

## The 38<sup>th</sup> International Sun Valley Workshop on Skeletal Tissue Biology

### Foreword

The 38<sup>th</sup> International Sun Valley Workshop on Skeletal Tissue Biology was held August 3-6, 2008. There were 115 Workshop attendees representing a wide range of clinical, basic science and social science disciplines.

The W.S.S. Jee Remodeling in Bone (RIB) Award was given to Dr. Lance Lanyon, who spoke from his wide experience about "Strain-related Control of Bone (Re)modeling: Objectives, Mechanisms and Failures". Dr. Lanyon was one of the first to apply strain gages to determine the actual mechanical inputs to bone, and subsequently moved on to examine the interface between the mechanical environment and hormonal determinants of bone adaptation. He has been at the interface of skeletal biology and engineering for nearly 4 decades, and in many ways has defined that field over this period of time. The plenary lecture was followed by a poster session that highlighted posters from the ten young investigators who received the Alice L. Jee Travel Award. The Workshop program was also highlighted by podium talks Monday evening from six young investigators who were selected winners of the ASBMR/Harold M. Frost Young Investigator Awards, which came with a \$1500 prize (supported in part by the ASBMR) and certificate.

Besides training, a primary focus of the Workshop has been on the interaction of younger and more senior investigators. This year, we expanded the mentorship program established at the 30<sup>th</sup> Workshop in 2000, which arranged for those younger scientists who have received awards to share lunch with a senior investigator of their choice. This year, we provided luncheon vouchers for any younger investigator who wished to meet with a senior investigator. The number of these mentor luncheons rose from 17 last year to 25 this year.

In addition, with the support of NIAMS, we were able to provide an NIH Workshop on Funding for Young Investigators. Special thanks go out to Dr. Gayle Lester, who organized this special event, and also to Linda Sandell and Nancy Lane, who acted as preceptors. The session was well attended, and hopefully will provide real benefits in improved opportunity for funding for those who attended.

This year at the 38<sup>th</sup> Workshop, we made an attempt (successful I think) to expand beyond skeletal biology and engage others working in the broader fields of musculoskeletal biology. This resulted in a session on "Translational Research in OA," chaired by Rich Loeser, and one on "Muscle Biology," chaired by Karyn Esser. This represented an attempt to provide more translational content, and for participants to think about how their "pet" tissue influences, and is influenced by, the other tissues that surround it. If we wish to solve real clinical problems that involve the musculoskeletal system, we will have to challenge ourselves to this brand of interdisciplinary translational research – something more often discussed than achieved.

The Workshop was supported by grants from the National Institutes of Health (NIAMS), and the Orthopaedic Research and Education Foundation (OREF). In addition, contributions from industry came from pharmaceutical concerns (Alliance for Better Bone Health; Amgen; Pfizer Global Research and Development; Eli Lilly and Co.; Merck Research Laboratories) contract research companies (Charles River Laboratories) and manufacturers of imaging and diagnostic equipment and services (Immunodiagnostic Systems Inc., Micro Photonics Inc., Osteometrics; and Scanco USA, Inc.).

The 39<sup>th</sup> International Sun Valley Workshop will be held August 9-12, 2009. We are currently planning to revisit Bone and Cancer, and are also preparing sessions on Osteoimmunology and Bone Marrow, and Skeletal Development and Regeneration. In the spirit of continuing the interdisciplinary sessions with other musculoskeletal tissues, a session is being organized on the Mechanobiology of Muscle and Bone. Finally, we are proposing a Tutorial on Design, Delivery and Application of siRNAs. We are excited to announce that Dr. Graham Russell will receive the W.S.S. Jee Remodeling in Bone (RIB) Award for his long-standing contributions to our understanding of pharmaceutical interactions with bone cells and tissues. Dr. Russell has been an invited speaker at the Workshop several times in the past, and will give the plenary lecture.

If you attended the Workshop in 2008, we hope you found it both educational and enjoyable. Whether you were able to attend or not, we hope that we find you in Sun Valley in August of 2009.

**David B. Burr, PhD**

Organizer and Director  
38<sup>th</sup> International Sun Valley Workshop  
on Skeletal Tissue Biology  
Associate Editor of JMNI

## 38<sup>th</sup> International Sun Valley Workshop On Skeletal Tissue Biology

August 3-6, 2008, Sun Valley, Idaho, USA

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*Sunday Morning (8:00 am-Noon)*

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### Genetics of Osteoporosis

(Chair: Michael Econs)

1. Introduction to skeletal genetics - **Michael Econs**, Indiana University
2. Genetics of osteoporosis. Utility of mouse models - **Robert Klein**, Oregon Health Sciences Center
3. Gene targeting approaches in mice: Assessing the roles of Lrp5 and Lrp6 in osteoblasts - **Bart Williams**, Van Andel Institute
4. Autosomal dominant high bone mass: The phenotype - **Robert Recker**, Creighton University
5. Turning genetic discoveries into new treatments: The WNT/Lrp5 system as a source of new drug targets for skeletal diseases - **Peter Bodine**, Wyeth-Ayerst

