *"Hippocampal Neuroplasticity and Sleep are Impaired in a Model of Inflammatory Knee Pain"*		
Cynthia Alcazar, *"Regenerative Engineering of Complex Extremity Trauma"*		
10:30am-12:00pm	**Morning Session B**	**Seminar Room 156-158**
Session Chairs: Elain Fu (OSU) and Nataliia Shchotkina (UO)		
Lightning Talks:		
Rebecca Frederick*, "Peripheral Nerve Interfaces and a Tool to Predict Stimulation-Induced Neural Tissue Damage"*		
Michael Henderson*, "Amplifying Cancer Biomarker Release and Immune Stimulation using Ultrasound-Responsive Nanoparticles"*		
Khadijeh Khederlou, *"Utilizing Nafion antifouling coatings on stencil-printed electrodes for sensitive electrochemical detection of the therapy drug carbamazepine from saliva"*		
Sayandeep Gupta, *"Large scale expression of human proteome antigen libraries in E. coli"*		
Delaney Shea, *"Investigating the cellular uptake and cargo delivery of engineered dual-labeled bacterial membrane vesicles in vitro"*		
Bioengineering Session I:		
Nima Ahmadkhani, *"Advancing Cryopreservation- Simultaneous High-Throughput Screening of Cell Membrane Permeability and Toxicity for Discovery of Novel Cryoprotective Agents"*		
Tristan Hormel, *"Wide-field and High-resolution Coupled Structural and Angiographic OCT"*		
Malley Gautreaux, *"Investigating interactions between cartilage and synovial fluid in a 3D model of post-traumatic osteoarthritis"*		
Christian Ross, *"Dielectrophoretic extraction and PCR amplification of nucleic acids from unaltered plasma"*		
Teresa Rapp, *"Self-Illuminating Hydrogels for Phototriggered Drug Delivery"*		

12:00-1:30pm	**Lunch and Poster Session**	
Boxed Lunches are available for pick-up on the 2nd Floor. *Poster Session located throughout the building. See list and map in the program booklet for locations.*		
1:30-2:45pm	Afternoon Session A	**Beetham Seminar Room**
Session Chairs: Gabriella Lindberg (UO), Tristan Hormel (OHSU), and Tyler Guyer (UO)		
Clinical Science Talks:		
***Bala Ambati**, Research Professor for the Knight Campus, UO; Ophthalmologist, Pacific Clear Vision Institute - "Development of a New Corneal Strengthening Therapeutic for Keratoconus"*		
***Daniel Fitzpatrick,** Orthopedic Surgery Specialist, Slocum Orthopedics, and **Michael Bottlang,** Director, Legacy Biomechanics Laboratory - "Collaboration between Surgeons and Scientists: A Powerful Approach to Improve Patient Care"*		
***Kiya Movassaghi,** Plastic Surgeon, Movassaghi Plastic Surgery – "Building Blocks of Beauty: Navigating Breast Tissue Regeneration"*		
***Leah Wilson,** Assistant Professor for the Department of Medicine, Division of Endocrinology, School of Medicine, OHSU – " Clinical application of AI and machine learning for people with type 1 diabetes"*		
1:30-2:45pm	**Afternoon Session B**	**Seminar Room 156-158**
Session Chairs: Adam Higgins (OSU), Kai Neuhaus (OHSU), and Tayler Hebner (UO)		
Bioengineering Session II:		
***Morgan Giers,** "A Novel Method to Cryopreserve the Intact Intervertebral Disc with No Reduction in Cell Viability"*		
***Lei Wang,** "Quantitative Fluorescence Imaging of Drug Distribution and Therapeutic Response at Single-Cell Resolution"*		
***Nicholas Pancheri,** "Rupture of the ACL impairs limb function increases pain sensitivity and induces degenerative structural changes in a translationally relevant preclinical model of PTOA"*		
***Conor Harris,** "Controlling size and circularity of hydrogel beads for cell immobilization with a coaxial air device and vibrational frequency"*		
***H. Michael Shepard,** "Introduction to the New Kids in Town: Enosi Therapeutics and H. Michael Shepard, PhD"*		
2:45-3:30pm	**BREAK a*nd Innovation Center Open House***	**Papé Family Innovation Center**
During the break, the Papé Family Innovation Center will be open for self-guided tours. *Staff will be available to answer questions. Located on the 2nd floor.*		
3:30-5:00pm	**Keynote, Awards, and Closing Session**	**Beetham Seminar Room / Live-streamed in Seminar Room 156-158**
Session Chair: Bob Guldberg (UO)		
***Keynote Speaker Jason Burdick,** "Advances in Biofabrication Methods to Process Biomedical Hydrogels"*		
Awards Announcement: Gabriella Lindberg and Paul Dalton		
Closing Remarks: Danielle Benoit		
5:00-7:00pm	**RECEPTION and NETWORKING SOCIAL**	**Knight Campus Connector (2nd Floor)**
Join us on the 2nd Floor Connector for food, drinks, and networking!		

