Arnold and Madaleine Penner
4th Annual Musculoskeletal Repair and Regeneration Symposium
Thursday, October 22, 2015

Presented by: Musculoskeletal and Orthopaedic Research Laboratories and Department of Orthopaedic Surgery at Einstein College of Medicine and Montefiore Medical Center

Program Director:
Hui (Herb) B. Sun, PhD

University Chairman, Department of Orthopaedic Surgery:
Neil J. Cobelli, MD

Albert Einstein College of Medicine
Michael F. Price Center and Harold and Muriel Block Research Pavilion
1300 Morris Park Avenue
Bronx, NY 10461
SYMPOSIUM MISSION
The Albert Einstein College of Medicine Musculoskeletal Repair and Regeneration Symposium seeks to expand the knowledge base within the field, and to foster inspiration, collaboration and networking between researchers throughout the region. This year's meeting will emphasize recent advances in translational research in two areas:

- Mechanisms and development of novel therapeutics for musculoskeletal disorders and diseases
- Stem cell, tissue repair, degeneration, and regeneration

HIGHLIGHTS FOR 4th ANNUAL SYMPOSIUM
- Dynamic sessions based on the vision and primary contribution from the Steering Committee and Session Chairs: Maurizio Pacifici, PhD, Yi-Xian Qin, PhD, Nelly Andarawis-Puri, PhD, Jeremy J. Mao, DDS, PhD.
- World-class scientists, including keynote speakers, will share their viewpoints and their most exciting up-to-date translational research.
- Outstanding speakers from new participating institutions including: Rush University, Boston University, Rensselaer Polytechnic Institute, Georgia Tech/Emory University, and The University of Kansas.

SYMPOSIUM LOCATION AND DATE
October 22, 2015
LeFrak Auditorium (Room 151), Price Center
Albert Einstein College of Medicine
1301 Morris Park Ave. Bronx, NY 10461

SCIENTIFIC GAP
Damage to musculoskeletal tissues is a significant cause of morbidity and increased mortality, and is a magnifier of mortality in other clinical diseases such as diabetes and cardiovascular disorders. The innate repair capacities are limited for articular cartilage, tendon, and extensive bone defects. In addition, current treatments for the repair of injured musculoskeletal tissue are not sufficient to restore the functionality of the original tissue. These daunting challenges present a desperate need for a better understanding of musculoskeletal biology and emphasize the importance of discovering novel repair and regeneration strategies that can be translated to clinical use.
GOALS
This program will address current issues in musculoskeletal repair and regeneration, and disease treatment. Discussions will focus on up-to-date laboratory discoveries and the potential impact of these findings on patient treatment and management in the future.

REGISTRATION
Deadline: September 21, 2015
Registration includes continental breakfast, lunch, and reception.
Registration is free. Early registration is highly recommended.
Register online: http://einstein.yu.edu/departments/orthopaedic-surgery/symposium

AGENDA

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:15 – 8:00 am</td>
<td>Check-in and continental breakfast</td>
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<tr>
<td>8:00 – 8:10 am</td>
<td>Acknowledgements</td>
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<tr>
<td>8:00 – 8:10 am</td>
<td>Opening remarks</td>
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<td>8:15 – 8:35 am</td>
<td>Potentiel role of cartilage beta-catenin signaling in the development of spondyloarthritis</td>
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<td>8:35 – 9:00 am</td>
<td>Role of iRhom2/ADAM17/TNFalpha signaling pathway in hemophilia arthropathy</td>
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<tr>
<td>9:00 – 9:25 am</td>
<td>Cell lineage and molecular mechanisms underlying articular cartilage development and growth</td>
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<tr>
<td>9:25 – 9:50 am</td>
<td>Strategies for functional tissue engineering of articular cartilage</td>
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9:50 – 10:10 am COFFEE BREAK

Session 1 – Cartilage Biology and Repair
Chair: Maurizio Pacifici, PhD

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Session 2 – Regeneration and Degeneration
Chair: Yi-Xian Qin, PhD

