# ASBMR® 2017 Annual Meeting

September 8–11, 2017
Colorado Convention Center
Denver, Colorado, USA

Register now at
www.asbmr2017.org

## PRELIMINARY PROGRAM

# Join us in Denver this September!

Discover the latest in bone, mineral and musculoskeletal research and learn about new opportunities for collaboration at the ASBMR 2017 Annual Meeting! Join over 3,000 bone, mineral and musculoskeletal scientists from 70 countries around the world for more than 100 education sessions and over 1,100 poster presentations on a variety of topics.

## Find out what keeps your colleagues coming back to the ASBMR Annual Meeting!

### 2017 Scientific Program Committee

**ASBMR President**
Jane A. Cauley, DrPh, University of Pittsburgh, USA

**Program Co-Chairs**
Teresita Bellido, Ph.D., Indiana University, USA;
Kenneth Saag, M.D., MSc., University of Alabama at Birmingham, USA;
Anna Teti, Ph.D., University of L'Aquila, Italy

REGISTER NOW

# Schedule-at-a-Glance

## (Official Scientific Program Overview)

| Friday, September 8 | |
|---|---|
| 8:00 am – 9:30 am | Gerald D. Aurbach Lecture & Award Presentations |
| 9:30 am – 10:00 am | Break |
| 10:00 am – 11:30 am | Highlights of the ASBMR 2017 Annual Meeting |
| 11:30 am - 12:30 pm | Meet-the-Professor Sessions |
| 11:30 am - 12:45 pm | Grant Writing Workshop: What to Choose and How to Fund It |
| 11:30 am – 1:00 pm | Hands-on Workshops |
| 12:30 pm – 1:00 pm | Break |
| 1:00 pm – 2:00 pm | Concurrent Orals |
| 2:00 pm – 2:15 pm | Break |
| 2:15 pm – 3:30 pm | Concurrent Orals |
| 3:30 pm – 4:00 pm | Break |
| 3:45 pm – 5:00 pm | Basic Science Session: CRISPR-Cas9: Gene Editing and Beyond |
| 4:00 pm – 5:00 pm | ASBMR/ECTS Clinical Debate: Anti-resorptive Therapy During the Menopausal Transition Prevents Bone Fractures Later in Life |
| 5:00 pm – 7:00 pm | Welcome Reception & Plenary Poster Session |

| Saturday, September 9 | |
|---|---|
| 6:45 am – 8:00 am | ASBMR Networking Breakfast |
| 8:00 am – 9:30 am | Louis V. Avioli Lecture & Award Presentations |
| 9:30 am – 9:45 am | Break |
| 9:45 am – 11:00 am | Plenary Orals |
| 11:00 am – 12:00 pm | Meet-the-Professor Sessions |
| | Update on the American College of Physicians (ACP) New Osteoporosis Guidelines |
| | Increase Your Chances of Getting Published in *JBMR* |
| 11:00 am – 12:30 pm | Hands-on Workshop |
| 12:00 pm – 12:30 pm | Break |
| 12:30 pm – 2:30 pm | Poster Session I & Poster Tours |
| 2:45 pm – 4:00 pm | Symposium: Sleep, Energy Metabolism and Musculoskeletal Systems |
| | Symposium: Testosterone Treatment in Older Men |
| 4:00 pm – 4:30 pm | Break |
| 4:30 pm – 6:00 pm | Concurrent Orals |
| 6:30 pm – 8:30 pm | Basic Science Evening: The Bone Marrow Niche and Hematopoiesis |
| 6:30 pm – 8:30 pm | Clinical Evening: Treating the Treatment Gap |
| 8:30 pm – 11:30 pm | Networking Event |

REGISTER NOW

# Schedule-at-a-Glance

## (Official Scientific Program Overview)

| Sunday, September 10 | |
|---|---|
| 8:00 am – 9:30 am | 40th Anniversary Plenary Symposium |
| 9:30 am – 9:45 am | Break |
| 9:45 am – 11:00 am | Plenary Orals |
| 11:00 am – 12:00 pm | Meet-the-Professor Sessions |
| | Career Development Session: Navigating Career Pathways: How to Develop, Adjust and Sustain a Career in Bone and Mineral Health for the Long-Term |
| | ASBMR-IOF Joint Session: Reducing the Treatment Gap |
| 11:00 am – 12:30 pm | Hands-on Workshops |
| 12:00 pm – 12:30 pm | Break |
| 12:30 pm – 2:30 pm | Poster Session II & Poster Tours |
| 2:30 pm – 4:00 pm | Concurrent Orals |
| 4:00 pm – 4:30 pm | Break |
| 4:30 pm – 6:00 pm | Concurrent Orals |
| 6:00 pm – 7:00 pm | ASBMR Town Hall Meeting |
| 7:00 pm - 9:00 pm | Clinical Evening: Management and Treatment of Rare Bone Diseases |

| Monday, September 11 | |
|---|---|
| 8:00 am – 9:30 am | Concurrent Orals |
| 9:30 am – 9:45 am | Break |
| 9:45 am – 11:00 am | Plenary Orals |
| 11:00 am – 11:15 am | Break |
| 11:15 am – 12:00 pm | Late-Breaking Abstract Presentations |
| 12:00 pm – 2:00 pm | Poster Session III |
| 2:00 pm – 3:00 pm | Plenary Symposium: Bone-Muscle Interactions |
| 3:15 pm – 4:00 pm | Closing Reception |

# Plenary Lectures

## Gerald D. Aurbach Lecture

Friday, September 8 | 8:00 am – 9:30 am

### Cellular Senescence: Yin and Yang

***Judith Campisi, Ph.D., Buck Institute for Research on Aging, USA***

Aging is characterized by a plethora of degenerative diseases, including those that affect the musculoskeletal system, all of which rise with approximately exponential kinetics beginning at about the midpoint of the life span (50-60 years, in the case of humans). This concerted rise in age-related pathology supports the notion that aging is caused by basic processes that act on multiple tissues and/or the systemic milieu to disrupt the structure and function of diverse organ systems. One candidate for such a basic aging process is cellular senescence – the stress response that results in an essentially irreversible arrest of cell proliferation accompanied by a multi-factorial senescence-associated secretory phenotype (SASP). The SASP includes numerous cytokines, chemokines, growth factors, proteases and, most recently discovered, signaling lipids and damage-associated molecular patterns (DAMPs). I will discuss how these bioactive factors are a double-edged sword.

Senescent cells are induced transiently in response to tissue injury, where SASP factors can promote tissue repair and regeneration. On the other hand, senescent cells increase with age, where the growth arrest is known to be a crucial tumor suppressive mechanism that prevents the propagation of damaged or stressed cells. In addition, as senescent cells appear to be chronically present in aged tissues, the SASP appears to fuel inflammaging – the low level chronic inflammation that is a hallmark of many aging tissues. There is mounting evidence from mouse models and human tissue samples that senescent cells can indeed be both beneficial for tissue repair and regeneration, as well as detrimental, where they can drive the development multiple age-related pathologies, including, ironically, cancer. The challenges now are to understand the biology of senescent cells in sufficient detail to identify the factors they produce under both beneficial and deleterious contexts. During aging, these factors may be too diverse to target individually, in which case it may be advantageous to develop strategies to eliminate senescent cells from aged tissues.

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**About Dr. Judith Campisi**

Judith Campisi received a Ph.D. in Biochemistry from the State University of New York at Stony Brook, and postdoctoral training in cancer biology at the Dana-Farber Cancer Institute and Harvard Medical School. She joined the Boston University Medical School as an Assistant and Associate Professor before joining the Lawrence Berkeley National Laboratory as a Senior Scientist. In 2002, she started a second laboratory at the Buck Institute for Age Research, where she is a Professor. At both institutions, she established a broad program to understand the relationship between aging and disease, with an emphasis on cancer and aging. Her laboratory made several pioneering discoveries in these areas, and her research continues to challenge and alter existing paradigms. Campisi has received numerous awards, including two MERIT awards from the National Institute on Aging, and awards from the AlliedSignal Corporation, Gerontological Society of America and American Federation for Aging Research, the Longevity prize from the IPSEN Foundation, and the first international Olav Thon Foundation prize. She is an elected fellow of the American Association for the Advancement of Science, and serves on numerous national and international editorial and scientific advisory boards.

