

# 2023 Research Interest Groups (RIGs)

Friday, February 10

10:00 AM – 2:00 PM

## RIG: Musculoskeletal Infection

Organizers: Fintan Moriarty, PhD, Edward Schwarz, PhD, Noreen Hickok, PhD, Tom Schaer, VMD, Kordo Saeed, MD, Antonia Chen, MD, MBA

Complete Voting on the 2023 ORS MSKI ICM Questions

Saturday, February 11

12:30 PM – 1:30 PM

## Mental Health Awareness and Support Initiative

Overcoming the Stigma of Mental Illness

Organizers: Kharma Foucher, PhD, Penny Atkins, PhD

After the 2022 Annual Meeting workshop on Destigmatizing Mental Illness, participants requested additional support, resources, and community to tackle these issues. Mental health challenges affect persons of all ages, ethnicities, backgrounds, levels of education, and career stages, but can be difficult to discuss openly. Our interest group is focused on continued recognition and destigmatization of mental illness in our community and sharing strategies and resources on supporting each other. Through recognition of the experience of mental illness or mental health challenges, and the benefit of sharing our personal experiences, we hope to build a community of support.

Speakers:

### *Introduction*

DEIC and WLF Mental Health Initiative

Kharma Foucher, PhD, University of Illinois at Chicago

Penny Atkins, PhD, University of Utah

Wendy Ingram, PhD

Founder and CEO

Dragonfly Mental Health

Saturday, February 11

7:00 PM – 9:00 PM

## RIG: Foot and Ankle

Organizers: William Ledoux, L. Daniel Latt, Amy L. Lenz, Karen Kruger

The Foot and Ankle RIG will advance the science underpinning foot and ankle care by promoting communication and fostering collaborations among individuals interested in foot and ankle science. The purpose is to serve as a network to facilitate the interaction between basic scientists, translational researchers, and clinicians interested in collaborating on studies of foot and ankle science.

This session will specifically focus on the biomechanics, outcomes and conditions of the foot and ankle is needed for four reasons: 1) the wide spectrum of pathology and related treatments; 2) the complex anatomy of the foot and ankle; 3) a paucity of biomechanical data; and 4) ongoing challenges in making adequate diagnoses. Discussion around these four topics is expected to ultimately lead to the improvement of clinical care of the foot and ankle patient population.

Speakers:

*Bioengineering interventions for the treatment of injury and degeneration in the ankle joint*  
Claire Brockett, PhD  
University of Leeds

*Standardizing Terminology, 3D Spatial Orientation, and Relative Positioning of the Foot and Ankle Bones: An Expert Consensus Task Force*  
Karen Kruger, PhD  
Marquette University  
and  
Amy Lenz, PhD  
University of Utah

*Poster Pitches*

## **RIG: Bone Morphometry and Beyond**

Old and new methods to understand bone cell biology

Organizers: Miguel Dias Castilho and Lilian Plotkin

Our understanding on the mechanisms by which peak bone mass is achieved and eventually lost with aging, on how diseases affect the skeleton, and on the mechanisms of action of bone preserving drugs depend on how well we can quantify the function of bone cells such as osteoblasts, osteoclasts, and osteocytes. While methods to evaluate bone cell number and function using histomorphometry are essential, complimentary new technologies also allow us to go deeper into cell and molecular biology, providing robust information to inform the underlying mechanism. The purpose of this session is to provide an overview of both traditional and state-of-the art methods to evaluate bone cell function, as well as a transparent discussion of the advantages and disadvantages of each method.

Speakers:

*Use of histomorphometry/multiplexing/spatial transcriptomics to understand bone cell biology*  
Thomas Andersen, PhD  
University of Southern Denmark

*Structural analyses at the bone tissue and cellular levels (microCT/FIB-SEM)*  
Natalie Reznikov, PhD  
McGill University

*Spatio-temporal analyses of cortical bone remodeling in vivo using 3D and 4D evaluation of the basic multicellular unit*  
David Cooper, PhD  
University of Saskatchewan

**Sunday, February 12**  
**11:30 AM – 12:30 PM**

## **Orthopaedic Research: Beyond the Lab and Into the Classroom**

Organizers: Sonia Bansal, PhD, Amy Loya, PhD, Jason Marvin, PhD

Pedagogical career paths are varied, and it is imperative that trainees and faculty in the MSK sciences have an opportunity to engage with best practices in teaching, communication, and outreach. As such, the goal of this session is to create a community of educators and educators-to-be to discuss pedagogical advances, inclusive teaching strategies, justice-focused curricula, and professional development.

