



MINNESOTA
MEDICAL
ASSOCIATION

PROGRAM
AIMM/ASBMR JOHN HADDAD
YOUNG INVESTIGATORS MEETING

April 4 – 6, 2017

SNOWMASS, COLORADO

The purpose of this conference is to bring scientists and clinicians together in a format of open verbal communication that permits the translation of basic science advances into clinical concepts. Physicians and scientists working in the field of bone and mineral metabolism are encouraged to participate.

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint providership of the Minnesota Medical Association and the Advances in Mineral Metabolism. The Minnesota Medical Association (MMA) is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The Minnesota Medical Association designates this live activity for a maximum of *22.5 AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

OBJECTIVES

- Learn about fundamental epigenetic changes as mesenchymal stem cells transition to differentiated cell states and the impact of epigenetic regulation on health and disease.
- Integrate new information on the mechanisms that drive bone cancer pain and how this knowledge is being translated into mechanism based therapies to better treat and control bone cancer pain.
- Examine recent insights in pathophysiology, diagnosis, and therapy of disorders of phosphate and magnesium metabolism.
- Gain new perspectives on the relative contributions of estrogen vs. testosterone towards regulating bone metabolism.
- Understand the geographical, environmental, ethnic, and genetic factors that influence varying risks of osteoporosis and fracture rates around the globe.
- Discuss recent advances in understanding the function and biology of the calcium-sensing receptor.
- To consider the inclusion of the human skeletal components in art across the ages, and the associated symbolism.
- Attendees will participate in discussion of clinical management of several skeletal diseases.
- Facilitate the development of collaborative ideas and research.
- Gain knowledge in a broad array of topics relevant to bone biology and disease.
- These talks will facilitate the development of collaborative ideas and research.
- Advance understanding of topics important to the science of mineral metabolism and the study of human disease.
- Recognize myriad approaches exist for pursuing an academic career path.

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AIMM Founders Lecture Fund

AIMM/ASBMR John Haddad Young Investigators

Amel Dudakovic, PhD	Mayo Clinic
Anyonya Guntur, PhD	Maine Medical Center Research Institute
Amira Hussein, PhD	Boston University
Zixue Jin, PhD	Baylor College of Medicine
Courtney Karner, PhD	Duke University
Chad Novince, DDS, PhD	Medical University of South Carolina
Kelly Roszko, MD, PhD	Massachusetts General Hospital
David Scott, PhD	Monash University
William Thompson, PhD	Indiana University
Mengrui Wu, MD, PhD	Harvard School of Dental Medicine

AIMM/ASBMR JOHN HADDAD YOUNG INVESTIGATORS MEETING
PROGRAM
April 4 – 8, 2017

TUESDAY, April 4

2:30 – 6:00pm REGISTRATION

3:55 – 4:00pm **Introduction and Welcome**
Christopher Kovacs, MD, AIMM President

Session 1 Basic and Applied Epigenetic Biology
Chairs: Steve Harris, PhD and Marc Wein, MD, PhD

4:00 – 4:45pm Jonathan Gordon, PhD (University of Vermont)
“Regulation of mesenchymal cell fate by coordinated actions of epigenetic regulators and transcriptional networks”

4:45 – 5:30pm Andre Van Wijnen, PhD (Mayo Clinic)
“Epigenetic Control of Bone

5:30 – 5:45pm break

5:45 – 6:30pm Mark Meyer, PhD (University of Wisconsin)
“Epigenetic consequences and endocrine control points revealed by CRISPR in vitamin D metabolism in vivo”

6:30 – 7:00pm Young Investigator – Amel Dudakovic, PhD (Mayo Clinic)
“Control of skeletal development by the histone methyltransferase Ezh2”

7:45 – 10:00pm WELCOME RECEPTION FOR REGISTRANTS AND GUESTS

WEDNESDAY, APRIL 5

Session 2 Bone Pain and Disease

Chairs: David Roodman, MD, PhD, and Michaela Reagan, PhD

- 7:00 – 7:45am Tamara King, PhD (University of New England)
“**The effects of treadmill exercise on bone remodeling and advanced osteoarthritis bone pain in rats**”
- 7:45 – 8:30am Patrick Mantyh, PhD, JD (University of Arizona)
“**The neurobiology of bone cancer pain**”
- 8:30 – 8:45am break
- 8:45 – 9:15am Young Investigator – Chad Novince, DDS, MSD, PhD (Medical University of South Carolina College of Dental Medicine)
“**Commensal Flora, a Dynamic Osteoimmunoregulator of Skeletal Metabolism in Health**”
- 9:15 – 9:30am Discussion and Overview