# Plenary Lectures

## Louis V. Avioli Lecture

Saturday, September 9 | 8:00 am – 9:30 am

### The Quest for Osteoporosis Mechanisms: How Far We've Come, How Much Further We Need to Go

***Stavros Manolagas, M.D., Ph.D., University of Arkansas for Medical Sciences, USA***

Life expectancy has doubled during the last 200 years, making it imperative for our field to elucidate whether skeletal involution is an inexorable accompaniment of longevity or it can be slowed by targeting molecular pathways and mechanisms of aging, so that "bone health span" can increase in tandem with lifespan. During the last 40 years, our understanding of bone biology and the pathogenesis of osteoporosis has improved dramatically thanks to basic and clinical research advances, genetic insights from humans and rodents, and newer imaging technologies. Culprits of osteoporosis are no longer a matter of speculation based on in vitro observations. Instead, they can be identified and dissected at the cellular and molecular level using genetic approaches; and their effect on distinct bone envelops and anatomic regions can be functionally assessed in vivo. The landscape of pharmacotherapies for osteoporosis has also changed profoundly with the emergence of several potent anti-resorptive drugs as well as anabolic agents, displacing estrogen replacement as the treatment of choice. In spite of these major positive developments, the optimal duration of the available therapies and their long-term safety remain matters of conjecture and some concern. Moreover, anti-resorptive therapies are used indiscriminately for patients of all ages on the assumption that suppressing remodeling is always beneficial for bone, but rebound remodeling upon their discontinuation suggests otherwise. In my lecture I will highlight the latest state of knowledge of bone-intrinsic and extrinsic mechanisms responsible for the development of osteoporosis in both sexes; differences between the mechanisms responsible for the effects of aging and estrogen deficiency; and the role of old osteocytes in the development of cortical porosity. In addition, I will highlight exciting advances towards the goal of developing drugs for several degenerative diseases of old age at once, including osteoporosis, by targeting shared mechanisms of aging.

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**About Dr. Stavros Manolagas**

Stavros C. Manolagas, M.D., Ph.D. is the Distinguished Professor of Medicine and Professor of Orthopedics at the University of Arkansas for Medical Sciences (UAMS), the Thomas E. Andreoli, M.D., MACP, Clinical Scholar Chair in Internal Medicine, Director of the Division of Endocrinology and Metabolism, Vice Chair for Research in the Department of Internal Medicine, Director of the UAMS/VA Osteoporosis and Metabolic Bone Diseases Center, and Chief of the Endocrinology Section of the Central Arkansas Veterans Healthcare System. His scholarly contributions have been recognized over the years with the induction to the Association of American Physicians in 1996; the AlliedSignal award for research on aging in 1999; the inaugural Louis V. Avioli Award of ASBMR, 2000; a Doctor Honoris Causa from the National and Kapodistrian University of Athens, Greece, 2007; the International Bone and Mineral Society (IBMS) D. Harold Copp award, 2013; and the William S. Middleton Award of the Department of Vetereans Affairs (VA) for achieving international acclaim for research accomplishments in areas of prime importance to VA's research mission, 2016.

# Symposia

*Symposia are sessions that feature three to four invited talks covering basic and/or clinical topics.*

## Friday, September 8

### Basic Science Session: CRISPR-Cas9: Gene Editing and Beyond

**3:45 pm – 5:00 pm**

**Co-Chairs:** Charles O'Brien, Ph.D., Central Arkansas VA Healthcare System, University of Arkansas for Medical Sciences, USA;
Martina Rauner, Ph.D., Medical Faculty of the TU Dresden, Germany

**The CRISPR System: Where It Came From and How It Works**
Blake Wiedenheft, Ph.D. , Montana State University, USA

**CRISPR-Mediated Control of Gene Repression and Activation**
Lei (Stanley) Qi, Ph.D., Stanford Medicine, USA

**Rapid Analysis of Gene Enhancers Using CRISPR-Cas9**
J. Wes Pike, Ph.D., University of Wisconsin-Madison, USA

## Saturday, September 9

### Sleep, Energy Metabolism and Musculoskeletal Systems

**2:30 pm – 4:00 pm**

**Co-Chairs:** Bente Langdahl, M.D., DMSc, Aarhus University Hospital, Denmark;
Jillian Cornish, Ph.D., University of Auckland, New Zealand

**Circadian Rhythms and Energy Metabolism**
Paolo Sassone-Corsi, Ph.D., University of California Irvine, USA

**Biological Basis for an Association between Sleep and Osteoporosis**
Christine Swanson, M.D., University of Colorado, USA

**Measures of Sleep and Falls, Frailty and Fractures in Older Adults**
Kristine Ensrud, M.D., M.P.H., University of Minnesota, USA

# Symposia

*Symposia are sessions that feature three to four invited talks covering basic and/or clinical topics.*

## Saturday, September 9

### Testosterone Treatment in Older Men

**2:30 pm – 4:00 pm**

**Co-Chairs:** Yumi Rhee, M.D., Ph.D., College of Medicine, Yonsei University, South Korea;
Kerri Sanders, Ph.D., Australian Catholic University, Australia

**Skeletal Effects of Testosterone Treatment**
Peter Snyder, M.D., University of Pennsylvania, USA

**Effects of Testosterone on Physical Function, Body Composition and Vitality**
Shalender Bhasin, M.D., Brigham and Women's Hospital, USA

**Testosterone Treatment in Older Men (Who Should Be Targeted, Safety Considerations)**
Fred Wu, M.D., University of Manchester, United Kingdom

## Sunday, September 10

### Plenary Symposium – ASBMR 40th Anniversary Symposium

**8:00 am – 9:30 am**

**Co-Chairs:** Jane Aubin, Ph.D., University of Toronto, Canada;
Steven Teitelbaum, M.D., Washington University in St. Louis School of Medicine, USA

**Historical Overview**
Paula Stern, Ph.D., Northwestern University, USA

**Clinical Overview**
Steven Cummings, M.D., San Francisco Coordinating Center, USA

**Basic/Translational Overview**
Jack Martin, M.D., St. Vincent's Institute, Australia

## Monday, September 11

### Plenary Symposium – Bone-Muscle Interactions

**2:00 pm - 3:15 pm**

**Co-Chairs:** Rivka Dresner-Pollak, M.D., Hadassah-Hebrew University Medical Center, Israel;
Luisa Plantalech, M.D., Hospital Italiano de Buenos Aires, Argentina

**Osteocalcin: A Bone-Derived Hormone Involved in Muscle Adaptation to Exercise**
Gerard Karsenty, M.D., Ph.D., Columbia University, USA

**Circadian Rhythms, the Molecular Clock and Skeletal Muscle**
Karyn Esser, Ph.D., University of Florida, USA

**Drug Development and Discovery in Sarcopenia**
Roger Fielding, Ph.D., Tufts University, USA

# Meet-the-Professor Sessions

Meet-the-Professor Sessions are small, informal sessions designed to provide an opportunity for meeting attendees to interact with experts in an intimate setting and discuss specific clinical and research topics.

A PDF handout will be available for download in advance of the meeting at no charge to members and meeting attendees through the mobile app and online itinerary builder.

***Please Note:*** *Tickets are not required for these sessions; however, space is extremely limited. Interested individuals are welcome to attend these sessions on a first-come, first-served basis. Room restrictions and professor preferences will dictate number of attendees.*

## Friday, September 8 | 11:30 am – 12:30 pm

BC **LRP Receptors and Wnt Signaling**
Michaela Kneissel, Ph.D., Novartis Institutes for Biomedical Research, USA

B T **Bone Marrow Fat in Health and Disease**
Beata Lecka-Czernik, Ph.D., University of Toledo College of Medicine, USA

B T **Stromal Support of Hematopoiesis**
Pamela Robey, Ph.D., National Institute of Dental and Craniofacial Research, USA

C **Diabetes and Bone**
Ann Schwartz, Ph.D., University of California, San Francisco, USA

C **Interesting Cases in Metabolic Bone Disease**
Amy Warriner, M.D., CCD, University of Alabama at Birmingham, USA

B T **Osteocyte and Mechano-transduction**
Paola Divieti Pajevic, Ph.D., MGH-Harvard Medical School, USA

B T **Gene-editing in Cells and Mice**
Mark Meyer, Ph.D., University of Wisconsin-Madison, USA

C **Screening for Atypical Femur Fractures**
Angela Cheung, M.D., Ph.D., University Health Network-University of Toronto, Canada

B T **Bone Extracellular Matrix Assembly and Mineralization**
Marian Young, Ph.D., National Institutes of Health, USA

C **How to Use Data and Specimens from the Large SOF (Study of Osteoporotic Fractures) and MrOS (Osteoporosis in Men) Studies to Do Your Research**
Steven R. Cummings, M.D., San Francisco Coordinating Center, USA;
Eric Orwoll, M.D., Oregon Health & Science University, USA;
Peggy Cawthon, Ph.D., M.D., San Francisco Coordinating Center, USA

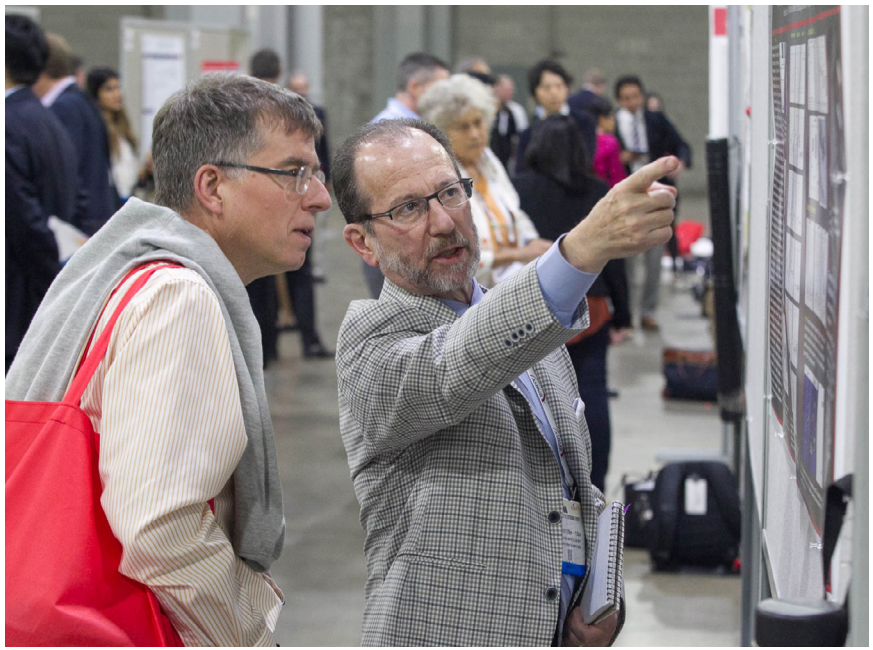
B Basic C Clinical T Translational BC Basic Science for Clinicians