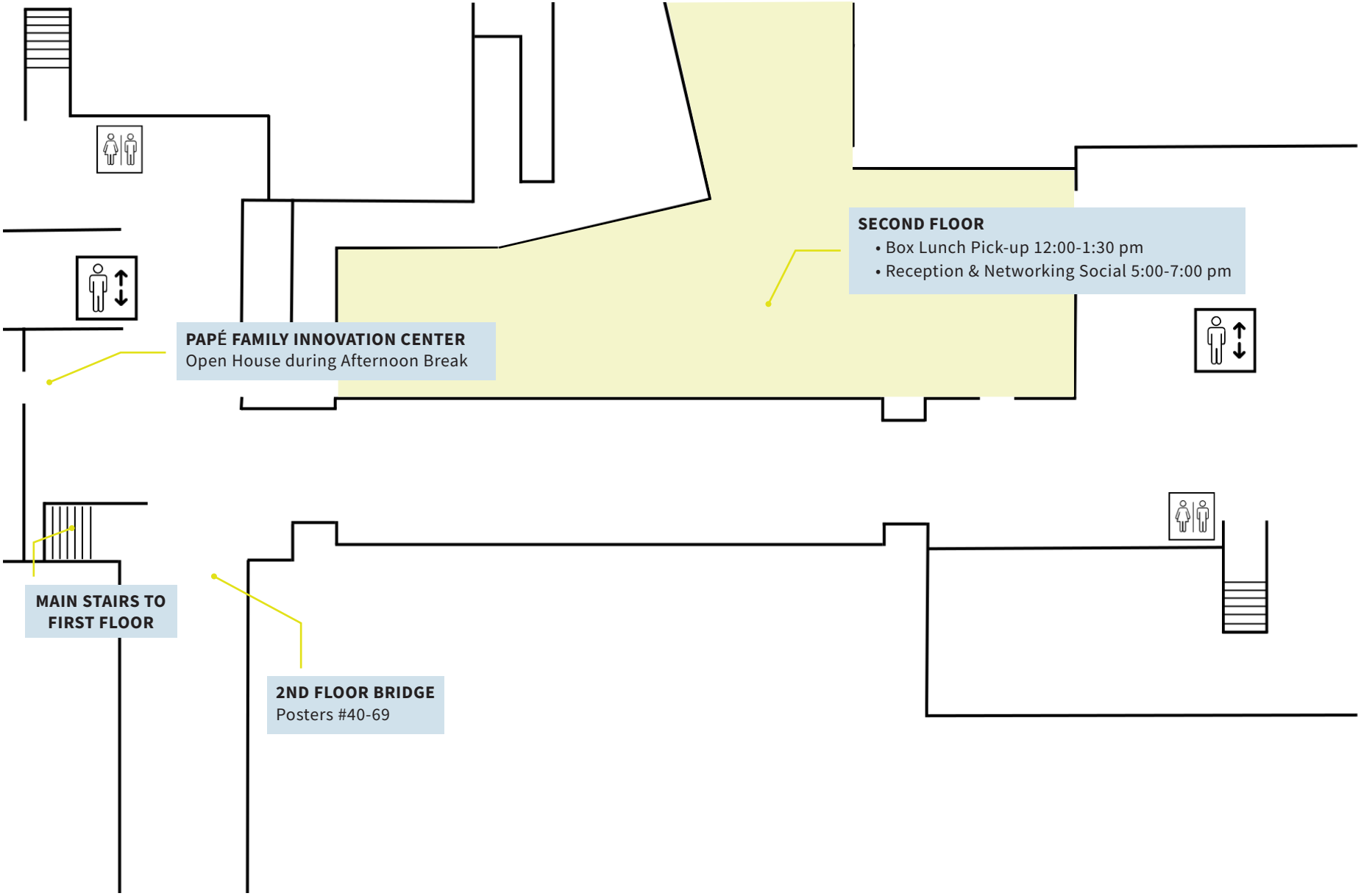
2023 OREGON BIOENGINEERING SYMPOSIUM

CONFERENCE MAP - LEVEL ONE



2023 OREGON BIOENGINEERING SYMPOSIUM

CONFERENCE MAP - LEVEL TWO

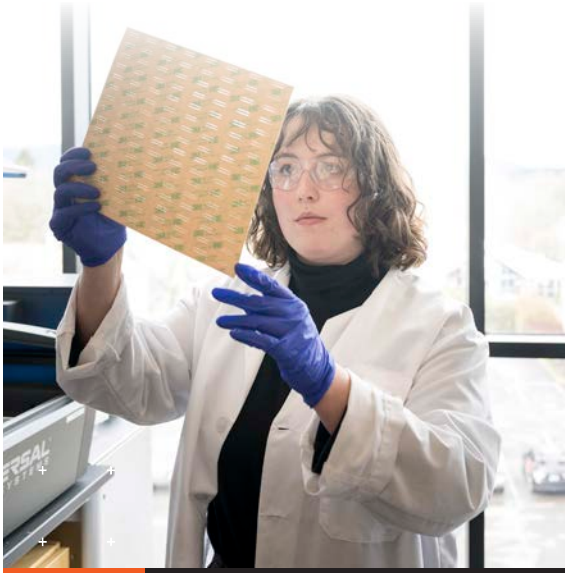


COLLEGE OF ENGINEERING

Oregon State University

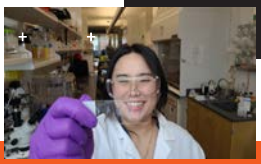
BIOENGINEERING

PH.D., M.S., AND M.ENG. PROGRAMS



Research Areas

- Biomaterials
- Biomedical devices and instrumentation
- Cell and tissue engineering
- Human performance engineering
- Systems and computational biology



