



**48th International
Musculoskeletal Biology Workshop
Sun Valley, Idaho
July 25 - 28, 2019**

New Approaches to Musculoskeletal Tissue Regeneration, Quality, and Targeting

Scientific Agenda

Wednesday, July 24

3:00 PM – 5:30 PM

Registration

Thursday, July 25

7:00 AM-8:00 AM

Breakfast

8:00 AM–8:10 AM

Welcome

8:10 AM–9:15 AM

Plenary Session: The Remodeling in Bone (RIB) Award and Presentation

Rib Awardee: David Burr, PhD, Indiana University School of Medicine

How Basic Science Can Result in Clinical Insights

9:30 AM-10:00 AM

Blue Ribbon Sun Valley Posters

Chair: Teresita Bellido, PhD, Indiana University

Disruption of LINC Complex in Stem Cells Results in Decreased Osteogenesis and Trabecular Architecture

Scott Birks, *University of Boise*

Regulation of Tendon Formation by Ca²⁺ Signaling Through CaV1.2 L-type Voltage-gated Calcium Channel

Chike Cao, PhD, Weill Cornell Medicine

Disruption of Notch Signaling Targeted to the Myeloma Bone Marrow Microenvironment Simultaneously Inhibits Tumor Growth and Prevents Bone Loss Without Inducing Gut Toxicity

Adam Ferrari, BS, MS, Indiana University School of Medicine

The Fibrodysplasia Ossificans Progressiva-causing ACVR1[R206H] and ACVR1[R258G] Mutations Exhibit Distinct Skeletal Phenotypes In Neonatal Mice

Lily Huang, Regeneron Pharmaceuticals, Inc.

Isolation of Differentially Activated Tendon Cell Populations

Anne Nichols, PhD, University of Rochester

10:15 AM–12:00 PM

Session: Tendon Biology and Disease

Chair: Alayna Loiselle, PhD, University of Rochester Medical Center

Mechanisms of Tendon Regeneration

Alice Huang, PhD, Icahn School of Medicine at Mount Sinai

Cellular Basis of Tendon Regeneration

Alayna Loiselle, PhD, University of Rochester Medical Center

Engineering Tissue Integration

Helen H. Lu, PhD, Columbia University

7:30 PM-8:00 PM

Blue Ribbon Sun Valley Posters

Chair: Alexander Robling, PhD, Indiana University

Effects of Diet Alterations, With or With Out Gut Microbial Transplants, on Bone Strength and Density

Sarah Little, MS, Texas A&M University

Sclerostin Antibody Rescues Hypophosphatemia and Increases Bone Mass in Hyp Mouse Model

Ryan Ross, PhD, Rush University Medical Center

The Role of AGEs Accumulation and RAGEs Signaling in Intervertebral Disc Degeneration

Simon Tang, PhD, Washington University in St Louis

IL-4 is Protective Against Murine Post-Traumatic Osteoarthritis

Ericka von Kaeppler, BS, Stanford School of Medicine

The Primary Cilium and Osteoclastogenesis

Michael Sutton, BSE, MS, Columbia University

8:00 PM–10:00 PM

Poster Session

(See poster list in the Agenda Book)

Friday, July 26

7:00 AM – 8:00 AM

Breakfast

7:30 AM – 8:00 AM

Regeneron Breakfast Session

Cracking the Code of Rare Diseases: Understanding Mechanisms and Developing Therapies

Presenter: Aris Economides, PhD

8:00 AM–9:00 AM

ASBMR/Harold M. Frost Young Investigator Awards Presentations

Chair: Teresita Bellido, PhD, Indiana University

Identification of a Novel Periosteal Stem Cell Population that Mediates Intramembranous Bone Formation

Shannon Debnath, PhD, Weill Cornell Medicine, Cornell University

Single and Combinatorial Gene Therapy Strategies for Treatment of Post-Traumatic and Genetic Forms of Osteoarthritis

Matthew Grol, PhD, Baylor College of Medicine

Deletion of the Mitochondrial Deacetylase Sirt3 Suppresses Osteoclast Fusion and Increases Bone Mass in Old Mice

Ha-Neui Kim, PhD, University of Arkansas for Medical Sciences

9:15 AM–12:00 PM

Session: Major Methodologies: Material Properties and Tissue Quality - State of the Art

Chair: David Burr, PhD, Indiana University

Introduction – What are the Physical Attributes of Bone Tissue Properties?

David Burr, PhD, Indiana University

Measuring Bone's Structure and Mechanical Behavior at Multiple Length Scales

Elizabeth Zimmerman, PhD, Shriners' Hospital for Children

Measuring Multi-Scale Relationships between Bone Structure, Chemistry and Function and Their Importance to Skeletal Fragility

Virginia Ferguson, PhD, University of Colorado

Does Loss and Modification of Collagenous and Non-Collagenous Proteins Affect Fracture Risk? Tools, Assays and Disease Models

Deepak Vashishth, PhD, Rensselaer Polytechnic Institute

Reducing Fracture Risk by Acellular Manipulation of Bone Tissue Properties

David Burr, PhD, Indiana University

1:00 PM – 2:30 PM

Career Development Workshop

Career Transitions: Planning and Negotiating for Career Advancement

Marjolein van der Meulen, PhD, Cornell University, Chair

Career Transitions: Planning and Negotiating for Career Advancement

- Mentoring: including transition from mentee to mentor
- Resources: start up and facilities, budgets, personnel
- Personnel: staffing a lab including recruiting graduate students, technicians & staff, postdocs
- PI vs team science: maintaining your own projects and collaborating successfully
- Transition considerations and concerns: intangibles and other considerations.
- Transitions within industry

