

Summer 2011



# Musculoskeletal Messenger



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*University of Pennsylvania Penn Center for Musculoskeletal Disorders*

## Looking Forward to the 2011 PCMD Annual Scientific Symposium – October 26, 2011

Preparations are underway for the 8th Annual Penn Center for Musculoskeletal Disorders Scientific Symposium in the BRB Auditorium/Lobby to be held on October 26, 2011. Register for the symposium by clicking on the following link: [http://www.med.upenn.edu/pcmd/muscsymp\\_form.shtml](http://www.med.upenn.edu/pcmd/muscsymp_form.shtml)

The keynote speaker will be Steven R. Goldring M.D., Chief Scientific Officer, St. Giles Chair, Hospital for Special Surgery and Professor of

Medicine at Weill Cornell Medical School. His lecture is titled "Mechanisms of Pathological Bone Remodeling: Pathology Teaches Physiology."

The day will begin at 8:00 am with a continental breakfast followed by scientific presentations from some new Center members and PCMD Pilot Grant recipients.

The symposium will also include lunch and a judged poster session with prizes

awarded in four categories. The event will end at approximately 3:30 pm.

Stay tuned for more details!

Penn Center for Musculoskeletal Disorders  
University of Pennsylvania  
424 Stemmler Hall, 3450 Hamilton Walk  
Philadelphia, PA 19104-6081  
  
Phone: 215-898-8653  
Fax: 215-573-2133  
[www.med.upenn.edu/pcmd](http://www.med.upenn.edu/pcmd)

If you have any news or information that you would like included in the next issue of this newsletter, please email us at:

[centermd@mail.med.upenn.edu](mailto:centermd@mail.med.upenn.edu)

## PCMD Pilot and Feasibility Grant Recipients Announced

The Penn Center for Musculoskeletal Disorders Pilot and Feasibility Grant Program has awarded three investigators with one year of funding each for their pilot grant projects with a start date of July 1, 2011.

The first recipient in our newest round, Motomi Enomoto-Iwamoto, Ph.D., D.D.S., will receive funding for her grant titled "Tendon Repair by Retinoic Acid Receptor Agonists." Dr. Enomoto-Iwamoto's project will address the hypothesis that RAR $\gamma$  agonists promote normal tendon progenitor cell

function and may represent novel and effective therapeutic agents for tendon injuries.

The second new recipient, Struan Grant, Ph.D., will receive funding for his pilot grant titled "Utilization of ChIP-seq to Identify Genes Regulated by Osterix." Dr. Grant's study will test the global hypothesis that Osterix is a key determinant of human osteoblast differentiation and regulates the expression of a set of genes in specific pathways critical for maximal osteoblast function. The third new recipient is Ian

Jacobs, M.D., whose pilot grant is titled "Development of a Rabbit In-Vivo Tissue-Engineered Cartilage Graft for Pediatric Laryngotracheal Reconstruction." Dr. Jacobs' pilot grant's goal is to devise a safe and customized tissue-engineered cartilage graft for expansion of the pediatric airway.

Congratulations to all pilot grant recipients!

**Remember to include reference to support from the Center** in your abstracts and publications. Cite Grant NIH/NIAMS P30AR050950 from the National Institute Of Arthritis And Musculoskeletal And Skin Diseases of the NIH.

## New at CHOP-Translational Research Program in Pediatric Orthopaedics - Maurizio Pacifici, Ph.D.

We are delighted to announce the creation of the Translational Research Program in Pediatric Orthopaedics in the Division of Orthopaedic Surgery at The Children's Hospital of Philadelphia. The founding faculty members of the Program are Drs. Motomi Enomoto-Iwamoto, Eiki Koyama, Masahiro Iwamoto and Maurizio Pacifici (Director). These individuals will have faculty appointments in the Department of Orthopedic Surgery at the University of Pennsylvania. The team includes five post-doctoral fellows (Shuji Asai, Agnese Di Rocco, Takashi Kinumatsu, Yoichi Ohta and Federica Sgariglia), a research associate (Kengo Shimono), four research technicians (Johanna Jasinski, Colleen Larmour, Cheri Sanders and Wei Tung), a graduate student (Julianne Huegel) and a program manager (Jen Rosa).

The team's biomedical research focuses on cellular, biochemical and molecular mechanisms that regulate the development and growth of the craniofacial, axial and appendicular skeleton prena-

tally and postnatally. The ultimate goal is to use the resulting detailed information and insights to understand the pathogenesis of congenital and acquired skeletal pathologies and to conceive and design possible modes of therapeutic intervention in close cooperation with the Division's clinicians and clinician-scientists. Grants from the NIH and US Army support the work.

The creation of the Program is of particular importance because it broadens the spectrum of expertise and research interests within our skeletal biology community and offers significant opportunities for unique links and collaborations with PCMD members.



*Back row left to right: Takashi Kinumatsu, Shuji Asai, Yoichi Ohta, Wei Tung, Masahiro Iwamoto*

*Front row left to right: Agnese Di Rocco, Julianne Huegel, Colleen Larmour, Johanna Jasinski, Kengo Shimono, Motomi Enomoto-Iwamoto, Cheri Saunders, Maurizio Pacifici, Jennifer Rosa, Federica Sgariglia, Eiki Koyama*

## Research Updates from PCMD Members

### E. Michael Ostap, Ph. D.

The Pennsylvania Muscle Institute (PMI) is an internationally renowned center for muscle and motility research supported by Penn Medicine with a mission to: (1) discover the mechanisms of muscle function, muscle disease and motile biological systems through innovative and cross-disciplinary research, and to apply these discoveries to new therapies; (2) develop state-of-the-art technologies for the study of muscle and motile systems; (3) provide education and training in muscle biology and motility to scientists, physicians, and students.