LEARN MORE

cbee.oregonstate.edu/bioengineering

BIOMEDICAL ENGINEERING PH.D. PROGRAM

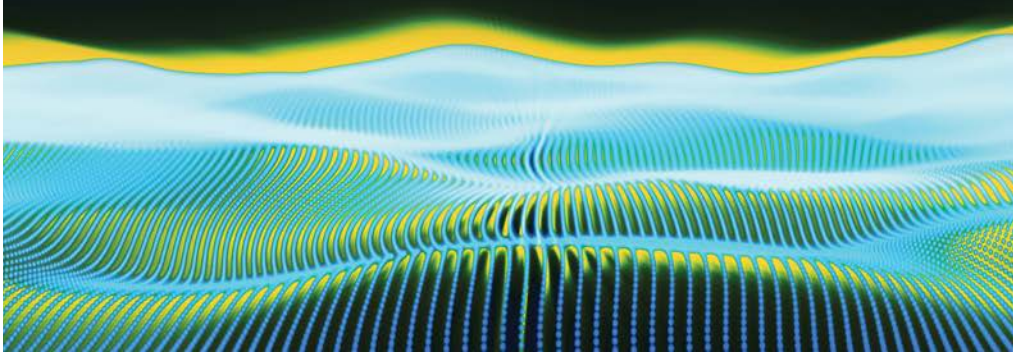
OREGON HEALTH & SCIENCE UNIVERSITY

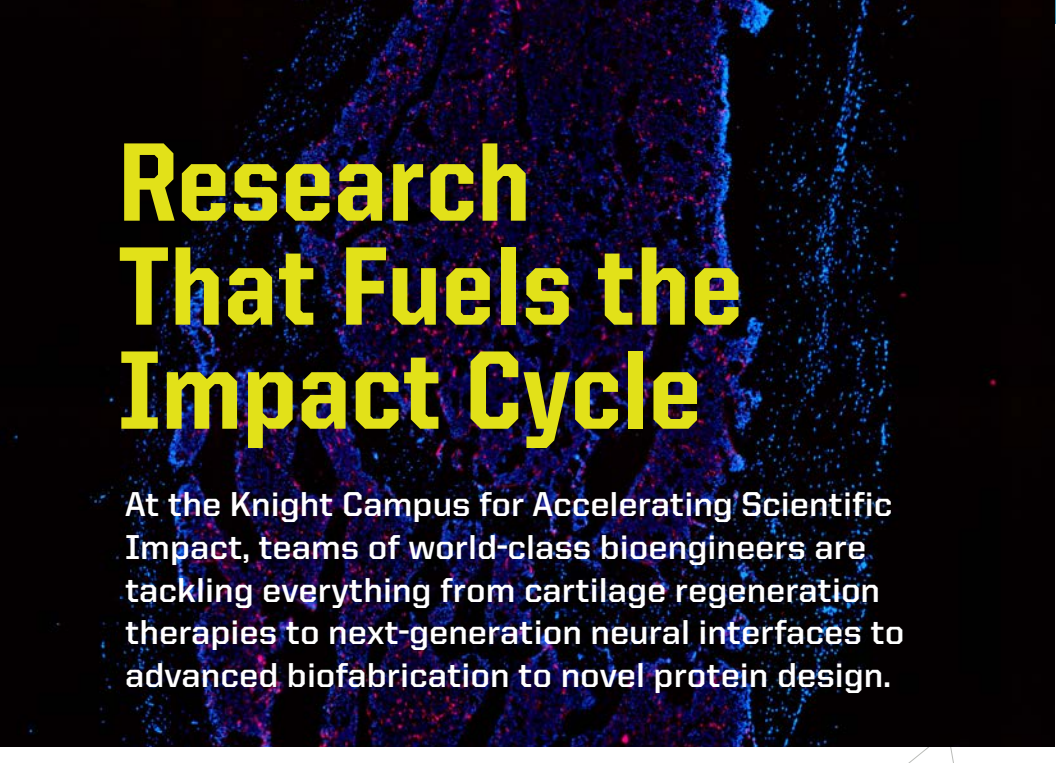
Innovators Welcome

Harness the problem-solving power of engineering to reimagine health care and help people in need. As a Ph.D. student at OHSU, you'll collaborate with other medical researchers as well as physician-scientists caring for people every day. We welcome students who strive to become innovators, entrepreneurs and scientific leaders. Join us as we uncover breakthroughs for better health.

OHSU

ohsu.edu/bme





Research That Fuels the Impact Cycle

At the Knight Campus for Accelerating Scientific Impact, teams of world-class bioengineers are tackling everything from cartilage regeneration therapies to next-generation neural interfaces to advanced biofabrication to novel protein design.

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KEYNOTE SPEAKER

Professor Jason Burdick

Bowman Endowed Professor of Chemical and Biological Engineering
University of Colorado Boulder

For the first time, the Oregon Bioengineering Symposium will feature a keynote address by a prominent researcher external to the host institutions. For the fifth-annual symposium, we are pleased to welcome Dr. Jason Burdick, who is Bowman Endowed Professor of the BioFrontiers Institute and Department of Chemical and Biological Engineering at the University of Colorado Boulder as the 2023 keynote speaker. The keynote address, "Advances in Biofabrication Methods to Process Biomedical Hydrogels," will be held at 3:30 p.m. in the Beetham Seminar Room and Live-Streamed to Seminar Room 156-158. Audience Q & A will follow, moderated by Bob Guldberg, Vice President and Robert and Leona DeArmond Executive Director of the Knight Campus.

Burdick's Biomaterials and Biofabrication Laboratory designs new biomaterials that can be processed through fabrication methodologies to meet the needs of medicine, ranging from translational therapeutics to tissue models. He currently has more than 310 peer-reviewed publications and is on the editorial boards of Journal of Biomedical Materials Research A, Biofabrication, Advanced Healthcare Materials, and International Journal of Bioprinting. He has been recognized through numerous awards such as a Packard Fellowship in Science and Engineering, an American Heart Association Established Investigator Award, the Clemson Award for Basic Science through the Society for Biomaterials, and the Acta Biomaterialia Silver Medal Award. Burdick has been elected as a Fellow of the American Institute for Medical and Biological Engineering, to the International College of Fellows of Biomaterials Science and Engineering, as a Fellow of the National Academy of Inventors, and as an International Fellow of the Canadian National Academy of Engineering.

FEATURED SPEAKERS

Danielle Benoit

Lorry Lokey Chair of the Department of Bioengineering, University of Oregon

Danielle Benoit's research specializes in the rational design of polymeric materials for regenerative medicine and drug delivery applications. Her work has provided insights into the translation of tissue engineering strategies for bone allograft repair, development of pH-responsive nanoparticles for nucleic acid and small molecule delivery, and novel targeting strategies for bone-specific delivery of therapeutics. An award-winning researcher, teacher, and mentor, she is a fellow of the American Institute of Medical and Biological Engineering and the Biomedical Engineering Society, as well as an Associate Editor for Science Advances and the Journal of Biomedical Materials Research Part B.

Danielle Benoit's talk will be during the Opening Session from 9-10am in the Beetham Family Seminar Room, and live-streamed to Seminar Room 156-158.

Adam Higgins

Professor in Chemical, Biological, and Environmental Engineering, Oregon State University

Adam Higgins' research interests include biotransport and biomedical process engineering; stabilization of biomedical products (e.g., biomolecules, cells, tissues, and organs) using technologies such as cryopreservation, lyophilization and spray drying; high flow rate microfluidic devices, mathematical modeling and optimization. He holds a Ph.D. in Bioengineering from Georgia Institute of Technology, a B.S. in Bioengineering and B.A. in International Studies, both from Oregon State University.