# Meet-the-Professor Sessions

## Saturday, September 9 | 11:00 am – 12:00 pm

BC **Notch Signaling**
Ernesto Canalis, M.D., UConn Health, USA

C **Managing an Osteoporosis Practice in an Era of Healthcare Reform**
Robin Dore, M.D., Robin K. Dore, Inc., USA



B T **Autophagy in Bone Cells**
Charles O'Brien, Ph.D., Central Arkansas VA Healthcare System, University of Arkansas for Medical Sciences, USA

C **Screening Strategies for Young Postmenopausal Women (50-64)**
Carolyn Crandall, M.D., M.S., University of California, Los Angeles, USA

C **What's Next in the Treatment of Osteoporosis?**
Serge Ferrari, M.D., Geneva University Hospital and Faculty of Medicine, Switzerland

B T **Osteocytes in Myeloma**
David Roodman, M.D., Ph.D., Indiana University, USA

B T **Chondrocyte Biology and Osteoarthritis**
Martine Cohen-Solal, M.D., Centre Viggo Petersen, USA

B T **Aging Bone and MiRs**
Johannes Grillari, Ph.D., University of Natural Resources and Life Sciences Vienna, Austria

B T **Paracrine Actions of IL-6 Family Cytokines from Bone, Marrow and Muscle**
Natalie Sims, Ph.D., St. Vincent's Institute of Medical Research, Australia

B Basic C Clinical T Translational BC Basic Science for Clinicians

# Meet-the-Professor Sessions

## Sunday, September 10 | 11:00 am – 12:00 pm

BC **Glucocorticoids and Bone**
Mark C. Cooper, M.D., Ph.D., University of Sydney, Australia

B T **Statistical Power: Do I Have Enough Mice**
Robert Jilka, Ph.D., University of Arkansas for Medical Sciences, USA

B T **Non-Coding RNAs**
Matthias Hackl, Ph.D., TAmiRNA GmbH, Austria

B T **ROS Signaling in Bone Cells**
Maria Almeida, Ph.D., Central Arkansas VA Healthcare System, University of Arkansas for Medical Sciences, USA

C **Therapeutic Approach of Osteogenesis Imperfecta in the Adult**
Bente Langdahl, M.D., Ph.D., D.MSc, Aarhaus University Hospital, Denmark

> *Meet-the-Professor sessions are the best part of ASBMR, even as an established scientist.*
>
> – ASBMR 2016 Annual Meeting Attendee

> *ASBMR is the place to be for Boneheads! I get the best, most up-to-date, and even breaking information. I get information that I can watch for in publications to come, but also come away from the meeting with information that I will use in my patient care the very next day.*
>
> – ASBMR 2016 Annual Meeting Attendee

B T **Anti-sclerostin and Multiple Myeloma**
Peter Croucher, Ph.D., Garvan Institute of Medical Research, Australia

B T **Automated Histomorphometry**
David Rowe, M.D., University of Connecticut Health Care, USA

B T **New Insights in Bone Vasculature**
Anjali Kusumbe, Ph.D., Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, United Kingdom

C **Muscle Power vs. Muscle Strength: Impact for falls and mobility**
Elsa Strotmeyer, Ph.D., M.P.H., University of Pittsburgh, USA

B Basic C Clinical T Translational BC Basic Science for Clinicians

# Special Sessions

## Friday, September 8

### Highlights of the ASBMR 2017 Annual Meeting
**10:00 am – 11:30 am**

This special session is of interest to all health professionals, first-time meeting attendees, young investigators, individuals new to the field, nurses, clinical research study coordinators, physical therapists and/or those seeking guidance in navigating through the extensive ASBMR program.

**Co-Chairs:** Teresita Bellido, Ph.D., Indiana University, USA; Kenneth Saag, M.D., MSc., University of Alabama at Birmingham, USA; Anna Teti, Ph.D., University of L'Aquila, Italy

**Basic Science Meeting Overview**
Roland Baron, D.D.S., Ph.D., Harvard School of Medicine and of Dental Medicine, USA

**Clinical Science Meeting Overview**
John Bilezikian, M.D., Columbia University College of Physicians and Surgeons, USA

### Grant Writing Workshop: What to Choose and How to Fund It
**11:30 am – 12:45 pm**
*Sponsored by the ASBMR Membership Engagement and Education Committee*

As funding gets increasingly more difficult to secure, it becomes more vital to learn what will help your grant stand out in the field. Join your fellow researchers and colleagues in this interactive session to discuss potential obstacles to grant writing and the strategic ways to overcome them. The following topics will be covered in this unique, 90 minute session: International Funding, Choosing the Appropriate Grant Mechanism and/or Funding Agency, and NIH Requirements. Workshop attendees will have the opportunity to participate in one or multiple discussion roundtables in this session. This is a can't miss opportunity for researchers at any career stage who want to gain valuable insight and tips into getting their research funded.

**Chair:** Nicola Napoli, M.D., University Campus Bio-Medico di Roma, Italy; *ASBMR Membership Engagement and Education Committee Chair*

# Special Sessions

## Friday, September 8

### ASBMR/ECTS Clinical Debate – Anti-Resorptive Therapy During the Menopausal Transition Prevents Bone Fractures Later in Life

**4:00 pm – 5:00 pm**

**Co-Chairs:** Dolores Shoback, M.D., VA Medical Center, USA; Richard Eastell, M.D., University of Sheffield, United Kingdom

**Debaters:**

**For the Motion**
Erik Eriksen, M.D., DMSc, Oslo University Hospital, Norway

**Against the Motion**
Gail Greendale, M.D., University of California, Los Angeles, USA

> *ASBMR is the best meeting within this field. All the best researchers are there and it makes it a great opportunity to make new connections and start new collaborations.*
>
> – ASBMR 2016 Annual Meeting Attendee

> *It was the best conference I have ever attended.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Special Sessions

## Saturday, September 9

### Publications Workshop: Increase Your Chances of Getting Published

**11:00 am – 12:00 pm**

Meet with *JBMR*® Editor-in-Chief Dr. Juliet Compston and *JBMR*® *Plus* Editor-in-Chief Dr. Peter Ebeling at this year's Publications Workshop. You'll learn how to improve the quality of your journal manuscripts, what *JBMR*® and *JBMR*® *Plus* are looking for and how to increase your chances of getting published. Wiley Publisher Jinnie Kim and Wiley Associate Editor Jane Taylor will also update you on maximizing visibility for your paper, navigating the submission process and timeline and taking advantage of the latest technology. Whether you're a new author considering submitting a paper or a seasoned journal contributor, don't miss this unique opportunity to hear directly from and interact with ASBMR Journal editors.

> *The ASBMR Annual Meeting provides an excellent platform to meet collaborators and learn about research techniques in the field*
>
> – ASBMR 2016 Annual Meeting Attendee

### Basic Evening – The Bone Marrow Niche and Hematopoiesis

**6:30 pm – 8:30 pm**

*Space is limited and available on a first-come, first-served basis. Attendees must be registered for the ASBMR 2017 Annual Meeting.*

**Co-Chairs:** Laura Calvi, M.D., University of Rochester School of Medicine, USA;
Moustapha Kassem, M.D., Ph.D., Odense University Hospital, Denmark

**Autophagy and the Bone Marrow Niche**
Emmanuelle Passegue, Ph.D., University of California, San Francisco, USA

**Neuronal Control of the Marrow Niche in Hematopoiesis**
Paul Frenette, M.D., Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine, USA

**Niche and Leukemia**
Stavroula Kousteni, Ph.D., Columbia University Medical Center, USA

# Special Sessions

## Saturday, September 9

### Clinical Evening – Treating the Treatment Gap

**6:30 pm – 8:30 pm**

*Supported by an educational grant from Lilly USA, LLC and sponsorship support from UCB*

*Space is limited and available on a first-come, first-served basis. Attendees must be registered for the ASBMR 2017 Annual Meeting.*

**Co-Chairs:** Mattias Lorentzon, M.D., Ph.D., Geriatric Medicine, Center for Bone Research at the Sahlgrenska Academy, Sweden; Anne Schafer, M.D., University of California, San Francisco and the San Francisco VA Medical Center, USA