9:30am GROUP PHOTO

12:00 – 1:30pm Mid-day consultations between Young and Established Investigators

- 3:00 – 4:15pm **Special Session on the Skeleton in Art** Session Chair:
Chair: Mary F. Barbe, PhD

Susan Fecho, MFA (Barton College)
“**Manifestations of the Undead: The Myth of Human Bones as Depicted in Art**”
- 4:15 – 4:30 pm break

Session 3 Phosphate and Magnesium Metabolism

Chairs: Clemens Bergwitz, MD and Brya Matthews, PhD

- 4:30 – 5:15pm Karl L. Insogna, MD (Yale)
“**Disorders of Phosphate Homeostasis**”
- 5:15 – 6:00pm Karl P. Schlingmann, MD (Universitätsklinikum Münster)
“**Magnesium in man: implications for health and disease**”
- 6:00 – 6:15pm break
- 6:15 – 6:45pm Young Investigator – Mengrui Wu, PhD (Harvard School of Dental Medicine)
“**The mechanism underlying how Gα13 signaling inhibits osteoclast differentiation and attenuates osteoporosis**”
- 6:45 – 7:00pm Discussion and Overview

7:45 – 10:00pm WELCOME DINNER FOR REGISTRANTS AND GUESTS

THURSDAY, APRIL 6

Session 4 **Young Investigator Session**

Chair: Ivo Kalajzic, MD, PhD

- 7:00 – 7:30am Young Investigator – William Thompson, DPT, PhD (Indiana University)
“Mechanical Regulation of MSC Differentiation through mTORC2/Cytoskeletal Signaling”
- 7:30 – 8:00am Young Investigator – Courtney Karner, PhD (Duke University School of Medicine)
“The role of glutaminase during osteoblast specification and differentiation”
- 8:00 – 8:15am break
- 8:15 – 8:45am Young Investigator – Anyonya Guntur, PhD (Maine Medical Center Research Institute)
“Differential glycolytic response by osteoblasts and adipocytes to meet ATP demand”
- 8:45 – 9:15am Young Investigator – Zixue Jin, PhD (Baylor College of Medicine)
“Argininosuccinate Lyase Deficiency as a Model to Study Nitric Oxide Function in Bone”
- 9:15 – 9:30am Discussion and Overview

10:30 – 12:00 Ski Race

12:00 – 1:30pm Mid-day consultations between Young and Established Investigators

3:00 – 4:00pm **Meet the Professor Session 1**

1A: Sundeep Khosla, MD (Mayo Clinic) – **The human as model organism**

1B: Andre Van Wijnen (Mayo Clinic) – **How to get the most from your data mining**

Session 5 **Sex Steroids and Bone**

Chairs: Dana Gaddy, PhD and Jonathan Lowery, PhD

- 4:30 – 5:15pm Sundeep Khosla, MD (Mayo Clinic)
“Estrogen vs Testosterone effects on bone: Mouse and human interventional studies”
- 5:15 – 6:00pm Robert Adler, MD (McGuire VA Medical Center)
Testosterone Replacement in men: Safety, Effects on Bone and Muscle, Alternatives”
- 6:00 – 6:15pm break
- 6:15 – 6:45pm Young Investigator – David Scott, PhD (Monash University)
“Obesity, muscle quality, falls and fractures in older adults”
- 6:45 – 7:00pm Discussion and Overview

7:45 – 10:00 pm Dinner Gathering for Invited Speakers and Young Investigators

7:30 – 10:00 pm AIMM Board Meeting

FRIDAY, APRIL 7

Session 6 Late-Breaking Clinical Topics
Chair: Richard Bockman, MD, PhD

- 7:00 am Marc Wein
Phosphoproteomic profiling reveals novel salt inducible kinase targets downstream of parathyroid hormone signaling in osteocytes
- 7:15am Karl Insogna
Efficacy and Safety of KRN23 in Adults with X-linked Hypophosphatemia (XLH): Data from a Phase 2 Extension Study”
- 7:30am Suzanne Jan de Beur
Effects of KRN23, An anti-FGF23 antibody, in patients with tumor-induced osteomalacia or epiderman nevus syndrome-associated osteomalacia: interim results from a phase 2 study
- 7:45am Jackie Fretz
Elevations in FGF-23 precede disruptions in either phosphate or iron homeostasis in the Ebf-1-KO mouse model of renal insufficiency
- 8:00am Chris Kovacs
Absence of calcitriol causes greater cortical bone loss and lower milk calcium during lactation, but does not impair post-lactation recovery of bone mass or strength in Cyp27b1 null mice
- 8:15am Jad Sfeir
Clinical Features of Patients with Tumoral Calcinosis: The Mayo Clinic Experience
- 8:30am break
- 8:45am Robert Adler
Future of Osteoporosis Treatment
- 9:00am Robert Gensure
Lesion-seeking bone anabolic agents to enhance fracture repair in rodent models
- 9:15am Delores Shoback
TBA