Adam Higgins' talk will be during the Opening Session from 9-10am in the Beetham Family Seminar Room, and live-streamed to Seminar Room 156-158.

FEATURED SPEAKERS

Owen McCarty

Chair of the Biomedical Engineering Department, School of Medicine, Oregon Health & Science University

Owen McCarty's research focuses on developing narrow mechanism-specific agents targeting the intrinsic pathway of coagulation and demonstrated that experimental thrombosis and platelet production in primates is interrupted by selective inhibition of activation of coagulation factor (F)XI by FXIIa. His current studies are focused on defining the role of the endothelium in inactivating FXI, as well as studies on whether inhibiting FXI is beneficial in a non-human primate model of sepsis. He received a Ph.D. in Chemical Engineering from Johns Hopkins University and is a fellow of the American Heart Association.

Owen McCarty's talk will be during the Opening Session from 9-10am in the Beetham Family Seminar Room, and live-streamed to Seminar Room 156-158.

H. Michael Shepard

CEO and Co-Founder, Enosi Therapeutics

H. Michael Shepard is a global, leading authority on cancer research and therapeutics. He is best known for his invention of "Herceptin"/Trastuzumab, which has remained one of the most profitable platforms for the pharmaceutical company Roche. He is the CEO and Co-founder of Enosi Therapeutics, a drug research and development company focused on providing industry-leading therapeutics for autoimmune diseases and cancer. Shepard is a biomarker pioneer and has been founder or principal in several biotech companies, receiving the 2019 Albert Lasker Award and the Warren Alpert Prize, among many other professional accolades. He received his Ph.D. from Indiana University.

H. Michael Shepard's talk will be during the Afternoon Session B from 1:30-2:45pm in Seminar Room 156-158.

FEATURED SPEAKERS

Bala Ambati

Research Professor for the Knight Campus, University of Oregon; Ophthalmologist, Pacific Clear Vision Institute

Bala Ambati, MD, PhD, is a clinician-scientist, conducting research in drug delivery, ocular angiogenesis, and has co-founded iVeena, a startup focused on developing an eyedrop for corneal strengthening and an implant for drop-free cataract surgery. Dr. Ambati completed his residency at Harvard University and fellowship at Duke University. His expertise includes cataract surgery, advanced lens implants, laser cataract surgery, all-laser LASIK, cornea transplants, Intacs, ICLs, iris repair, and other cornea procedures. Having graduated at the age of 17 from Mount Sinai School of Medicine as the world's youngest doctor, he was cited in 2015 as the No. 1 eye surgeon in a top 40 under 40 global competition and made the Top 100 Power List of Ophthalmology by The Ophthalmologist magazine.

Bala Ambati's talk will be during the Afternoon Session A from 1:30-2:45pm in the Beetham Family Seminar Room.

Daniel Fitzpatrick

Orthopedic Surgery Specialist, Slocum Orthopedics

Daniel Fitzpatrick, MD, is an orthopedic surgery specialist in Eugene. He graduated from University of Iowa Carver College of Medicine and completed residency at The University of Iowa Orthopaedics & Rehabilitation. He currently practices at Slocum Center for Orthopedics & Sports Medicine and is affiliated with Sacred Heart Medical Center at RiverBend. He treats patients with a wide range of bone and joint injuries, including sports injuries, and joint replacements and has a special interest in the treatment of fractures and complex elbow injuries. Through his affiliation with the Legacy Biomechanics Laboratory, Dr. Fitzpatrick is active in research aiming to improve fracture healing.

Daniel Fitzpatrick's talk will be during the Afternoon Session A from 1:30-2:45pm in the Beetham Family Seminar Room.

FEATURED SPEAKERS

Michael Bottlang

Director, Legacy Biomechanics Laboratory

Michael Bottlang received his PhD in Biomechanical Engineering from the University of Iowa. He has established a cutting-edge program that conducts basic research, applied research and industry collaboration. In collaboration with orthopedic surgeons, he developed a "pelvic sling" that stabilizes fractures of the pelvis to minimize internal bleeding and resulting mortality. Today, his patented device is the standard of care for pelvic fracture stabilization in over 40 countries. His team has partnered with a leading implant manufacturer a novel plating system for severe chest wall injuries. Today, this "Matrix Rib" system is used in thousands of patients per year around the world and reduces mortality and long-term morbidity associated with crushed chest walls.

Michael Bottlang's talk will be during the Afternoon Session A from 1:30-2:45pm in the Beetham Family Seminar Room.

Kiya Movassaghi

Plastic Surgeon, Movassaghi Plastic Surgery

Kiya Movassaghi, MD, FACS, completed his medical and surgical training at Harvard Medical School. His practice focuses on cosmetic and reconstructive plastic surgery. He also received his DMD at Harvard Dental School, where he graduated magna cum laude. He followed this degree with a residency in maxillofacial surgery at Massachusetts General Hospital. Dr. Movassaghi is a Clinical Assistant Professor of Plastic Surgery at Oregon Health & Science University's School of Medicine in Portland and is well versed in the latest techniques including laser and endoscopic procedures with minimal scarring, having authored numerous publications in leading scientific and plastic surgery journals. He has a special interest in cosmetic surgery of the face and body including body contouring, facial rejuvenation, nasal surgery, and breast surgery.

Kiya Movassaghi's talk will be during the Afternoon Session A from 1:30-2:45pm in the Beetham Family Seminar Room.

FEATURED SPEAKERS

Leah Wilson

Assistant Professor for the Department of Medicine, Division of Endocrinology, School of Medicine, Oregon Health & Science University

Leah M. Wilson, MD, is an Assistant Professor for the Department of Medicine, Division of Endocrinology. She is originally from Alaska and attended undergraduate at Washington State University followed by medical school at the University of Washington. She completed her Internal Medicine residency, Chief residency and Endocrinology fellowship at OHSU. She is actively engaged in clinical research focused on diabetes technologies for patients with type 1 diabetes including automated insulin delivery systems and smartphone-based decision support applications, and treats patients with type 1 diabetes, type 2 diabetes, gender dysphoria, osteoporosis and other endocrine conditions.