Research is conducted by its more than 60 member laboratories using biophysics, biochemistry, genetics, physiology and ultrastructure to understand cell migration and intracellular transport, molecular motors, cell division, muscle contraction and development, muscle pathologies and thera-

pies targeted to muscle disease. We are prominent in technological and methodological development for these investigations, especially in advanced light microscopy, structural spectroscopy, nanotechnology, biochemical kinetics, image processing, molecular biology, and viral gene targeting. Extramural grants, seminars, symposia, and journal clubs are uniquely initiated and supported by the PMI. The PMI is home to a NIGMS-supported program project grant, a NIAMS-supported training program in "Muscle Biology and Muscle Disease", and a NIAMS/NHLBI-supported Paul Wellstone Muscular Dystrophy Cooperative Research Center.

We encourage members of the Penn community to attend and contribute to our lively cell motility journal club, muscle club, and seminar series.

These high-quality and interactive meetings provide outstanding opportunities for the Penn community to discuss state-of-the-art research in the muscle and motility fields. They also provide an excellent forum for pre- and post-doctoral trainees to present research. Details and schedules about PMI programs are available on our website [www.med.upenn.edu/pmi](http://www.med.upenn.edu/pmi).

For questions or inquiries about the PMI, please contact:

E. Michael Ostap, Ph.D.

Director, Pennsylvania Muscle Institute  
Professor of Physiology

B40 Anatomy-Chemistry Building

Email: [ostap@mail.med.upenn.edu](mailto:ostap@mail.med.upenn.edu)

### Mary B. Leonard, MD, MSCE

I am an Associate Professor of Pediatrics in the Division of Nephrology at the Children's Hospital of Philadelphia, and a Senior Scholar in the Center for Clinical Epidemiology and Biostatistics at the University of Pennsylvania.

My multidisciplinary research program in clinical bone disease is focused on (1) the detrimental effects of glucocorticoid therapy, muscle deficits and inflammation on bone development in varied pediatric disorders, (2) the assessment of the unique effects of kidney disease on skeletal structure in children and adults using novel micro-imaging techniques, and (3) the effects of vitamin D deficiency on physical functioning and cardiovascular disease in adults with chronic kidney disease.

I am currently conducting an NIH funded randomized placebo-controlled dou-

ble-blind clinical trial of exposure to daily low magnitude mechanical stimuli as an anabolic bone therapy in children with Crohn disease. I am collaborating with Felix Wehrli on a study funded by the Penn Center for Musculoskeletal Disorders to measure mineral phosphorus content in cortical bone by 3D solid-state MRI of  $^{31}\text{P}$  in patients with osteomalacia. This technique will provide the basis for future clinical trials of vitamin D in renal disease and other disorders of bone mineralization in chronic kidney disease and other disorders.

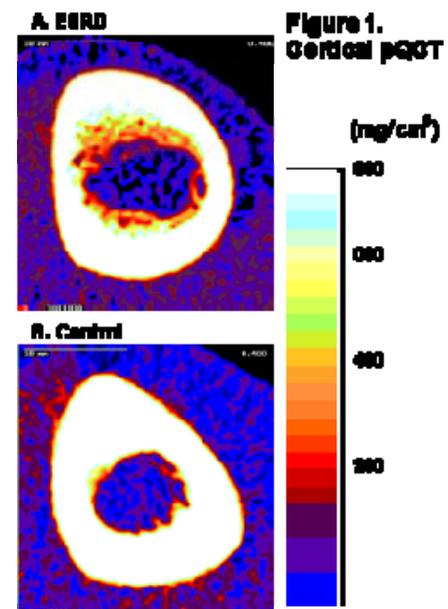


Figure 1: PQCT Scans in the Mid-shaft of the Tibia in a Pediatric Renal Transplant Recipient (A) and Healthy Control (B). This figure illustrates the bone loss on the endosteal surface and the reduced endocortical vBMD.



Supported by the



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## Upcoming Events

### PCMD Annual Scientific Symposium October 26, 2011

(see more info on Newsletter front)

This Symposium will be held in the BRB Auditorium/Lobby. Register for the symposium by clicking on:  
[http://www.med.upenn.edu/pcmd/muscysymp\\_form.shtml](http://www.med.upenn.edu/pcmd/muscysymp_form.shtml)

The keynote speaker will be Steven R. Goldring M.D., Chief Scientific Officer, St. Giles Chair, Hospital for Special Surgery and Professor of Medicine at Weill Cornell Medical School. His keynote lecture is titled "Mechanisms of Pathological Bone Remodeling: Pathology Teaches Physiology."

The day is scheduled to begin at 8:00am and end by 3:30pm.

Stay tuned for more details!

### PCMD Visiting Professorship Series 2011-2012

**Tuesday, September 20, 2011, 1:00-2:00pm/location tba**

tba  
tba

**Tuesday, November 22, 2011, 1:00-2:00pm/location tba**

tba  
tba

**Tuesday, December 13, 2011, 1:00-2:00pm/ location tba**

tba  
tba

**Tuesday, January 24, 2012, 1:00-2:00pm/ location tba**

tba  
tba

**Tuesday, February 28, 2012, 1:00-2:00pm/ location tba**

tba  
tba

**Tuesday, March 27, 2012, 1:00-2:00pm/ location tba**

tba  
tba

**Tuesday, April 24, 2011, 1:00-2:00pm/ location tba**

tba  
tba

**Tuesday, May 22, 2011, 1:00-2:00pm/ location tba**

tba  
tba