### ORS Great Lakes/Midwest Regional Symposium: Orthopaedic Research from Bench to Bedside

**Monday, August 12, 2019**  
Rush University Medical Center, Chicago, Illinois

**Organizers:** Andrea Alford, PhD, ORS Ambassador – Great Lakes, University of Michigan  
Ryan Ross, PhD, ORS Ambassador – Midwest, Rush University Medical Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 7:30 AM – 8:45 AM | Registration  
Poster Set Up  
Short Talk Presentations Loaded |
|               | Searle Conference Center:  
Billings-Herrick Center |
| **•** Please plan to pick up your name badge and materials first before setting up your poster or loading your presentation.  
• A continental breakfast will be available until 8:45 AM. |
| 9:00 AM – 9:30 AM | Welcome  
Searle conference Center:  
542 Brainard |
| **•** Andrea Alford, PhD, University of Michigan, and Ryan Ross, PhD, Rush University Medical Center, ORS Ambassadors  
**•** Susan Chubinskaya, PhD, Vice Provost of Faculty Affairs, Rush University Medical Center  
**1st Vice President, Orthopaedic Research Society**  
**•** Joshua J. Jacobs, MD, Chairman, Department of Orthopedic Surgery, Rush University Medical Center |
| 9:30 AM – 10:10 AM | Keynote: *Novel matricellular modulators of Wnt signaling regulate bone formation*  
Kurt Hankenson, DVM, PhD, University of Michigan |
| 10:10 AM – 10:40 AM | Lysosomal function is deregulated in Osteoarthritis and its inhibition induced apoptosis in chondrocytes through Bax mediated release of Cytochrome c  
Mohammad Ansari, PhD, Northeast Ohio Medical University  
**10:25 AM - 10:40 AM**  
*Runx2-mediated autophagy promotes osteoblast and chondrocyte differentiation*  
Ahmad Othman, MSc, Rush University Medical Center |
| 10:40 AM – 11:05 AM | Networking Break |
| 11:05 AM – 11:45 AM | Keynote: *Osteoarthritis Pain: What’s bone got to do with it?*  
Anne-Marie Malfait, MD, PhD, Rush University Medical Center |
| 11:45 AM – 12:00 PM | Lunch and Poster Session  
Poster Session will be in the Billings-Herrick Room.  
**•** All presenting authors should be available at their posters 12:15 PM – 1:00 PM to answer questions and share their work.  
**•** Lunch will be available 12:00 PM – 2:30 PM. |
| 2:30 PM – 3:10 PM | Keynote: *Intradiscal injection therapy for intervertebral disc degeneration: basic science research and treatment options*  
Howard An, MD, Rush University Medical Center |
| 3:10 PM – 4:20 PM | Fatigability, Aerobic Capacity and Physical Activity in Women with Hip Osteoarthritis  
Megan Horras, BS, University Illinois at Chicago  
**3:25 PM - 3:40 PM**  
*Novel Repurposing of a Cytadine Analog to Treat Human Muscle Contractures*  
Richard Lieber, PhD, MBA, Shirley Ryan Ability Lab |

Tweet @ORSsociety #ORSChicago
3:40 PM - 4:05 PM
Anterior Cruciate Ligament Bundle Morphometry Relationships Vary by Age and Sex During Adolescent Growth
Stephanie Cone, PhD, University of Wisconsin

4:05 PM – 4:30 PM
Networking Break

4:20 PM – 5:00 PM
Keynote: Cartilage restoration: Choosing a clinically meaningful approach
Adam Yanke, MD, PhD, Midwest Orthopaedics at Rush

5:00 PM – 5:30 PM
Symposium Wrap Up and Short Talk/Poster Awards Presentation

Symposium Supporters
Thank you to the following for their generous support of the symposium.

Gold

RUSH UNIVERSITY MEDICAL CENTER

Susan Chubinskaya, PhD, Vice Provost of Faculty Affairs

Silver

RUSH UNIVERSITY MEDICAL CENTER

Department of Cell & Molecular Medicine

Join the ORS Research Community!
Stop by the registration desk to join the #ORSNation on the spot! ORS Staff will be available to answer questions about membership and society opportunities. Please also visit www.ors.org.