**An International Look at Changing Rates of Osteoporosis Testing, Treatment and Fractures: Is There Cause and Effect?**
Bo Abrahamsen, M.D., Ph.D., University of Southern Denmark, Denmark

**Commentary: Using Population Data to Assess Temporal Trends**
Nicole Wright, Ph.D., University of Alabama at Birmingham, USA

**Fall Prevention**
Stephen Robinovitch, Ph.D., Simon Fraser University, Canada

**Will the Therapeutic Horizon Fix the Treatment Gap?**
Doug Bauer, M.D., University of California, San Francisco, USA

## Sunday, September 10

### ASBMR-IOF Joint Session: Reducing the Treatment Gap

**11:00 am – 12:00 pm**

**Co-Chairs:** Jane A. Cauley, DrPh, ASBMR President, University of Pittsburgh, USA;
Cyrus Cooper, D.M., FRCP, MedSci, IOF President, University of Southampton, United Kingdom

**A Multi-Stakeholder Strategic Roadmap to Prevent Future Fractures in People Who Have Already Fractured**
Sundeep Khosla, M.D., Mayo Clinic, USA;
Douglas P. Kiel, M.D., M.P.H., Institute for Aging Research, Hebrew SeniorLife, USA

**A Global Perspective on Current and Future Strategies for Prevention of Fragility Fractures**
Nicholas Harvey, MBBChir, MRC LifeCourse Epidemiology Unit, University of Southampton, United Kingdom;
Paul Mitchell, MS, University of Notre Dame Australia, New Zealand

> *ASBMR is a venue to meet and hear from the top bone biologists in the world in one place.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Special Sessions

## Sunday, September 10

### Career Development Session: Navigating Career Pathways: How to Develop, Adjust and Sustain a Career in Bone and Mineral Health for the Long-Term

**11:00 am – 12:00 pm**

*Sponsored by the ASBMR Membership Engagement and Education Committee and the Women in Bone and Mineral Research Committee*

Everyone knows how to get started with their scientific or clinical career – but how do you develop, adjust and sustain it for the long term? In this session you will have the opportunity to learn from the experiences of a variety of professionals from academia, clinicians, government agencies and industry to learn how they have navigated and developed their careers in the bone and mineral field.

**Co-Chairs:** Nicola Napoli, M.D., University Campus Bio-Medico di Roma, Italy; *ASBMR Membership Engagement and Education Committee Chair*;
Roberta Faccio, Ph.D., Washington University in St. Louis School of Medicine, USA; *Women in Bone and Mineral Research Committee Chair*

### Clinical Evening – Management and Treatment of Rare Bone Diseases

**7:00 pm – 9:00 pm**

*This activity is supported by an educational funding donation provided by Ultragenyx Pharmaceutical*

*Space is limited and available on a first-come, first-served basis. Attendees must be registered for the ASBMR 2017 Annual Meeting.*

**30 Years of Treatment of Osteogenesis Imperfecta: Where We Are and Where We Are Going**
Francis Glorieux, O.C., M.D., Ph.D., McGill University, Canada

**Musculoskeletal Homeostasis in Bone and Muscle Rare Diseases (XLH and Duchenne Muscular Dystrophy)**
Maria Luisa Bianchi, M.D., Instituto Auxologico Italiano IRCCS, Italy

**Autosomal Dominant Osteopetrosis Type 2: Is there Hope for Treatment?**
Michael Econs, M.D., Indiana University School of Medicine, USA

# Hands-On Workshops

Learn new skills or refine existing ones at the ASBMR 2017 Annual Meeting. Experts will use model datasets to teach the latest technologies and research tools, allowing you to gain practical insight and tips that you can immediately utilize in your own research. A boxed lunch will be provided.

## Friday, September 8

### Functional In-silico Assessment of Genomic Regions Influencing Bone Mineral Density

**11:30 am – 1:00 pm**

*Registration Fee: $75*

**Target Audience:** Early to Senior Career Researchers
**Presenters:** Fernando Rivadeneira, M.D., Ph.D., Erasmus University Medical Center, The Netherlands;
Emma Duncan, MBBS, Ph.D., Royal Brisbane and Women's Hospital, Australia

**Overview:**
The field of complex traits has been revolutionized by the advent of genome-wide association studies (GWAS). The musculoskeletal field is no exception, with the discovery of several hundreds of loci influencing BMD and other musculoskeletal traits. An increasing number of GWAS with huge sample sizes (hundreds of thousands) are emerging, making their meta-analysis results publicly available. This means both 1) that the number of discoveries will increase dramatically, and 2) that these data will be widely and readily available to researchers for performing functional follow-up evaluations. In this workshop, we will use real GWAS results as an example of the wealth of data-mining possibilities able to be applied across selected candidate genomic regions.

**Learning Objectives:**
1. Make use of the increasing number of summary GWAS results becoming publicly available by mining the results and identifying candidate regions with statistical evidence of association with musculoskeletal traits.
2. Learn how to manage large files and grasp the use of Linux commands to browse, lookup and filter results; also use PLINK commands to annotate genes underlying the GWAS signals.
3. Analyze the patterns of linkage disequilibrium (LD) surrounding the GWAS signal regions.
4. Use bioinformatics tools (HaploReg) to mine ENCODE information in relation to the GWAS signals.
5. Analyze the structure of topological associated domains (TADs) in the regions to scrutinize short and long-range associations.

> *ASBMR is the best meeting within this field. All the best researchers are there and it makes it a great opportunity to make new connections and start new collaborations.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Hands-On Workshops

## Friday, September 8

### Histomorphometry: An Interactive Introduction

**11:00 am – 12:30 pm**

*Registration Fee: $75*

**Target audience:** Trainees and Principle Investigators who use histomorphometry

**Presenters:** Deborah Novack, M.D., Ph.D., Washington University in St. Louis School of Medicine, USA;
Erica Scheller, DDS, Ph.D., Washington University in St. Louis School of Medicine, USA

**Overview:**

The aim of this workshop is to provide an interactive environment to teach qualitative and quantitative histological analysis of human and animal bone phenotypes. Learn how to approach histomorphometry experimental design and data collection, and discuss subjectivity in analysis through interactive group activities based on case studies and simulated experiments.

**Learning Objectives:**

1. Choose appropriate tissue processing and staining methods for the desired type of histomorphometric analysis
2. Use case studies to distinguish the appearance of constituent bone cells for counting
3. Design a histomorphometric approach for basal phenotyping and disease modeling
4. Learn to interpret histomorphological data from your own experiments and the literature

*ASBMR is the place to be for cutting edge bone research. The meeting has a number of different interests: clinical, basic, medication development, bone and muscle interactions, etc., so it always feels like there are fresh and diverse topics to explore.*

– ASBMR 2016 Annual Meeting Attendee

# Hands-On Workshops

## Saturday, September 9

### Practical Biomechanical Phenotyping: How to Get the Most Out of a Phenotype

**11:00 am – 12:30 pm**
*Registration Fee: $75*

**Target audience:** Biologists, Clinicians and Trainees
**Presenters:** Karl Jepsen, Ph.D., University of Michigan, USA; Ed Guo, Ph.D., Columbia University, USA

**Overview:**
The aim of this workshop is providing hands-on training on practical guidelines for evaluating the biomechanical properties of mouse long bones. In this workshop we will present definitions of basic biomechanical terms, define "biomechanical mechanisms", and provide step-by-step instructions on how to analyze bone morphological, compositional and biomechanical data in a systematic manner using a sample data set provided by the organizers. These guidelines are intended to help researchers get the most out of their data by differentiating among biomechanical pathways arising from a genetic (or environmental) perturbation and that should provide additional clues to gene function and disease mechanism. Attendees are encouraged to bring their own data (body weights; morphological traits including total cross-sectional area, cortical area, marrow area, moments of inertia; tissue-mineral density; organic contents; whole bone mechanical properties including stiffness, maximum load, post-yield deflection and work-to-fracture; whole bone fracture mechanics test data including load and crack propagation data for fracture toughness measurement). A background in basic statistical analysis methods (regression analyses) is helpful but not required. Attendees are encouraged to bring laptops along with basic statistical software packages (e.g., Excel, GraphPad Prism, MiniTab or SPSS) or share with others.

**Learning Objectives:**
1. Understand basic biomechanical terms and basic concepts of biomechanical mechanisms
2. Learn how to adjust data for body size effects.
3. Systematically evaluate morphological, compositional, and biomechanical data to arrive at a biomechanical mechanism.
4. Measure bone material properties using whole bone notched tests.
5. Discuss strengths, weaknesses, and nuances of these methods and how the systematic analysis may provide novel insight into gene function.