6:00 PM – 8:00 PM

Awards and Recognition Banquet

Saturday, July 27

7:00 AM – 8:00 AM

Breakfast

7:30 AM – 8:00 AM

Ultragenyx Breakfast Session

Understanding Bone Remodeling in XLH: Insight into Restoring Phosphate Homeostasis

Presenter: Javier San Martin, MD

8:00 AM–9:00 AM

ASBMR/Harold M. Frost Young Investigator Awards Presentations

Chair: Alexander Robling, PhD, Indiana University

Serum Bone-Derived Extracellular Vesicles are Associated with Bone Loss with Antiretroviral Therapy in Adults with HIV

Erika Marques de Menezes, PhD, University of California - San Francisco

Innervation Controls Epiphyseal Stem Cell Niche Performance

Phillip Newton, PhD, Karolinska Institute

Intra-articular Ablation of Periostin Attenuates Post-traumatic Osteoarthritis in Mice via Canonical Wnt and NFkB Pathways

Muhammad Farooq Rai, PhD, Washington University in St. Louis School of Medicine

9:15 AM–12:00 PM

Session: Epigenetics and Musculoskeletal Disease

Chair: Regis J. O'Keefe, MD, PhD, Washington University

Brief Overview of Epigenetics

Regis J. O'Keefe, MD, PhD, Washington University

Histone Deacetylase 3 in Cartilage Development and Osteoarthritis

Jennifer J. Westendorf, PhD, Mayo Clinic

Defining DNMT3b and Downstream Targets in the Pathogenesis of Osteoarthritis

Regis J. O'Keefe, MD, PhD, Washington University

Genome-wide DNA Methylation Changes in Mice under Simulated Microgravity Conditions

Mario Fraga, University of Oviedo

1:00 PM – 2:30 PM

Career Development Workshop: Bringing Discoveries to Market: Navigating the FDA

Chair: Jose Moreno, PhD, FDA

The workshop will provide the audience with an overview of the various mechanisms available to obtain FDA feedback regarding the potential regulatory pathway ahead for any products resulting from their research efforts. This information is of special interest for researches applying to the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funding programs, where such regulatory information can have a larger impact in the funding process. Attendees will gain key knowledge regarding the current regulatory pathways for device, drug, biological and combination products, and the mechanisms available to present the results of their research efforts to FDA.

7:30 PM–9:30 PM

Session: Rare Diseases of Phosphate Handling and Tissue Mineralization: Too Much or Too Little

Chair: Javier San Martin, MD, Ultragenyx, Inc.

Introduction to Phosphate Metabolism

Javier San Martin, MD, Ultragenyx, Inc.

From Therapeutics Target Identification to Drug Development, with an Anti-FGF23 Antibody, Burosumab

Javier San Martin, MD, Ultragenyx, Inc.

Targeting a Unique Pathophysiology for Improved Outcomes in X-linked Hypophosphatemia

Thomas Carpenter, MD, Yale University

Multiple Osteochondroma and Fibrodysplasia Ossificans Progressiva: Two Distinct Pediatric Disorders, One Common Therapeutic Target

Maurizio Pacifici, PhD, Children's Hospital of Philadelphia

Sunday, July 28

7:00 AM-8:00 AM

Breakfast

7:50 AM – 8:00 AM

ORS Membership Presentation

Presenter: Chris Hernandez

8:00 AM–9:00 AM

ASBMR/Harold M. Frost Young Investigator Awards Presentations

Chair: Teresita Bellido, PhD, Indiana University

Vitamin D Receptor Signaling Prevents the Adverse Actions of Glucocorticoid Excess in Bone, Skeletal Muscle, and the Heart, by Interfering with the AtroGene Pathway

Amy Sato, PhD, Indiana University School of Medicine

Could Many Non-Contact Anterior Cruciate Ligament Injuries be a Result of Fatigue-Damage Accumulation?

Stephan Schlecht, PhD, University of Michigan

Osteocalcin Deficiency Rescues Glucose Metabolism in a Model of Severe Osteogenesis Imperfecta

Josephine Tauer, PhD, McGill University

Stimulation of Piezo1 by Mechanical Signals Promotes Bone Anabolism

Jinhu Xiong, PhD, University of Arkansas for Medical Sciences

9:15 AM-12:00 PM

Session: Musculoskeletal Regenerative Medicine Meets the Clinic

Chair: Lisa Larkin, PhD, University of Michigan

Bridge Enhanced ACL Repair: from Concept to Clinical Trial

Braden Fleming, PhD, Rhode Island Hospital/Warren Alpert Medical School of Brown University

Rotator Cuff Healing: Gaps in Knowledge, Progress and Opportunities

Kathleen Derwin, PhD, Cleveland Clinic

A Tissue Engineering Approach to Repair Volumetric Muscle Loss

Lisa Larkin, PhD, University of Michigan

7:30 PM – 9:30 PM

Session: Targeting Musculoskeletal Tissues

Chair: Brendan Boyce, MD, University of Rochester Medical Center

Introduction to Targeting Strategies

Brendan Boyce, MD, University of Rochester Medical Center

Targeting Chloroquine and Hydroxychloroquine to Bone to Increase Bone Mass

Brendan Boyce, MD, University of Rochester Medical Center

Genome Engineering of New Stem Cell Therapies for Arthritis

Farshid Guilak, PhD, Washington University

Bone-targeting Bortezomib in Pre-clinical Myeloma Studies

Lianping Xing, PhD, University of Rochester Medical Center

General contributions provided to the workshop by:



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