Symposium Location:
Rush Professional Building
1725 W. Harrison Street, 5th floor – MAIN LOUNGE
Chicago, IL 60612
<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Abstract/Poster Presenters</th>
</tr>
</thead>
</table>
| 1             | **Evaluation of Global Gene Expression and Cellular Composition in Regenerate Tissues Formed During Masquelet Treatment**  
Andrea Alford, PhD, University of Michigan*  
Andrea Alford, Mark Hake |
| 2             | **Fracture Healing in Aging: Improving Angiogenesis**  
Anthony Perugini, BS, Department of Orthopaedic Surgery, Indiana University School of Medicine  
Anthony Perugini, Ushashi Dadwal, Fazal Ur Rehman Bhatti, Deepa Sheik Pran Babu, Rachel Blosser, Seyungyup Sun, Olatundun Awosanya, Jiliang Li, Melissa Kacena |
| 3             | **Sclerostin anti-body regulation of mineral metabolism in the 8-week old Hyp mouse model**  
Kelsey Carpenter, MS, Rush University Medical Center*  
Kelsey Carpenter, Ryan Ross |
| 4             | **Inducing Temporomandibular Joint Condylar Fibrochondrogenesis through the Controlled Release of Estrogen from Emulsion Electrospun Scaffolds**1  
Pamela Johnson, BS, University of Kansas  
Pamela Johnson, Anna Trofimoff, Jennifer Robinson |
| 5             | **Shear Wave Speeds Measured in the Collateral Ligaments Are Sensitive to Overstuffing during Total Knee Arthroplasty**  
Joshua Roth, PhD, University of Wisconsin-Madison*  
Joshua Roth, Jonathon Blank, Rahul Samtani, Justin Greiner, Matthew Squire, Darryl Thelen |
| 6             | **Poster Withdrawn** |
| 7             | **Reduced Muscle Stem Cell Number Hinders Sarcomere Addition and Contracture Recovery**  
Richard Lieber, PhD, MBA, Shirley Ryan AbilityLab*  
Richard Lieber, Sudarshan Dayanidhi |
| 8             | **Radiography and Reference-Point Indentation as Predictors of Fracture Susceptibility**  
Jonathan Gaide, Purdue University  
Jonathan Gaide, Timothy Lescun, Russell Main |
| 9             | **Sned1 knockout causes neonatal lethality and craniofacial and skeletal defects**  
Anna Barque Falguera, BSc, MSc, University of Illinois at Chicago  
Anna Barque Falguera, Martin Davis, Kyleen Jan, Christina Nicholas, Richard Hynes, Alexandra Naba |
| 10            | **Poster Withdrawn** |
| 11            | **Fracture Healing and Pain Tolerance in Aging Populations**  
Zachary Campbell, BA, Indiana University School of Medicine Department of Orthopaedic Surgery  
Zachary Campbell, Zachary Gunderson, Ushashi Dadwal, Nicklaus Diggins, Alexander Brinker, Natalie Taylor-Nguyen, Rachel Blosser, Fletcher White, Melissa Kacena |
| 12            | **Effect of Patella Alta on the Native Anatomometricity of the Medial Patellofemoral Complex: A Cadaveric Study**  
Adam Yanke, MD, PhD, Rush University*  
Adam Yanke, Hailey Huddleston, Kevin Campbell, Michael Redondo, Alejandro Espinoza, Jorge Chahla, Brian Cole, Jack Farr |
| 13            | **Effects of Sclerostin Inhibition by BPS804 Antibody on Skeletal Mass and Strength in a Brtl+ Mouse Model of Osteogenesis Imperfecta**  
Christopher Stephan, MS, University of Michigan*  
Christopher Stephan, Rebecca Falzon, Lauren Battle, Chase Carto, Kenneth Kozloff |
| 14            | **Differential Gene Expression Analysis Reveals Pathways Important in Early Post-Traumatic Osteoarthritis in an Equine Model**  
Annette McCoy, DVM, MS, PhD, DACVS, University of Illinois Urbana-Champaign*  
Annette McCoy, Ann Kemper, Troy Trumble |
| 15            | **Targeted delivery of parathyroid hormones for accelerated fracture repair**  
Stewart Low, PhD, Purdue University*  
Stewart Low, Jeffery Nielsen, Philip Low |
| 16            | **Macrophage Response to CoCrMo Wear and Corrosion Debris Freshly Generated In-Situ**  
Simona Radice, PhD, Rush University Medical Center*  
Simona Radice, Kathrin Ebinger, Lauryn Samelko, Robin Pourzal, Nadim Hallab, Markus Wimmer |
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Evaluation of Treatment for Volumetric Muscle Loss in a Porcine Tibia Segmental Bone Defect Model</td>