> *You can count on ASBMR to keep you up to date.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Hands-On Workshops

## Sunday, September 10

### Skeletal Muscle Biology and Function: An Introduction to Analytical Approaches

**11:00 am – 12:30 pm**
*Registration Fee: $75*

**Target audience:** Investigators interested in expanding their research into the area of skeletal muscle biology
**Presenters:** Paul Coen, Ph.D., Florida Hospital, USA; Karyn A. Esser, M.D., University of Florida, USA; Elisabeth Barton, Ph.D., University of Florida, USA

**Overview:**
There is increasing appreciation for bone/muscle cross-talk that may underlie health and disease pathology. The aim of this hands-on workshop is to introduce the technical aspects of approaches commonly used to study skeletal muscle biology and function in both rodents and humans. We will provide an overview of muscle and physical function testing in humans, including isokinetic dynamometry and SPPB/walk tests. We will also cover practical aspects of conducting a percutaneous biopsy of the vastus lateralis in study participants, including best practice for specimen handling and sample preparation. Similar topics will be covered for rodent studies, including muscle function testing and tissue harvest practices. Analytical approaches commonly applied to both human and rodent specimens will be discussed, including histology (i.e. fiber type, SDH, Glycogen, Capillary Density), biochemistry (i.e. isolation of myonuclei and satellite cells) and molecular techniques (i.e. RNASeq).

**Learning Objectives:**
1. Understand common approaches for studying muscle function in humans and rodents.
2. Appreciate key technical aspects of skeletal muscle biopsy (human) and tissue harvest (rodent).
3. Learn about state of the art analytical approaches to interrogate key aspects of muscle biology.
4. Gain hands-on experience of muscle function testing in rodents and aspects of muscle biopsy procedure.

> *The ASBMR Annual Meeting provides me the opportunity to connect with my colleagues every year and to hear about their most exciting, unpublished research. The conference also provides the opportunity to make new connections. I have made at least 3-4 new contacts at every meeting for the last 9 years, which has greatly expanded my scientific and social network.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Hands-On Workshops

## Sunday, September 10

### RNA-Seq Computational Analysis Training Workshop

**11:00 am – 12:30 pm**
*Registration Fee: $75*

**Target audience:** Early to Senior Career Researchers
**Presenter:** Andre van Wijnen, Ph.D., Mayo Clinic, USA

**Overview:**
The aim of this workshop is to provide hands-on training on the latest advanced data analysis methodologies. In this workshop we will give insight into how to design an effective RNA-seq experiment, quickly analyze the data, efficiently generate molecular and cellular network models and use the information to infer functionality in living systems. Attendees will use Galaxy, an open source, web-based platform to generate pipelines and workflows that are flexible and can be used as a framework for future analyses.

**Learning Objectives:**
1. Understand the basics of experimental design, statistical concerns and library construction strategies for RNA-based experiments.
2. Become familiar with commonly used bioinformatics tools and Galaxy work environment.
3. Perform alignment and quantification of expression of a small-scale RNA-seq dataset using Galaxy workflows.
4. Perform a gene set enrichment (GSEA) and network analysis on a differentially expressed gene set.
5. Discuss integrative strategies for combining diverse types of NGS data.

*ASBMR is still where the best basic, translational and clinical science in bone and mineral is presented.*

– ASBMR 2016 Annual Meeting Attendee

# Networking and Social Opportunities

## Friday, September 8

### 40th Anniversary Welcome Reception and Poster Session

**5:00 pm – 7:00 pm**

*This activity is supported by a funding donation from AMGEN.*

Attendees and registered guests are invited to celebrate ASBMR's 40th Anniversary during our Wine and Cheese Welcome Reception and Poster Session in the ASBMR Discovery Hall. Simply display your badge for admission. Guests may purchase a badge for $50 at the ASBMR Registration Counter for entrance to the Welcome Reception.

### New Investigator Reception

**5:00 pm – 7:00 pm**

*Sponsored by the ASBMR Membership Engagement and Education Committee and Young Investigator Subcommittee*

The ASBMR Membership Engagement and Education Committee and Young Investigator Subcommittee members will be in attendance for this meet-and-greet networking event. The reception has been organized to promote interactions among young investigators and ASBMR leadership so that they may begin building a network of career-long contacts. The New Investigator Reception will be held concurrently with the Welcome Reception and the Plenary Poster Session in the Young Investigator Lounge in the ASBMR Networking Center in the Discovery Hall.

### Young Investigator Networking Happy Hour

**7:15 pm – 8:30 pm**

*Sponsored by the ASBMR Young Investigator Subcommittee and Membership Engagement and Education Committee*

Young Investigators who wish to continue building connections with peers in a fun and informal setting are invited to attend this event. Participants are encouraged to participate in Networking Bingo! Participants will get a chance to win drink tickets and be entered into a raffle drawing for a prize! Sign up to attend when you register for the meeting.

### Women in Bone and Mineral Research Evening Networking Reception

**8:00 pm – 9:30 pm**

*This activity is supported by a donation provided by UCB*

The Women in Bone and Mineral Research invite all colleagues to attend a special evening networking reception designed to foster conversations and connections among attendees. Participants will also have the opportunity to engage in a discussion about the career challenges faced by women in science. Sign up to attend when you register for the meeting.

# Networking and Social Opportunities

## Saturday, September 9

### ASBMR Networking Breakfast

**6:45 am – 8:00 am**

*Sponsored by the ASBMR Membership Engagement and Education Committee*

New Investigators (early-career stage), new ASBMR members and young and diverse investigators are invited to join ASBMR leadership, senior investigators and NIH Representatives for an informal networking breakfast. New Investigators and first-time attendees will have the opportunity to network with multiple senior investigators at tables assigned by topic. Breakfast will be provided.

### ASBMR Networking Event

**8:30 pm – 11:30 pm**

Join us for an evening of food, drinks and dancing at the ASBMR Networking Event! Connect with colleagues, both old and new, and help us celebrate the 40th anniversary of the American Society for Bone and Mineral Research! We'll be announcing the event's theme soon! Be on the lookout for additional details in the coming weeks. Admission is included with Annual Meeting registration.

## Sunday, September 10

### ASBMR Annual Town Hall Meeting and Reception

**6:00 pm – 7:00 pm**

You are invited to attend the ASBMR Town Hall Meeting and Reception at which you will learn about the Society, including the year in review, planned activities, strategic directions and leadership opportunities. Come learn more about ASBMR, meet with ASBMR leadership, ask questions during an "open-mic" time and enjoy a wine and cheese reception.

### Diversity in Bone and Mineral Research Networking Reception

**7:00 pm – 8:30 pm**

*Sponsored by the ASBMR Diversity Subcommittee and Membership Engagement and Education Committee*

This reception provides attendees the opportunity to meet other attendees and ASBMR leadership, including the ASBMR Diversity in Bone and Mineral Research Subcommittee in an interactive environment. Come to network and learn how the Diversity in Bone and Mineral Research Subcommittee is working to promote inclusiveness and participation of the Society's diverse members, particularly focusing on individuals from underrepresented racial and ethnic groups and individuals with disabilities.

# Networking and Social Opportunities

## Ongoing Opportunities

### ASBMR Networking Center

Located in the ASBMR Discovery Hall, the ASBMR Networking Center is a central spot to meet-up with colleagues and to discover new collaborators and friends. It's also a great place to meet our friendly ASBMR staff, to hold discussions with NIH representatives and enjoy free Wi-Fi for online networking.

### Meet-the-Committee-Chair Roundtables

NEW this year: Ever wonder how ASBMR committees work or what they do throughout the year? Come connect with ASBMR's volunteer leaders at the ASBMR Networking Center for one of our new Meet-the-Committee-Chair Roundtables. Members interested in joining an ASBMR committee are encouraged to take advantage of this opportunity. Sign up for a session online to guarantee your spot!

### Meet-the-Professor Sessions

The Meet-the-Professor Sessions are small, informal sessions designed to provide an opportunity for meeting attendees to interact with experts in an intimate setting and discuss specific clinical and research topics. A PDF handout will be available for download in advance of the meeting at no charge to members and meeting attendees through the mobile app and online itinerary builder.

***Please Note:*** *Tickets are not required for these sessions; however, space is extremely limited. Interested individuals are welcome to attend these sessions on a first-come, first-served basis. Room restrictions and professor preferences will dictate number of attendees.*

### Poster Tours

*Sponsored by the ASBMR Membership Engagement and Education Committee*

Back by popular demand, the Annual Meeting Poster Session Tours will take place during the poster sessions on Saturday, September 9 and Sunday, September 10. These poster tours will be guided by a prominent scientist in the bone field to assist attendees in navigating the science within the poster hall. The tours will begin at the ASBMR Networking Center located in Discovery Hall in the Convention Center and will last approximately 60 minutes. Please visit the ASBMR website in mid-July to sign up to attend one of these exciting poster tours.

# Networking and Social Opportunities

## Working Groups

Working Groups are small interactive evening sessions organized around focused topics of special interest to you and others in your specific area of study. They are part of the ASBMR Ancillary Program and are organized by members independent of the Official ASBMR Program. Additional tickets are required.
See pages 29-33 for topics and speakers.

## Young Investigator Lounge

All young and early career investigator attendees are invited to visit the Lounge located in the ASBMR Networking Center in the Discovery Hall. The lounge will also host several informal roundtable peer mentoring discussions throughout the Annual Meeting. Don't miss this opportunity to make new friends and expand your network of colleagues.