Leah Wilson's talk will be during the Afternoon Session A from 1:30-2:45pm in the Beetham Family Seminar Room.

Morgan Giers

Assistant Professor for Chemical, Biological, and Environmental Engineering, Oregon State University

Morgan Giers' work focuses on predicting treatment outcomes for intervertebral disc (IVD) regenerative and surgical therapies; utilizing MRI, image processing, mathematical modeling, tissue engineering, drug delivery, and surgery to study transport phenomena in vivo; studying potential molecular and biomechanical targets for IVD regeneration in the context of the nutrient-deprived human IVD. She holds a Ph.D. in Biomedical/Medical Engineering from Arizona State University and completed her postdoctoral fellowship at Barrow Neurological Institute.

Morgan Giers' talk will be during Afternoon Session B from 1:30-2:45pm in Seminar Room 156-158.

Teresa Rapp

Assistant Professor for the Department of Chemistry and Biochemistry, University of Oregon

Teresa Rapp trained as an inorganic chemist with expertise in photocleavable ruthenium compounds with applications spanning protein engineering and biomaterial design. She completed her postdoctoral training at the University of Washington as a Washington Research Foundation Postdoctoral Fellow with the DeForest Lab in Chemical Engineering, where she advanced next generation photochemistries for biomaterial applications. She earned her Ph.D. in Chemistry from the University of Pennsylvania in Prof. Ivan Dmochowski's laboratory, where she innovated several new ruthenium-based photochemistries. Through a collaboration with Prof. Jason Burdick, she harnessed these chemistries to create rapidly degradable hydrogels, as featured in her Cover Article for Cover in Chemistry – *A European Journal.*

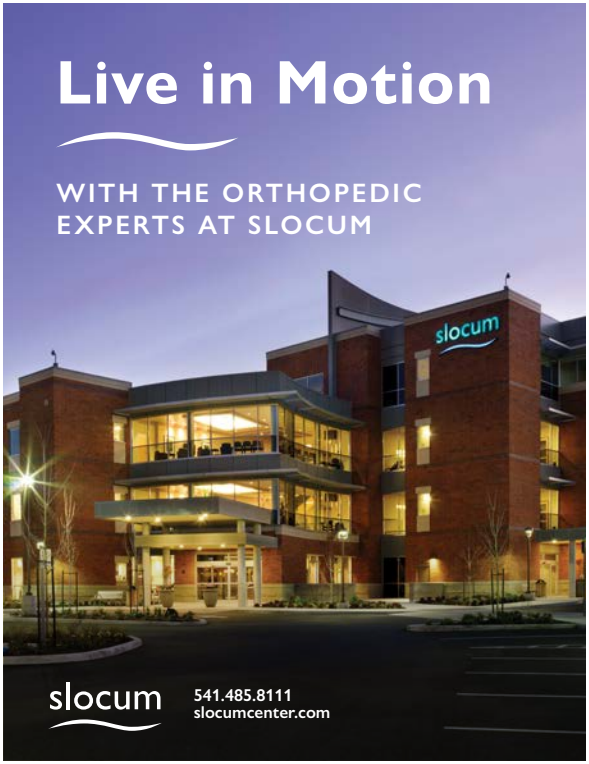
Teresa Rapp's talk will be during Morning Session B from 10:30am-12:00pm in Seminar Room 156-158.

Lei Wang

Reasearch Assistant Professor of Biomedical Engineering, School of Medicine, Oregon Health & Science University Knight Cancer Institute

Lei Wang's research focus is developing Near-Infrared fluorescent small molecule contrast agents with inherent tissue targeting properties (cancer, nerve, etc.) for clinical translation to Fluorescence-guided surgery, as well as fluorescently labeled therapeutics for assessment of drug engagement and efficacy for personalized medicine. He holds a Ph.D. in Organic Chemistry from Portland State University and completed his postdoctoral fellowship at Oregon Health & Science University.

Lei Wang's talk will be during Afternoon Session B from 1:30-2:45pm in the Seminar Room 156-158.



EXCELLENCE AWARD NOMINATIONS

Morning Session A from 10:30-12pm in the Beetham Seminar Room

The OBS Planning Committee is pleased to present the finalists for the Excellence in Research award, who will present their research during Morning Session A from 10:30-12pm in the Beetham Seminar Room. These presenters represent the top-scoring of over 115 abstracts submitted by students or trainees. A judging panel will select the award winner based on their presentations to receive a $200 prize, which will be announced during the closing session.

In addition to the Excellence in Research Award, prizes will be awarded to students or trainees for the best lightning talk presentation and best poster presentations. All awards will be announced during the closing session.

Yan Carlos Pacheco
Graduate Student, University of Oregon
"Hyaluronic Acid Hydrogels Aid in BMP-2 Mediated Bone Formation Subcutaneously"

Krista Habing
Graduate Student, Oregon Health & Science University
"Regenerative Engineering and Rehabilitation in Musculoskeletal Injury-Considering Age"

Sruthi Ranganathan
Graduate Student, University of Oregon
"Bone-binding PEG-4MAL microparticles for a targeted therapeutic approach to treating post-traumatic osteoarthritis"

Angel-Rose Villegas
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Cynthia Alcazar
Graduate Student, Oregon Health & Science University
"Regenerative Engineering of Complex Extremity Trauma"

ENOSI THERAPEUTICS

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BIOENGINEERING TALKS SELECTED FROM ABSTRACTS

Bioengineering Session 1
Morning Session B, 10:30-12:00, Seminar Room 156-158

Nima Ahmadkhani, Graduate Student at Oregon State University
"Advancing Cryopreservation: Simultaneous High-Throughput Screening of Cell Membrane Permeability and Toxicity for Discovery of Novel Cryoprotective Agents"

Tristan Hormel, Postdoctoral Fellow at Oregon Health & Science University
"Wide-field and High-resolution Coupled Structural and Angiographic OCT"

Malley Gautreaux, Graduate Student at University of Oregon
"Investigating interactions between cartilage and synovial fluid in a 3D model of post-traumatic osteoarthritis"