*Sunday Evening (7:30 pm-10:00 pm)*

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### Ribs and other bones: A scientific interaction poster session

(L. Yamamoto, Procter & Gamble/S-A)

### The RIB Award/Plenary Lecture

**Strain-related control of bone (re)modeling: Objectives, mechanisms and failures** - **L. Lanyon**, Royal Veterinary College, London

[Poster viewing followed the Plenary Session]

*Monday Morning (8:00 am-Noon)*

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### Translational Research in OA – From Molecules to Animals to Humans

(Chair: Richard Loeser)

1. Molecular mechanisms of cartilage destruction in osteoarthritis - **Richard Loeser**, Wake Forest University
2. Metabolism of chondrocytes in osteoarthritis: Why all this activity? - **Linda Sandell**, Washington University
3. Modulating chondrocyte hypertrophy in growth plate and osteoarthritic cartilage - **Amanda Fosang**, Melbourne University
4. Mouse models and new therapeutic targets for OA - **Qian Chen**, Brown University
5. Clinical research in OA - The NIH Osteoarthritis Initiative - **Gayle Lester**, NIAMS

*Monday afternoon (2:00 pm-4:45 pm)*

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### NIH Workshop on Funding for Young Investigators

(Representatives from NIAMS and the Research Community)  
(Chair: Gayle Lester; Preceptors: Nancy Lane, Linda Sandell)

1. Introduction to NIH - **Gayle Lester**, NIAMS
2. Preparing your grant - **Nancy Lane**, University of California, Davis

3. Review process and response - **Linda Sandell**, Washington University

*Monday Evening (7:30 pm-10:00 pm)*

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### ASBMR/Harold M. Frost Award Presentations

1. Trabecular structure analysis of the distal radius in adolescent patients with anorexia nervosa using ultra high resolution flat panel based Volume CT - **Miriam Bredella**, Massachusetts General Hospital
2. Blocking VEGF as a potential approach to improve cartilage healing after OA - **Tomoyuki Matsumoto**, Children's Hospital of Pittsburgh
3. FGF2 induced expression of the pyrophosphate generating enzyme, PC-1, is mediated by Runx2 and Msx2 - **Nan Hatch**, University of Michigan
4. Unique roles of microRNA140 and its host gene WWP2 in cartilage biology - **Yukio Nakamura**, Children's Hospital and Harvard Medical School
5. Role of hypoxia inducible Factor-1 $\alpha$  pathway in bone regeneration - **Chao Wan**, University of Alabama at Birmingham
6. Notch signaling maintains bone marrow mesenchymal progenitors by suppressing osteoblast differentiation - **Matthew Hilton**, Washington University

*Tuesday Morning (8:00 am-Noon)*

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### Nanomechanics of Bone

(Chair: Edward Guo)

1. What is nanomechanics of bone and why is it important? - **Edward Guo**, Columbia University
2. The post-yield behavior of bone: From nano to macroscopic length scales - **Xiaodu Wang**, University of Texas, San Antonio
3. Effects of nanomechanical bone tissue properties on bone tissue strain: Implications for osteocyte mechanotransduction - **Dan Nicolella**, Southwest Research Institute
4. Strain amplification and integrin based signaling in osteocytes - **Sheldon Weinbaum**, City College of New York

*Wednesday Morning (8:00 am-Noon)*

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### Muscle Biology

(Chair: Karyn Esser)

1. Regenerative medicine based on muscle stem cells - **Johnny Huard**, University of Pittsburgh
2. Mechanical regulation of growth signaling in skeletal muscle - **Karyn Esser**, University of Kentucky
3. The molecular basis of skeletal muscle atrophy - parallels with osteoporotic signaling - **Susan Kandarian**, Boston University
4. Regulation of muscle size in humans: Role of myostatin? - **Marcas Bamman**, University of Alabama

*Wednesday Evening (7:30 pm-10:00 pm)*

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**Bone as an Endocrine Organ**

(Chair: **Beata Lecka-Czernik**)

1. Local and systemic functions of bone fat and its contribution to the energy metabolism, the effect of diabetes and obesity on bone - **Beata Lecka-Czernik**, University of Toledo

2. Nutritional hormones and the entero-osseous axis - **Carlos Isales**, Medical College of Georgia
3. Reciprocal regulation of bone and energy metabolism - **Na Kyung Lee**, Columbia University
4. Common regulatory pathways controlling energy metabolism and bone mass - **Masanobu Kawai**, Maine Medical Center Research Institute