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<tr>
<td>10:10 – 10:35 am</td>
<td>Mechanical loading: bone degeneration and regeneration</td>
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<td>10:35 – 11:00 am</td>
<td>Diabetes alters bone response to exercise</td>
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<td>11:00 – 11:25 am</td>
<td>Image-Guided Analysis of Failure Processes in the Elderly Spine</td>
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<tr>
<td>11:25 – 11:50 am</td>
<td>Trabecular Plate and Rod Abnormality in OA</td>
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Maurizio Pacifici, PhD, Children’s Hospital of Philadelphia
Mia M. Thi, PhD, Albert Einstein College of Medicine
Elise F. Morgan, PhD, Boston University
X. Edward Guo, PhD, Columbia University
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| 12:00 – 1:45 pm | **LUNCH AND POSTER SESSION** (Lubin Hall)  
Lunch starts at 12:00 pm; Poster session starts at 12:45 pm  
12:00 pm – Faculty photo (Courtyard in front of Lubin Hall)  
12:00 – 12:45 pm – Faculty meeting with lunch (Faculty Club in Lubin Hall) |
| 12:00 pm     | Faculty photo (Courtyard in front of Lubin Hall)                      |
| 12:00 – 12:45 pm | Faculty meeting with lunch (Faculty Club in Lubin Hall)               |
| 1:45 – 2:05 pm | **Guiding regenerative strategies for tendon-to-bone repair: lessons from developmental biology**  
Stavros Thomopoulos, PhD, Columbia University |
| 2:05 – 2:25 pm | **Enhancing tendon repair through stem cell reprogramming**  
Herb B. Sun, PhD, Albert Einstein College of Medicine |
| 2:25 – 2:45 pm | **Guiding the Development of Immunomodulatory Therapeutics for Tendon Repair: 2D/3D Bioprinting to study Cell-Cell Signalling and Cross-Talk in Spatially-Precise Co-Cultures**  
David T. Corr, PhD, Rensselaer Polytechnic Institute |
| 2:45 – 3:05 pm | **Effects of Autologous Tenocyte-Seeded Nanofibrous Scaffolds in Rotator Cuff Repair**  
Andrew F. Kuntz, MD, University of Pennsylvania |
| 3:05 – 3:25 pm | **Discussion**                                                        |
| 3:25 – 3:45 pm | **COFFEE BREAK**                                                      |
| 3:45 – 4:10 pm | **Keynote: Biologic Augmentation for Rotator Cuff Repair – Is it Ready for Human Use Yet?**  
William N. Levine, MD, Columbia University |
| 4:10 – 4:35 pm | **GAG-based Biomaterials for Protein Release and Cell Differentiation**  
Johnna S. Temenoff, PhD, Georgia Tech/Emory University |
| 4:35 – 5:00 pm | **Injectable Cellulosic Hydrogels for Nucleus Pulposus Replacement**  
Steven B. Nicoll, PhD, The City College of New York |
| 5:00 – 5:25 pm | **Will Chondroinductive Materials Revolutionize Cartilage Regeneration?**  
Michael Detamore, PhD, The University of Kansas |
| 5:30 pm       | **Young Investigator Awards**                                         |
| 5:40 pm       | **Closing remarks**                                                   |
| 5:40 – 6:15 pm | **Reception and networking**                                          |
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PROGRAM DIRECTOR
Hui (Herb) B. Sun, PhD
Associate Professor of Orthopaedic Surgery and Radiation Oncology
Director of Orthopaedic Research
Albert Einstein College of Medicine and Montefiore Medical Center
Bronx, NY

STEERING COMMITTEE AND SESSION CHAIRS:
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Chief, Shoulder Service and Co-Director CSES  
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Chairman, Department of Biomedical Engineering
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Bronx, NY

Stavros Thomopoulos, PhD
Professor of Orthopaedic Surgery and Biomedical Engineering,
Vice Chair of Basic Research in Orthopaedic Surgery
Director of the Orthopedic Research Laboratories
Columbia University
New York, NY
CALL FOR ABSTRACTS / YOUNG INVESTIGATOR AWARD

Poster Session - We invite investigators to submit abstracts for the poster session, which is an important component of this conference. Posters will be displayed throughout the day with a dedicated poster session.

Young Investigator Award - Abstracts from graduate students and postdoctoral fellows will be considered for Young Investigator Awards. Three winners will be announced and each will be presented with prize and a plaque during the evening session. Winners will have the opportunity to give a brief highlight of their work (2 minutes) at the end of the award ceremony.

To qualify, you must register and submit an abstract to Dr. Mia M. Thi, the chair of the Poster Session and Young Investigator Award committee, by September 21, 2015 via email to: mia.thi@einstein.yu.edu.

ABSTRACT GUIDELINES

The abstract is limited to 1 page. Include in your abstract the study's objective, a brief statement of methods, a summary of the results obtained, conclusions, and significance. As the Symposium aims to promote communication within our region, we encourage you to submit your recent work (within 2015) to this Symposium, including work that may have been submitted to other meetings.

POSTER SESSION AND YOUNG INVESTIGATOR AWARD COMMITTEE
Chair: Mia M. Thi, PhD
Co-chairs: David M. Hirsh, MD, Robert J. Majeska, PhD, Jeremy J. Mao, DDS, PhD, Maurizio Pacifici, PhD, Sylvia O. Suadicani, PhD

CONTACT INFORMATION

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Rhomina Carrasco
Symposium Coordinator
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P: 718-430-2911
**Symposium Location**
Albert Einstein College of Medicine
Michael F. Price Center and Harold and Muriel Block Research Pavilion
1301 Morris Park Avenue, Bronx, NY 10461
Direction: http://www.einstein.yu.edu/visitors/

**HOTEL INFORMATION**
Residence Inn by Marriot
The Bronx at Metro Center Atrium
1776 Eastchester Road, Bronx, NY 10461
Launched in May 2015, the hotel is a 10 minute walk from the Symposium, and offers a free shuttle to Albert Einstein
www.marriott.com/nycbx
P: 718-239-3939

**PARKING INFORMATION**
The PF Parking lot
1975 Eastchester Road
Bronx, NY 10461
http://einstein.pfparking.org/location.php