Christian Ross, Research Assistant at Oregon Health & Science University
"Dielectrophoretic extraction and PCR amplification of nucleic acids from unaltered plasma"

Bioengineering Session 2
Afternoon Session B, 1:30-2:45, Seminar Room 156-158

Nicholas Pancheri, Graduate Student at University of Oregon
"Rupture of the anterior cruciate ligament impairs limb function, increases pain sensitivity, and induces degenerative structural changes in a translationally relevant preclinical model of post-traumatic osteoarthritis"

Conor Harris, Graduate Student at Oregon State University
"Controlling size and circularity of hydrogel beads for cell immobilization with a coaxial air device and vibrational frequency"

POSTER SESSIONS | 1ST FLOOR LOBBY

1 **Prabhat Pratap Singh Tomar - OSU/HP, Postdoctoral Fellow**
DNA in droplets: Synthetic biology on a novel digital microfluidics device

2 **Tanner Jefferson - OSU/HP, Graduate Student**
Automated Protein Synthesis and Binding Characterization on HP's DMF platform

3 **Deirdre Anderson - OHSU, Faculty**
Thrombotic response of biodegradable metals

4 **Julia Andraca Harrer - UO, Graduate Student**
Early Rehabilitation Promotes Functional Restoration of Hindlimbs Following Femoral Bone Defect Injury

5 **Alireza Asgharpour Masouleh - OSU, Graduate Student**
Time-Scale Analysis of Uric Acid Enzymatic Reaction in a Microfluidic Bioreactor: A Mathematical Modeling Study

7 **Avathamsa Athirasala - OHSU, Postdoctoral Fellow**
Circulating Tumor Cells in a Vascularized Bone-on-a-chip Model Links Matrix Mineralization and Nuclear Deformation as Novel Drivers of Prostate Cancer Metastasis

8 **Noora Azadvari - UO, Graduate Student**
Predicting the cell permeability of cyclic peptides using structural features

9 **Anissa Benabbas - UO , Graduate Student**
Engineering brighter fluorescent proteins with DropSynth and machine learning methods

10 **Morrhyssey Benz - UO, Undergraduate Student**
Affinity-mediated release of interleukin-4 for immunomodulation

11 **Hans Bestel - OSU, Undergraduate Student**
Foreign Body Response to an Orthopedic Implant with a Zwitterionic Polymer Coating: In Vivo Rabbit Model Pilot Study

12 **Danielle Brasino - OHSU, Postdoctoral Fellow**
Development of a Novel, Polycarbonate Gut Microbiome-Distal Tissue Chip Platform

13 **Michael Brasino - OHSU, Postdoctoral Fellow**
Engineered Bacteria as Biosensing Probes in the Lungs

14 **Ben Burress - UO, Undergraduate Student**
Computational Design of Bone Morphogenetic Protein-2 Knuckle Binders for Fracture Regeneration

POSTER SESSIONS | BASEMENT

15 **Nicholas Calistri - OHSU, Graduate Student**
Treg-fibroblast interactions associated with PARPi resistance in murine TNBC

16 **Damien Callahan - UO, Faculty**
Acute Fatigue In Vivo Alters Single Fiber Contractile Performance in a training Dependent Manner

17 **Conner Carnahan - UO, Graduate Student**
Determining Perturbative Effects from Ambient Activity of Dynamical Systems

18 **DeShea Chasko - UO, Graduate Student**
Development of Biofabricated Models to Probe Hematopoietic Stem Cell Mobilization

19 **Li-Jing (Larry) Cheng - OSU, Faculty**
Electrochemical Enzyme-Mimic Chemosensors for Wearable Metabolite Detection

20 **Holly Day - OHSU, Graduate Student**
Development of bioinks for a 3D-printed microfluidic model to study endothelial-breast epithelial interactions

21 **Elaine deLorimier - UO, Postdoctoral Fellow**
Development of an MSC-Resolvin Therapy Targeting Inflammation in Osteoarthritis

22 **Ethan Dinh - UO, Undergraduate Student**
Leveraging machine learning to identify proteomic biomarkers of tibial bone stress reinjury

23 **Jonathan Dorogin - UO, Graduate Student**
Dual-affibody hydrogels individually tune release kinetics of immunomodulatory and osteogenic proteins

24 **Melissa Duncan - Willamette University, Undergraduate Student**
Understanding the Effects of Quadruplex Modification

25 **Madeleine Ford - UO, Undergraduate Student**
Characterization of VEGF Specific Affibodies for Use in Complex Wound Healing

26 **Jarod Forer - UO, Graduate Student**
Microcirculation Dynamics in the Rat Achilles Tendon

highlighted names indicate lightning-talk speakers

POSTER SESSIONS | BASEMENT

27 **May Fraga - OHSU, Graduate Student**
Biomimetic mineralized collagen-based biomaterial for pulp capping

28 **Cristiane Franca - OHSU, Faculty**
Perivascular Mural Cells Regulate Vascular Function in Stiff Cancer-Associated Tumor Microenvironments On-a-chip

29 **Rebecca Frederick - UO, Postdoctoral Fellow**
Peripheral Nerve Interfaces and a Tool to Predict Stimulation-Induced Neural Tissue Damage

30 **Alycia Galindo - UO, Graduate Student**
Development of a Hyaluronic Acid Hydrogel to Enhance Anisotropic Myoblast Alignment and Muscle Regeneration

31 **Juan Garcia - UO, Undergraduate Student**
Controlled Release of Granulocyte-Macrophage Colony-Stimulating Factor Through Affibody Conjugated Polyethylene Glycol Hydrogels

32 **Cassandra Gonzalez - UO, Faculty**
Modular modeling of protein-protein interaction networks

33 **Sayandeep Gupta - UO, Postdoctoral Fellow**
Large scale expression of human proteome antigen libraries in E. coli

34 **Tyler Guyer - UO, Graduate Student**
All-Trans Retinoic Acid Depletes Myeloid-Derived Suppressor Cells in a Rat Model of Musculoskeletal Trauma

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The Impact of Rehabilitation Parameters on Bone Healing Depends on Injury Size