12:00 – 1:30pm Mid-day consultations between Young and Established Investigators

3:00 – 4:00pm **Meet the Professor Session 2**

2A: Clemens Bergwitz, MD (Yale) – **The kidney as master of phosphate metabolism**

2B: Douglas P. Kiel, MD (Harvard) – **Working with big data sets**

4:00 – 4:45pm Business Meeting

Session 7 Osteoporosis Genetics and Epidemiology

Chairs: Christopher Kovacs, MD and Matthew Greenblatt, MD, PhD

4:45 – 5:30pm Jane A. Cauley, PhD (University of Pittsburgh)

“Geographic and secular changes in fractures: A global perspective”

5:30 – 5:45pm break

5:45 – 6:30pm Douglas P. Kiel, MD, MPH (Harvard Medical School)

“The genetics of osteoporosis: Have we made progress?”

6:30 – 7:00pm Young Investigator – Amira Hussein Ali, PhD (Boston University School of Medicine)

“Serum Proteomic Assessment of the Progression of Fracture Healing”

7:45 – 10:00pm AWARDS DINNER FOR REGISTRANTS AND GUESTS

SATURDAY, APRIL 8

Session 8 **Late breaking basic/translational topics**

Session Chair: Nan Hatch, DMD, PhD

- 7:00am Clemens Bergwitz
Reduced Exercise Capacity of Mice with skeletal muscle specific ablation of Pi
- 7:15am Matthew Greenblatt
Novel periosteal skeletal stem cells
- 7:30am Murat Bastepe
The extra-large G protein alpha-subunit (XLas) mediates FGF23 production by maintaining FGFR1 expression and MAPK signaling in bone
- 7:45am Nan Hatch
TNAP Regulates Cranial Base Growth and Chondrocyte Maturation via Pi and MAPK
- 8:00am Martin Pellicelli
Lrp6 is a novel target of JunD and the PTH-activated α NAC transcriptional coregulator
- 8:15am Dobrawa Napierala
Phosphate stimulates secretion of mineralization-competent matrix vesicles and regulates their molecular composition
- 8:30am Steve Harris
Genomic Mapping of Enhancers, SuperEnhancers, and Enhancer RNAs Regulated by the Endogenous Bmp2 Gene in Periodontal and Bone Marrow Osteoprogenitors
- 8:45am break
- 9:00am Ebrahim Tahaei
The reduced osteogenic differentiation potential of *Nf1*-deficient osteoprogenitors is TGF β and EGFR-independent
- 9:15am Hans van Leeuwen
In vitro models to study metastases to the bone: interaction of cancer cells with osteoblasts

12:00 – 1:30pm Mid-day consultations between Young and Established Investigators

3:00 – 4:00pm **Meet the Professor Session 3**

3A: Nan Hatch, DMD, PhD (U Michigan) – **What bone(heads) can learn from teeth/the skull**

3B: Ivo Kalajzic, MD, PhD (UConn Health) – **Making the most of your *in vivo* model**

Session 9 **Calcium Sensing Receptor**

Chairs: Bart Clarke, MD and Joy Tsai, MD

4:30 – 5:15pm Jenny J. Yang, PhD (Georgia State University)
“Structural biology of receptor-mediated extracellular calcium signaling”

5:15 – 6:00pm Dolores Shoback, MD (University of California San Francisco)
**“Calcium- Sensing Receptor: Role in Endocrine Physiology
and Pathophysiology”**

6:00 – 6:15pm break

6:15 – 6:45pm Young Investigator – Kelly Lauter Roszko, MD PhD (Harvard Medical School)
**“Knock-in mouse with mutant G11 mimics human autosomal dominant
hypocalcemia and allows rescue by pharmacologic inhibitors”**

6:45 – 7:00pm Discussion and Close

SEE YOU NEXT YEAR!!!