## NIH Lounges

Representatives from the U.S. National Institutes of Health (NIH) andthe Center for Scientific Review (CSR) will be available in the NIH Lounge in the ASBMR Networking Center to discuss grant proposals and ideas. Program staff from the following institutes and centers will be available to talk with you:

- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Cancer Institute (NCI)
- National Institute of Dental and Craniofacial Research (NIDCR)
- National Institute on Aging (NIA)
- National Institute of Child Health and Human Development (NICHD)
- Center for Scientific Review (CSR)

## Hands on Workshops

Learn new skills or refine existing ones at the ASBMR 2017 Annual Meeting. Experts will use model datasets to teach the latest technologies and research tools, allowing you to gain practical insight and tips that you can immediately utilize in your own research.

> *...a terrific meeting with excellent science and open discussion.*
>
> – ASBMR 2016 Annual Meeting Attendee

# The Epicenter of Science and Technology: the ASBMR Discovery Hall

Join us in the ASBMR Discovery Hall, a truly unique experience beyond the traditional exhibit hall.



## The Latest Science

Browse through 1,100 poster presentations and learn about the new discoveries your colleagues are making. Take part in a 60-minute, guided Poster Tour with prominent scientists in the bone field, and explore the latest science.

## The Latest Opportunities

Connect with your colleagues in the ASBMR Networking Center to find new opportunities for collaboration, and to learn more about what other attendees are working on.

## The Latest Solutions

Find the newest products and services that can provide assistance to your lab or clinic. Our exhibitors are bringing their hottest solutions and can't wait to share them with you!

**Find everything you need in the ASBMR Discovery Hall**

## ASBMR Symposium

# Current Concepts in Bone Fragility: From Cells to Surrogates

**September 7, 2017 | Colorado Convention Center | Denver, Colorado, USA**

*This activity is supported by educational funding donations provided by Amgen, Lilly USA, LLC and Scanco Medical*

The importance of surrogate endpoints for fracture motivated the selection of the 2017 symposium entitled *Current Concepts in Bone Fragility: From Cells to Surrogates*. The timing of this symposium will correspond with completion of a large study funded by the Foundation for NIH Biomarkers Consortium focused on determining the utility of surrogate endpoints for clinical trials of osteoporosis drugs. There is currently an unmet medical need for more effective treatments for osteoporosis because currently available agents cannot fully restore skeletal integrity in patients with established disease and be safely given long-term for fracture prevention. Knowledge in identification and treatment of those at risk for fracture will be enhanced by bringing biologists, biomechanical engineers, imaging specialists, epidemiologists and clinicians together to discuss the factors underlying bone fragility and how to best measure them.

## Current Concepts in Bone Fragility

**8:00 am– 9:30 am**

**Co-Chairs:** Galatia Kazakia, Ph.D., University of California, San Francisco, USA;
Claus Glueer, Ph.D., Christian Albrechts Universitaet zu Kiel, Germany

### Hierarchical Material in Nature: How Bone is Tough

Peter Fratzl, Ph.D., Max Planck Institute of Colloids and Interfaces, Germany

### Interaction of Skeletal Traits Determines Long Bone Fragility

Karl Jepsen, Ph.D., University of Michigan, USA

### Beyond Whole Bone Strength

Chris Hernandez, Ph.D., Cornell University, USA

# ASBMR Symposium (Continued)

## Multi-scale Characterization on Bone Strength

**10:00 am – 11:40 am**

**Co-Chairs:** Matt Allen, Ph.D., Indiana University School of Medicine, USA;
Virginia Ferguson, Ph.D., University of Colorado, USA

**Multiscale Characterization of Human Bone: The Osteocyte Network**
Bjorn Busse, Ph.D., University Medical Center Hamburg-Eppendorf, Germany

**Beyond Bone Mineral: Contributions of Collagen and Non-callagenous Proteins to Bone Strength**
Lamya Karim, Ph.D., University of Massachusetts Dartmouth, USA

**Contribution of Cortical vs Trabecular Bone to Whole Bone Strength**
Bert van Rietbergen, Ph.D., Eindhoven University of Technology, The Netherlands

**Mechanical Loading, Structural Heterogeneity and Bone Strength**
Elise Morgan, Ph.D., Boston University, USA

**Effect of Osteoporosis Therapies on Bone Mechanical Properties: Preclinical Studies**
Paul Kostenuik, Ph.D., Phylon Pharma Services, USA

## Beyond Areal BMD

**12:45 pm – 2:20 pm**

**Chair:** Fjola Johanessdotir, Ph.D., Harvard Medical School; Beth Israel Deaconess Medical Center, USA

**Extending Beyond BMD**
Bill Leslie, M.D., MSc, FRCs, University of Manitoba, Canada

**Contribution of Bone Microarchitecture to Fracture Risk**
Steven Boyd, Ph.D., University of Calgary, Canada

**Bone Structure: Beyond Standard Metrics**
Andrew Burghardt, Ph.D., University of California, San Francisco, USA

**Identifying Patients with Fragile Bone via QCT-based FEA**
Tony Keaveny, Ph.D., University of California, Berkeley, USA

## Clinical Conundrums

**2:50 pm – 3:50 pm**

**Chair:** Marjolein van der Meulen, Ph.D., Cornell University, USA

**Atypical Femoral Fractures: Clinical Risk Factors**
Angela Cheung, M.D., Ph.D., University of Health Network-University of Toronto, Canada

**Atypical Femoral Fractures: Tissue Level Contribution?**
Eve Donnelly, Ph.D., Cornell University, USA

**Skeletal Fragility in T2D**
Robert Fajardo, UT Health Science Center, San Antonio, USA

# ASBMR Symposium (Continued)

## Is Now the Time for Surrogate Endpoints in Osteoporosis?

**4:00 pm – 5:00 pm**

**Co-Chairs:** Gayle Lester, Ph.D., National Institutes of Arthritis, Musculoskeletal & Skin Disease, USA;
Mary Bouxsein, Ph.D., Beth Israel Deaconess Medical Center, Harvard Medical School, USA

### Introduction
Gayle Lester, Ph.D., National Institutes of Arthritis, Musculoskeletal and Skin Disease, USA

### The FNIH Bone Quality Study
Dennis Black, Ph.D., UC San Francisco, USA

### Clinical Perspective: What Do We Need?
Sundeep Khosla, M.D., Mayo Clinic College of Medicine, USA

### Panel Discussion
Dennis Black, Ph.D., UC San Francisco, USA
Theresa Kehoe, M.D., CDER, FDA, USA
Sundeep Khosla, M.D., Mayo Clinic College of Medicine, USA

## Reception and Poster Viewing

**5:00pm – 6:15 pm**

*ASBMR provides valuable positive interactions with others in my field and supportive NIH representatives. These resources generate critical "bright spots" for researchers during this extended period of darkness due to funding scarcity.*

– ASBMR 2016 Annual Meeting Attendee

# Ancillary Programs

## ASBMR Expectation of Authors and Presenters

The 2017 Ancillary Program is not part of the ASBMR Official Scientific Program. However, ASBMR expects that all authors and presenters affiliated with the ASBMR 2017 Annual Meeting and the 2017 Ancillary Program will provide informative and fully accurate content that reflects the highest level of scientific rigor and integrity. This includes the presentations at the 2017 Ancillary Meetings.

ASBMR depends upon the honesty of the authors and presenters and relies on their assertions that they have had sufficient full access to the data and are convinced of its reliability. Please review further expectations regarding speaker disclosures and presentation guidelines.

## Working Groups

To round out attendees' educational experience, Working Groups are interactive meetings related to a focused topic not specifically addressed in the ASBMR Official Program. These meetings are organized by ASBMR members and not initiated by industry. Please note that Working Groups are not part of the ASBMR Official Program and have been organized by the parties indicated.

## Working Group Registration Procedures

Tickets for all Working Groups are available on a first-come, first-served basis through pre-registration and during on-site registration hours, space permitting. We strongly encourage you to pre-register online. Waiting lists are not maintained for Working Groups that have met their attendance limit.

| Friday, September 8 | |
|---|---|
| 7:15 pm – 9:45 pm | Muscle and Bone Working Group |
| 7:15 pm – 9:45 pm | Rare Bone Disease Working Group |

| Sunday, September 10 | |
|---|---|
| 7:15 pm – 10:00 pm | Adult Bone and Mineral Working Group |
| 7:15 pm – 9:15 pm | ASBMR Working Group on Aging |
| 7:15 pm – 9:45 pm | Bone Strength Working Group |
| 7:15 pm – 9:15 pm | Bone Turnover Markers Working Group |
| 7:15 pm – 9:30 pm | Pediatric Bone and Mineral Working Group |

# Ancillary Programs

## Friday, September 8

### Muscle and Bone Working Group

**7:15 pm – 9:45 pm**

*Registration Fee: $35*

*Supported by Stratec Medizintechnik and Novotec Medical GmbH*

**Diagnostics and Training for the Muscle-Bone-Unit**

The close relationship between muscle and bone implies common diagnosis and training strategies to analyze and to improve muscle function and bone strength. Muscle mass alone is a poor surrogate for the resulting function especially in an aging population. Therefore diagnostic methods like MRI, CT and pQCT allowing quantification of muscle and bone properties different from mass especially when combined with functional measurements including novel approaches such as Mechanography are of significant importance.