36 **Patrick Hall - UO, Graduate Student**
High-Resolution 3D Printing of Coaxial Microfibers

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Hemocompatibility Analysis of Novel Bioinspired Coating

38 **Jake Heinonen - UO, Undergraduate Student**
Development and Preliminary Testing of a Non-Invasive Compressive Loading Model

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40 **Haylie Helms - OHSU, Graduate Student**
Building Tissues with Single Cell Spatial Resolution Using Microfluidic Bioprinting

41 **Michael Henderson - OHSU, Graduate Student**
Modulation of Antibody Activation via Covalently Tethered Protein-L Based Blocking Peptide

42 **Michael Henderson - OHSU, Graduate Student**
Amplifying Cancer Biomarker Release and Immune Stimulation using Ultrasound-Responsive Nanoparticles

43 **Matthew Hofmann - UO, Faculty**
Effects of hyaluronate supplementation on cartilage integrity in a 3D osteoarthritis model

44 **Andrew Holston - UO, Graduate Student**
Engineering Chimeric Receptor Histidine Kinases

45 **Ya-Mei Hu - OHSU, Postdoctoral Fellow**
Transcriptional profiling to understand the mechanisms underlying extreme non-response to the androgen receptor signaling inhibitor, enzalutamide, in men with lethal prostate cancer.

46 **Grace Hubbell - OHSU, Postdoctoral Fellow**
Development of near infrared contrast agents for non-invasive early-stage cancer detection

47 **Juliana Huizenga - OSU, Graduate Student**
Monitoring Toxicant Dose and Uptake Kinetics in Embryonic Zebrafish (Danio rerio) Using Fluorescent Spectroscopy

48 **Yanapat Janthana - UO, Undergraduate Student**
PETase

49 **Payton Jefferis - UO, Undergraduate Student**
Co-delivery of Fluorescently Labeled Immunoregulatory and Osteogenic Proteins for Localized Bone Repair

50 **Jenna Khachatourian - UO , Undergraduate Student**
Hyaluronic Acid-Alginate Hydrogels for the Treatment of Spinal Cord Injury

51 **Khadijeh Khederlou - OSU, Graduate Student**
Utilizing Nafion antifouling coatings on stencil-printed electrodes for sensitive electrochemical detection of the therapy drug carbamazepine from saliva

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POSTER SESSIONS | 2ND FLOOR BRIDGE

52 Hillary Le - OHSU, Graduate Student
Endothelial viability and permeability are affected by delta-9-tetrahydrocannabinol (THC)

53 Noel Lefevre - OSU, Graduate Student
Robust Electrochemical Signal Quantification in Saliva: Comparison of Analysis Methods

54 Haley Lohf - UO, Undergraduate Student
Exploration into the future; Neural Interfaces and Reactive Accelerated Aging

55 Mary Kylene Lowrey - OHSU, Graduate Student
Ultrasound-Controlled Genetic Manipulation of Cells and Spheroids in 3D-Bioprinted Tissue Constructs

56 Gauri Sharad Malankar - OHSU, Postdoctoral Fellow
Near infrared fluorescent probes tuned with pharmacokinetic modulators for application in two color fluorescence guided surgery

57 Madeline Martin - UO, Graduate Student
Computational Design of Affibodies Specific to Interleukin-4 with Varying Affinities

58 Evan Martindale - OSU, Graduate Student
Modality-Specific Sleep Changes in Two Models of Chronic Pain

59 Harper McClain - UO , Undergraduate Student
Exogenous Myoblast Delivery in a Collagen Scaffold for Functional Recovery from Volumetric Muscle Loss

60 Kaylee Meyers - UO, Graduate Student
Suture Accessory Sensors and Wearable Detection Device to Monitor Suture Tension During Post-Operative Physical Therapy

61 Abhinay Mishra, OHSU, Postdoctoral Fellow
Laser based-bioprinting of large 3D heterogenous tissues with vascular networks using poly(N-isopropylacrylamide) as sacrificial templates

62 Sarah Mitchell - OHSU, Graduate Student
Unveiling the potential of high conductance dielectrophoresis for organelle fragment isolation from undiluted plasma during necrosis driven cell lysis events

63 Jonathan Mitchell - OSU, Graduate Student
Evaluating the Performance of Transformer Models on a Broad Range of Semantic Relations

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64 **Samantha Moellmer - OHSU, Graduate Student**
Development of function-blocking antibodies to plasma prekallikrein for the study of the interplay between coagulation and inflammation

65 **Austin Mohler - UO, Undergraduate Student**
Evaluation of a Multi-Axial Shear Sensor Using a Multi-Layer Perceptron Model

66 **Marcus Mullen - UO, Undergraduate Student**
An Anisotropic Hydrogel for Guiding Cell Alignment

67 **Shelby Nicholas - OHSU, Undergraduate Student**
Collection of bacterial membrane vesicles using dielectrophoresis as a novel biomarker detection technique.

68 **Kelly O'Neill, UO, Graduate Student**
Hydrogel surface coatings for tailored cell attachment onto melt electrowritten (MEW) flat and tubular scaffolds for tissue engineering applications

69 **Ethan Oseas - OHSU, Graduate Student**
Aligned Nanofibrillar Collagen Scaffolds Promote Repair Schwann Cell Phenotype for Peripheral Nerve Regeneration

POSTER SESSIONS | ROOM 106-107

71 **Diana Ostojich - UO, Graduate Student**
3-D Direct Laser Written Intraneural Microelectrode Arrays

72 **Simon Pauken - OSU, Undergraduate Student**
Inflection Point Analysis of Rabbit EDL Tendon for Validating Long-Term Viability of a Passive Force-Amplifying Implant

73 **Lily Pham - OHSU, Undergraduate Student**
Engineering Biodegradable Ultrasound-Responsive Nanoparticles

74 **Frank Pittman - UO, Graduate Student**
Shifting the balance of inflammatory and pro-resolving lipid mediators in volumetric muscle loss (VML) injury

75 **Grace Privett - UO, Graduate Student**
Skeletal Muscle Fiber Stiffness is Altered by Age and Fatigue and May Depend on Activation Status