Speakers:

*Teaching Faculty Roles at R1 Institutions*  
Lauren Heckelman, MS  
Columbia University

*Synergistically Teaching and Researching as a Trainee*  
Christopher Panebianco, PhD  
University of Pennsylvania

*“Scientist Does It Because It’s Amusing” Research and Teaching Outside of an R1 Institution*  
John Drazen, PhD  
Fairfield University

**Monday, February 13**  
**12:15 PM – 1:45 PM**

## **RIG: Bridging Disciplines to find Solutions in Osteoarthritis**

From Genetics to Mechanics: Expanding Our Outlook on OA Target Discovery

Organizers: Rachel Miller, PhD, Arin K. Oestreich, PhD

Osteoarthritis (OA) as a complex heterogeneous disease involving multiple connective tissues and organ systems. This complexity requires an interdisciplinary approach to address the substantial challenges for

developing new solutions to treat and prevent OA. The goal of this program is to leverage interdisciplinary strengths to stimulate and propose new strategic scientific approaches that exist at the interface between disciplines. The discussion theme will focus on the molecular and mechanical signatures of OA and integrate knowledge of genetic, cellular, and gait mechanics to devise targeted preclinical treatment strategies. This interdisciplinary consortium will bring together experts from different fields to discuss critical molecular and mechanical drivers of disease. Finally, this group will provide an opportunity for basic and clinical researchers to discuss innovative approaches to treating OA.

Speakers:

*Deciphering pathways governing susceptibility to osteoarthritis*

Mick Jurynek, PhD  
University of Utah

*Pivotal roles of pericellular matrix in cell-matrix cross-talk and disease initiation*

Lin Han, PhD  
Drexel University

*In vivo biomechanics of the ACL and patellar tendon during dynamic activities and their roles during knee joint loading*

Zoë Englander, PhD  
Duke University

*A machine learning approach to investigate the role of gait and physical activity in knee osteoarthritis progression*

Kerry Costello, PhD  
University of Florida

**Monday, February 13**

**4:30 PM – 6:00 PM**

## **RIG: Bone Quality**

Moving the Concept of Bone Tissue Quality to the Clinic

Organizers: Jeff Nyman, PhD, Chris Hernandez, PhD

The goal of this RIG is to discuss how the quality of a person's bone tissue can be clinically assessed in a way that adds value to the current diagnosis of osteoporosis. Participants will learn about the determinants of bone's ability to resist fracture, how current clinical practice (DXA and FRAX) fall short in accurately predicting a patient's fracture risk, the difference between bone toughness and bone strength, recent advances in the translation of laboratory-based measurements of bone quality to the clinic, and the importance of the organic matrix to whether an individual is at risk of a fragility fracture. The speakers have a background in mechanics of materials and will be encouraged to convey concepts for a general audience that includes biologists and clinicians.

Speakers:

*Determinants of Bone's Resistance to Fracture*

Chelsea Heveran, PhD  
Montana State University

*Contribution of Collagen Impairment to a Loss in Bone Toughness*

Claire Acevedo, PhD  
University of Utah

*Mechanisms of Bone Fracture Toughness in Brittle Bone Disease*

Alessandra Carriero, PhD  
The City College of New York

*Translatable Methods to Measure Bound and Pore Water in Bone*

Rachel Suowiec, PhD  
Indiana University

**RIG: Stem Cells**

From Basic Stem Cell Biology to Regenerative Therapies in Orthopedics

Organizers: Wan-Ju Li, PhD, Naoki Nakayama, PhD, Johnny Huard, PhD

Stem cells are a key player in tissue development and regenerative medicine applications; therefore, to understand musculoskeletal development and diseases and harness the potential of stem cells for orthopedic therapies, it is crucial for ORS members to share their latest findings and knowledge of stem cell research in the community of orthopedics. The purposes of this symposium are 1) to bring researchers together to form the research interest group of stem cells and musculoskeletal regenerative medicine, 2) to create a platform for stem cell scientists in ORS to share their research findings and collaborate on projects, and 3) to serve as an educational occasion for ORS members learning the latest knowledge and development of stem cell research and their applications in orthopedics.

Speakers:

*In vitro embryology using pluripotent stem cells for cartilage tissue engineering*

Naoki Nakayama, PhD  
Steadman Philippon Research Institute

*Epigenetic regulation of stem cell renewal and differentiation*

Nidhi Bhutani, PhD  
Stanford University

*Cell therapy for augmentation of rotator cuff tendon healing*

Scott Rodeo, MD  
Hospital for Special Surgery

**RIG: Multi-Organ System Crosstalk**

## Understanding the Role of Multi-organ Crosstalk in Knee Joint Health, Disease and Repair

Organizers: Isabel Amado, Thomas Hodgkinson, PhD, Farshid Guilak, PhD

The Multi-Organ System Crosstalk RIG will advance the science underpinning knee joint care by promoting communication and fostering collaborations among individuals interested in knee joint science. The purpose is to serve as a network to facilitate the interaction between basic scientists, translational researchers, and clinicians interested in collaborating on studies of multi-organ system crosstalk science.

This session will specifically focus on the multi-organ crosstalk in knee joint health, disease and repair from the molecular and biomechanics point of view, in order to understand better the mechanisms of disease and the development of new treatments for joint repair is needed for the following reasons: 1) the wide spectrum of pathology and related treatments; 2) the complex multi-organ nature of the joints; 3) ongoing challenges in the treatment of multifactorial joint conditions.

Discussion around these four topics is expected to ultimately lead to the improvement of clinical treatment of the knee joints.

Speakers:

*Leveraging tendon developmental mechanisms for treatment strategies*

Catherine Kuo, PhD

University of Maryland

*Role in fat in Osteoarthritis*

Kelsey Collins, PhD

Washington University in St. Louis

*A role for osteocytes in post-traumatic and age-associated osteoarthritis*

Tamara Alliston, PhD

University of California San Francisco