Many training methods are currently proposed and the effect of various methods on different aspects of muscle and bone properties will be discussed. Depending on age, disease status and personal preferences several training principles are available. According to Frost's mechanostat theory and based on animal experiments high strains are necessary to have an anabolic effect on bone.

A boxed dinner will be served at the meeting.

**For further information, please contact:**

Bjoern Buehring, M.D.
University of Wisconsin
bbuehring@medicine.wisc.edu

### Rare Bone Disease Working Group

**7:15 pm – 9:45 pm**

*Registration Fee: $50*

*Supported by a grant from The Rare Bone Disease Alliance*

While skeletal disorders with high bone mass are rare, they have the potential to offer unique insights into human skeletal biology. This working group will examine two disorders of high bone mass, sclerosteosis and melorheostosis, as examples. In addition the program will examine both the mechanisms underlying, and approaches to the care of patients with bone pain – a frequent and underappreciated aspect frequently seen in rare bone diseases.

**For further information, please contact:**

Charlene Waldman
Rare Bone Disease Alliance
waldmancharlene234@gmail.com

> *The science being presented and experts you meet at ASBMR are inspiring, thought provoking and motivating.*
>
> – ASBMR 2016 Annual Meeting Attendee

# Ancillary Programs

## Sunday, September 10

### Adult Bone and Mineral Working Group

**7:15 pm – 10:00 pm**

*Registration Fee: $45*

The Adult Bone and Mineral Working Group is one of the oldest working groups of the ASBMR. The meeting is opened with a historical vignette and followed by several peer-reviewed case presentations dedicated to clinical metabolic bone and mineral disorders. The ABMWG meetings are renowned for engaging discussions by internationally-revered clinical bone scientists, clinical bone educators and trainees in diseases related to bone and mineral metabolism. The ABMWG also bestows the coveted Boy Frame Award for "Excellence in Clinical Research" at its annual meeting.

A buffet dinner will precede the program.

**For further information, please contact:**

Michael Mannstadt, M.D.
Endocrine Unit, Massachusetts General Hospital and Harvard Medical School
mannstadt@mgh.harvard.edu

### ASBMR Working Group on Aging

**7:15 pm – 9:15 pm**

*Registration Fee: $50*

*Supported by an educational grant from the National Institute on Aging*

#### Effects of Physical Activity on Musculoskeletal Aging

There is increasing interest in the effects of physical activity on age-related declines in multiple tissues as well as the molecular mediators of these effects. This working group will focus on physical activity and musculoskeletal aging and will consist of three 20 minute talks with 10 minutes for discussion after each talk and a 30 minute open discussion session following all 3 presentations. The talks will help define the cellular and molecular mediators of loading/exercise in bone and muscle, as well as bone-muscle interactions. The overall goal is to help define the current state of knowledge as well as identify key directions for future research in this area.

**For further information, please contact:**

Lynda Bonewald, Ph.D.
Indiana Center for Musculoskeletal Health
lbonewald@iu.edu

Sundeep Khosla, M.D.
Kogod Center on Aging, Mayo Clinic
Khosla.sundeep@mayo.edu

# Ancillary Programs

## Sunday, September 10

### Bone Strength Working Group

**7:15 pm – 9:45 pm**
*Registration Fee: $35*
*Supported by the Canadian Bone Strength Working Group*

The program will consist of short oral presentations followed by a keynote panel discussion. The top five abstracts related to bone strength will be selected from the ASBMR Poster program for oral presentation and discussion. The topic of the keynote discussion will be: "State of the Art Assessment of Bone Strength". After the lecture, there will be time set aside for questions and discussion.

A plated dinner will precede the program.

**For further information, please contact:**
Angela Cheung, M.D., Ph.D
University of Toronto
angela.m.cheung@gmail.com

> *ASBMR is the best quality bone conference globally. It's where I learn the most and after which I feel most up to date.*
>
> – ASBMR 2016 Annual Meeting Attendee

> *ASBMR is the best source for discovering the newest scientific advances in the field of bone biology and clinical bone disease.*
>
> – ASBMR 2016 Annual Meeting Attendee

### Bone Turnover Markers Working Group

**7:15 pm – 9:15 pm**
*Registration Fee: $30*

**Debate on the Clinical Usefulness of Bone Turnover Markers**
This year the working group meeting will address the use of bone turnover markers in monitoring the offset of the effect of drugs for osteoporosis, as well as the usefulness of BTMs in predicting fracture risk reduction of bisphosphonate treatment. A lively debate on BTMs in clinical practice is expected.

Our keynote speakers will be Professors Richard Eastell, Douglas Bauer and Peter Ebeling.

**For further information, please contact**:
Nuria Guanabens, M.D.
Department of Rheumatology, Hospital Clinic
nguanabens@ub.edu

# Ancillary Programs

## Sunday, September 10

### Pediatric Bone and Mineral Working Group

**7:15 pm – 9:30 pm**

*Registration Fee: $35*

The Pediatric Bone and Mineral Working Group will convene its 34th annual meeting to hear scientific presentations and engage in discussion regarding discoveries relevant to pediatric bone and mineral diseases, healthy skeletal development and advances in diagnostic and therapeutic modalities. Our keynote speakers will be Dr. Erik Imel who will share his knowledge of updates in developments in XLH management, and Dr. Deborah Mitchell who will talk about the effects of type 1 diabetes on the growing skeleton. In addition to our keynote speakers, we will be accepting abstracts for presentation. Four abstracts will be chosen, each to deliver a 10-minute oral presentation. Abstracts submitted to the main ASBMR program can also be submitted to the Pediatric Bone and Mineral Working Group. Abstracts should be submitted via email to one of the program co-chairs noted below.

**For further information or to submit abstracts, please contact:**

Clemens Bergwitz, M.D., Ph.D
Yale University School of Medicine
clemens.bergwitz@yale.edu

Madhusmita Misra, M.D., MPH
Massachusetts General Hospital and Harvard Medical School
mmisra@mgh.harvard.edu

# General Information

## Intended Audience

The ASBMR 2017 Official Scientific Program is designed for researchers, physicians and other health and allied health professionals with interests in:

- Biomechanics
- Cell biology
- Dentistry
- Endocrinology
- Epidemiology
- Genetics
- Metabolism and musculoskeletal research
- Molecular biology
- Nephrology
- Pathology
- Pharmacology
- Physiology
- Rheumatology

## Meeting Objectives

Upon returning home from the meeting, participants should be able to:

- Identify and discuss the most current and significant advances in biomedical and clinical research in bone and mineral metabolism and better understand the interrelationship among basic research, clinical research and patient care.
- Improve the ability to treat and care for patients through an enhanced knowledge of osteoporosis, other diseases of bone, basic bone biology and its correlation to mineral metabolism.
- Develop and apply new and enhanced strategies for the assessment, diagnosis and treatment of patients at risk for or with osteoporosis and improve the ability to treat and care for patients.

## Continuing Medical Education (CME)

This educational activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of Creighton University and the American Society for Bone and Mineral Research (ASBMR). Creighton University is accredited by the ACCME to provide continuing medical education for physicians.

## AMA PRA Statement

Creighton University designates this educational activity for a maximum of 28.25 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

## Online CME

The CME online evaluation will be available beginning Tuesday, September 26. Please Note: There will be a $50 fee per application. This fee can be paid when you register for the Annual Meeting. Please check the Continuing Medical Education Credits (CME) box under Optional Events and Products. Should you have questions, contact the ASBMR Business Office at asbmr@asbmr.org or (202) 367-1161.

## Disclosure Policy

The ASBMR is committed to ensuring the balance, independence, objectivity and scientific rigor of all its individually sponsored or industry-supported educational activities. Accordingly, the ASBMR adheres to the requirement set by ACCME that audiences at jointly-sponsored educational programs be informed of a presenter's (speaker, faculty, author or planner) academic and professional affiliations, and the disclosure of the existence of any significant

# General Information

financial interest or other relationship a presenter or their spouse has with any proprietary entity over the past 12 months producing, marketing, re-selling or distributing health care goods or services, consumed by, or used on patients, with the exemption of non-profit or government organizations and non-health care related companies. When an unlabeled use of a commercial product, or an investigational use not yet approved for any purpose, is discussed during the presentation, it is required that presenters disclose that the product is not labeled for the use under discussion or that the product is still investigational. This policy allows the listener/attendee to be fully knowledgeable in evaluating the information being presented. The On-Site Program book will note those speakers who have disclosed relationships, including the nature of the relationship and the associated commercial entity.

Disclosure should include any affiliation that may bias one's presentation or which, if known, could give the perception of bias. This includes relevant financial affiliations of a spouse or partner. If an affiliation exists that could represent or be perceived to represent a conflict of interest, this must be reported in the abstract submission program by listing the name of the commercial entity and selecting the potential conflict(s) by clicking in the box next to the relationship type. Disclosures will be printed in the program materials. These situations may include, but are not limited to: 1) Grant/Research Support; 2) Consultant; 3) Speakers' Bureau; 4) Major Stock Shareholder; 5) Other Financial or Material Support.