76 **Austin Ricci - UO, Graduate Student**
Patellar Tendon Active Stiffness Is Altered By Fatigue In A Sex Dependent Manner

77 **Austin Ricci - UO, Graduate Student**
Acute Fatigue In Vivo Alters Single Fiber Contractile Performance in a training Dependent Manner

78 **Guilherme Rocha - UO, Postdoctoral Fellow**
Reproducible 3D-bioprinting of Streptococcus mutans to create model oral biofilms

79 **Teagan Rocheville-Higgins - OSU, Undergraduate Student**
Parylene-coated 3D-Printed Microneedle Arrays

80 **Sinan Sabuncu - OHSU, Postdoctoral Fellow**
Background Free Ultrasound Imaging using Blinking Nanoparticles

81 **Jordan Sandler - OHSU, Undergraduate Student**
The Effect of PKC Inhibitors on Procoagulant Platelets

82 **Shelby Santos - OHSU, Graduate Student**
Investigating in the LC8 Protein Hub via Molecular Dynamics

83 **Kevin Schilling - OHSU, Postdoctoral Fellow**
Enhancing Immunofluorescence Labeling of Spheroids Embedded in Thick Intact 3D Matrices via Microwave Irradiation

POSTER SESSIONS | ROOM 106-107

85 **Nikita Sehgal - OHSU, Graduate Student**
Developing Ultrasound-Responsive Dendrimer Complexes for Precision Cancer Gene Therapy

86 **Lana Senten - OSU, Undergraduate Student**
Comparison of anchoring methods for nucleic acid capture sequences on nitrocellulose for effective target hybridization

87 **Baila Shakaib - UO, Graduate Student**
Exploring Less invasive therapeutic devices and mechanisms for Keratoconus.

88 **Delaney Shea - OHSU, Graduate Student**
Investigating the cellular uptake and cargo delivery of engineered dual-labeled bacterial membrane vesicles in vitro

89 **Spencer Siegel - UO, Undergraduate Student**
Synthesis of Allylated Alginate for Applications in Microfluidics and Stem Cell Research

90 **Zachary Sims - OHSU, Faculty**
A Masked Image Modeling Approach to CyCIF Panel Reduction and Marker Imputation

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An engineered collagen-binding fusion protein to improve localized delivery of BMP-2 for bone regeneration

92 **Mauricio Sousa - OHSU, Postdoctoral Fellow**
Biomimetic regulation of osteoclastogenesis by engineered bone on-a-chip

93 **Sanique South - UO, Postdoctoral Fellow**
Predicting Therapeutic Potential of Human Mesenchymal Stromal Cells for Optimized Post-traumatic Osteoarthritis Treatment Efficacy

94 **Zachary Stevenson - UO, Graduate Student**
High-Throughput Targeted CRISPR Screens Utilizing TARDIS in Caenorhabditis elegans

95 **Ella Stimson - OHSU, Graduate Student**
Detection of cancer-associated protease activity using a multi-modal electrokinetic platform

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96 **Lia Strait - UO, Graduate Student**
Effects of Prehabilitation Exercise on Segmental Defect Bone Healing

97 **Cameron Sugden - OSU, Graduate Student**
Microfluidic UV-C Treatment of Human Milk to Inactivate Pathogens

98 **Justin Svendsen - UO, Graduate Student**
Characterization of Affinity-based Protein Delivery Systems for Amplifying Angiogenesis

99 **Dani Szafran - OHSU, Graduate Student**
Oral administration of near infrared nerve-specific imaging probes for fluorescence guided surgery

100 **Yong How Tan - OHSU, Graduate Student**
Aligned Decellularized Skeletal Muscle Extracellular Matrix for Muscle Regeneration

101 **Yong How Tan - OHSU, Graduate Student**
Extracellular Matrix Collagen Scaffolds with Tunable Biophysical Properties Drive Endothelial Inflammatory Phenotype, Myogenesis and Osteogenesis

102 **Max Tenenbaum - UO, Undergraduate Student**
Polydimethylsiloxane Casting: The Preferred Method for Encapsulating Neural Interface Devices

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POSTER SESSIONS | ROOM 108

103 **Rachel Thompson - OSU, Graduate Student**
Machine Learning Distinguishes Phenotypes of Human Intervertebral Disc Degeneration Using Magnetic Resonance Imaging, Pain, and Histological Metrics

104 **Maggie Trail - UO, Undergraduate Student**
Bone-like organoids for use as an in-vitro model system of vascularized bone

105 **Sofia Vignolo - OHSU, Graduate Student**
An engineered model to elucidate molecular clutch mechanisms of mechanotransduction during bone nanoscale mineralization

106 **Jacob Villa - UO, Clinician**
Assembly Program for a Stacked 3D Microelectrode Array

107 **Natanya Villegas - UO, Graduate Student**
Targeted Enrichment of Synthetic Genes to Enable Proteome Scale Assays

108 **Iman von Briesen - UO, Graduate Student**
The MEWron: Transforming biomedical research with an affordable, open-source high-resolution printing platform

109 **Jason Ware - OHSU, Graduate Student**
Manipulation of Protein Aggregates using Dielectrophoresis in a Microfluidic Device

110 **Tim Wheeler - UO, Postdoctoral Fellow**
Machine-learning optimization of volumetric bioprinting using randomly-generated 3D extrusion shapes

111 **Sean Worrall - UO, Undergraduate Student**
Conductive coatings to improve neural stimulation devices

112 **Rubiya Yasmin - UO, Graduate Student**
Chronic Stimulation of Rat Motor Cortex with Amorphous Silicon Carbide Microelectrode Arrays

113 **Yi Zhang - OHSU, Graduate Student**
Global 3'UTR Lengthening in Small-cell like Tumors?

114 **Xiaofan Zhao - OHSU, Graduate Student**
A Monocytes Single-cell Transcriptome Landscape of Donors with DNMT3A Mutations

115 **Xiyue Zhao - OHSU, Graduate Student**
iPhenoChat: Identifying phenotype-associated cell-cell communications by integrating bulk and single-cell RNA-seq

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