### ASBMR Expectation of Authors and Presenters

Through ASBMR meetings, the Society promotes excellence in bone and mineral research. To that end, ASBMR expects that all authors and presenters affiliated with the ASBMR 2017 Annual Meeting and the 2017 Ancillary Program will provide informative and fully accurate content that reflects the highest level of scientific rigor and integrity.

ASBMR depends upon the honesty of the authors and presenters and relies on their assertions that they have had sufficient full access to the data and are convinced of its reliability.

Furthermore, ASBMR expects that:

- Authors and presenters will disclose any conflicts of interest, real or perceived.
- Authors of an abstract describing a study funded by an organization with a proprietary or financial interest must affirm that they had full access to all the data in the study. By so doing, they accept complete responsibility for the integrity of the data and the accuracy of the data analysis.
- The content of abstracts, presentations, slides and reference materials must remain the ultimate responsibility of the author(s) or faculty.
- The planning, content and execution of abstracts, speaker presentations, slides, abstracts and reference materials should be free from corporate influence, bias or control.
- All authors and presenters (invited and abstracts-based oral and poster presenters) should give a balanced view of therapeutic options by providing several treatment options, whenever possible, and by always citing the best available evidence.

In addition, ASBMR's meeting evaluations will seek feedback regarding commercial bias at ASBMR Annual Meeting sessions, including the 2017 Ancillary Program.

# General Information

## Annual Meeting Resource Materials

### 2017 Abstracts Book

The 2017 Abstracts book is published as a supplement of the *Journal of Bone and Mineral Research* (JBMR®).

A limited number of the 2017 Abstracts Books will be printed and available for purchase and pick-up on site in Denver. To obtain a copy, you must order it in advance through the registration form by August 14, 2017. The price of the book is $50 USD. The 2017 Abstracts book will also be available in PDF format for download in advance of the meeting at no charge to members and meeting attendees.

### 2017 Abstracts Online Program

Only members and pre-registered Annual Meeting attendees will be able to access the 2017 Abstracts Online Program before the Annual Meeting. This tool can be used to help you search for and review abstract presentations, as well as plan your meeting itinerary. You may access this convenient program via the ASBMR website at www.asbmr2017.org starting mid-August.

### Meet-the-Professor Handout Booklet

A PDF handout will be available for download in advance of the meeting at no charge to members and meeting attendees through the mobile app and online itinerary builder.

### On-Site Program Book

As a registered meeting attendee you will receive an On-Site Program Book along with other meeting materials once you arrive at the Convention Center and check in at the registration counter. This book contains a detailed schedule and description of the events for the entire meeting, including the Ancillary Program.

### ASBMR Mobile App

*Supported by a donation provided by AMGEN*

This free smartphone application is a mobile version of the On-Site Program and includes the meeting abstracts. The app also features general meeting information, exhibitor listings and detailed maps of the convention center. The app will be available to download in mid-August.

### Ancillary Meetings

If you are looking to connect with colleagues on a special topic or reconnect with former classmates for a mini reunion, we have a process that might help you. Applications need to be submitted on or before August 11, 2017 and space is limited. For more information, visit www.asbmr2017.org.

# Thank You to Our Supporters

ASBMR would like to thank our supporters for their participation in the ASBMR 2017 Annual Meeting. *As of May 30, 2017.*

## Gold Sponsor

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*The ASBMR scientific program is developed by the Society's Annual Meeting Program Committee prior to, and independent of, educational grant support. In accordance with the standards of ACCME and Creighton CME, the commercial supporters of this meeting have no influence regarding topics or speakers.*

# Registration Information

**Register by July 28 for best rates!**

## ASBMR 2017 Annual Meeting Registration Fees

| | Annual Meeting Only | | Annual Meeting with Symposium | | Symposium Only |
|---|---|---|---|---|---|
| | Before July 28 | After July 28 | Before July 28 | After July 28 | |
| Member | $440 | $565 | $590 | $715 | $275 |
| Non-Member | $800 | $925 | $950 | $1075 | $275 |
| Student/Resident/Fellow Member | $265 | $315 | $340 | $390 | $175 |
| Student/Resident/Fellow Non Member | $365 | $415 | $440 | $490 | $175 |
| Allied Health Professional | $365 | $415 | $440 | $490 | $175 |

*Please note: a $50 on-site registration fee applies after September 8*

## Extra Events and Resources

| | |
|---|---|
| Working Groups | Fees vary from $20 – $50 per ticket |
| 2017 Abstracts Book | $20 per print copy* |
| Continuing Medical Education | $50 application fee |
| Hands-On Workshops | $75 per workshop |

## Group Registration

Tour leaders and other group organizers may register online using the same system as individuals. The system allows you to enter a list of delegates and enter the payment information only once at the end of the process. Once payment is complete, confirmations will be immediately sent to the confirmation email address you provide. Your confirmation will include instructions on how to log in and request changes or additional receipts. To register a group of 10 or more, email asbmr@compusystems.com for instructions.

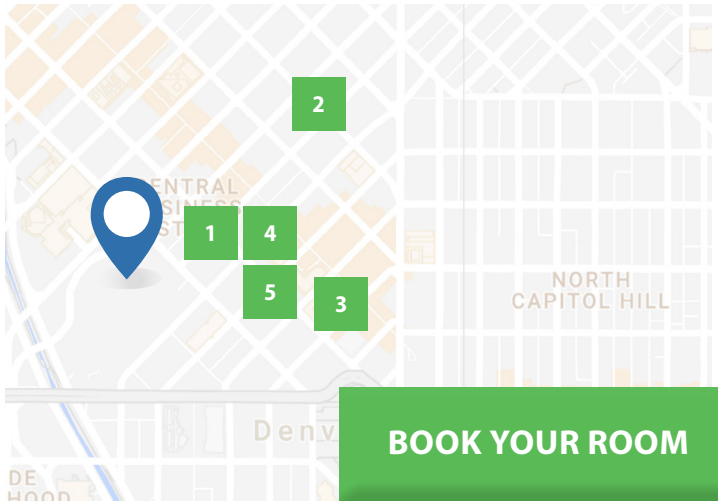
## What's included with registration fees?

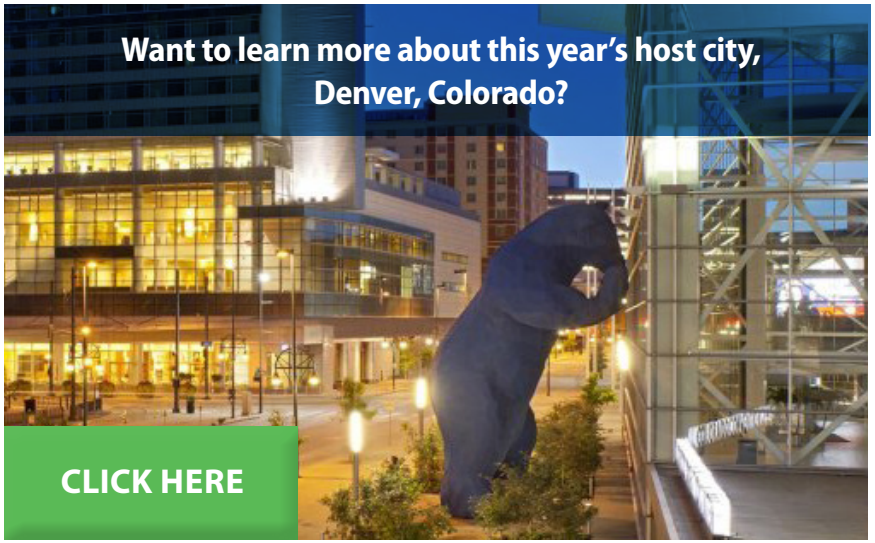
Annual Meeting registration fees entitle the registrant to:

- Admission to all sessions, which includes over 30 hours of educational content
- Admission to ASBMR Discovery Hall, which includes over 1,100 scientific posters
- Friday's Welcome Reception
- All coffee breaks
- Digital copy of the 2017 Abstracts book and Meet-the-Professor Handout booklet
- Access to the abstracts online and itinerary builder
- Unlimited networking opportunities to collaborate with other leaders in the field

# Hotel Information

ASBMR has secured rates at five hotels located within five blocks of the Convention Center. Rates range from $209 - $249 USD. Click here for more information about all of our hotel options. We encourage you to support ASBMR by using our official housing service. By doing so, we are able to effectively document the economic impact that the ASBMR Annual Meeting has on the city we are hosting in. This is critical to negotiating rates with the city's meeting facilities, allowing us to keep costs low in other areas for our attendees. Unofficial, third-party websites posing as ASBMR are a cybersecurity risk and can result in identify theft. We highly recommend that you only use the links provided on ASBMR's official housing site to securely book your room online.




1. Hyatt Regency Denver at Colorado Convention Center
2. Marriott Denver City Center
3. Sheraton Denver Downtown
4. Hampton Inn and Suites Denver Downtown Convention Center
5. Homewood Suites by Hilton Denver Downtown

*All hotels are within 0.5 miles from the Colorado Convention Center.*

Click here for more information about international group housing, or email us at ASBMRgrouphousing@asbmr-igd.com.

For information about housing for US-based groups, please email us at housing@asbmr.org.