<td>Nicklaus Diggins, MS, Indiana University Orthopaedic Research Lab</td>
</tr>
<tr>
<td></td>
<td>Development of a comparative primate skeletal cell culture model to study gene expression responses to mechanical strain</td>
<td>Genevieve Housman, PhD, University of Chicago</td>
</tr>
<tr>
<td></td>
<td>Characterization of the Noicceptive and Inflammatory Response in a Mouse Model of ACL Rupture-Induced PTOA</td>
<td>Phillip Rzeczycki, PhD, University of Michigan</td>
</tr>
<tr>
<td></td>
<td>Effect of Spacer Porosity on the Masquelet Technique</td>
<td>Sara McBride-Gagyi, PhD, Saint Louis University*</td>
</tr>
<tr>
<td></td>
<td>Peripheral Musculoskeletal Challenge Alters the Gut Microbiome in an In vivo Rat Model</td>
<td>Meghan Moran, PhD, Rush University Medical Center*</td>
</tr>
<tr>
<td></td>
<td>Type 2 Diabetes-Driven Alterations in Bone Healing and Angiogenesis</td>
<td>Seungyup Sun, BS, Indiana University School of Medicine</td>
</tr>
<tr>
<td></td>
<td>Sclerostin antibody-induced differential transcriptional expression in trabecular bone of Brtl/+ osteogenesis imperfecta mouse</td>
<td>Hsiao Sung, DDS, MS, University of Michigan*</td>
</tr>
<tr>
<td></td>
<td>The Pathological Interaction Between Alzheimer's Disease and Osteoporosis in 5xFAD Mouse Model</td>
<td>Shruti Shakthivel, PhD, Rush University</td>
</tr>
<tr>
<td></td>
<td>Opioids Paradoxically Exacerbate Postfracture Pain Despite Evidence of Bone Union</td>
<td>Zachary Gunderson, PhD, Rush University Medical Center*</td>
</tr>
<tr>
<td></td>
<td>Bone formation rate is largely unaffected by pharmaceutical treatments following weaning in the lactation/low calcium model.</td>
<td>Kyle Anderson, MS, Rush University Medical Center*</td>
</tr>
<tr>
<td></td>
<td>Thrombospondin-2, an endogenous anti-angiogenic protein, is strongly expressed by the synovium following traumatic injury in mice</td>
<td>Lucas Junginger, BS, University of Michigan, Ann Arbor</td>
</tr>
<tr>
<td></td>
<td>Cellular and molecular mechanism underlying alcohol inhibition of bone fracture healing</td>
<td>Jonathan Eby, BS, Loyola University Chicago</td>
</tr>
<tr>
<td></td>
<td>Effect of Assembly Method—One vs Multiple Strikes—in Modular Taper Mechanics in Total Hip Arthroplasty</td>
<td>Jonathan Gustafson, PhD, Rush University Medical Center*</td>
</tr>
<tr>
<td></td>
<td>Step Length Asymmetry and its Associations with Gait Efficiency in Older Adults with Hip Osteoarthritis</td>
<td>Chun-Hao Huang, MS, University of Illinois at Chicago</td>
</tr>
<tr>
<td></td>
<td>Targeted Delivery of Anabolic Extracellular Matrix Cues to Accelerate Bone Fracture Repair</td>
<td>Jeffery Nielsen, Purdue University*</td>
</tr>
<tr>
<td></td>
<td>Imaging Intracellular Calcium in Murine Chondrocytes During Dynamic Compression</td>
<td>Spencer Fullam, MS, Rush University Medical Center</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>34</td>
<td>Intramuscular Anatomy Drives Muscle Collagen Content Variation</td>
<td>Benjamin Binder-Markey, DPT, PhD, Shirley Ryan Ability Lab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Binder-Markey, Nicole Broda, Richard Lieber</td>
</tr>
<tr>
<td>35</td>
<td>Cell Identification and Sub-Cellular Chemical Characterization using HD FTIR-Imaging: A Multivariate Analysis</td>
<td>Songyun Liu, MS, Rush University Medical Center</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Songyun Liu, Deborah Hall, Stephanie McCarthy, Joshua Jacobs, Robert Urban, Robin Pourzal</td>
</tr>
<tr>
<td>36</td>
<td>The Effects of Spaceflight and Fracture Healing on Distant Skeletal Sites</td>
<td>Alexander Brinker, IU School of Medicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alexander Brinker, Melissa Kacena</td>
</tr>
<tr>
<td>37</td>
<td>Destabilization of the medial meniscus in one knee primes the contralateral knee for accelerated osteoarthritis</td>
<td>Anita Donner, BS, Rush University Medical Center</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anita Donner, Shingo Ishihara, Rachel Miller, Phuong Tran, Anne-Marie Malfait</td>
</tr>
<tr>
<td>38</td>
<td>Poster Withdrawn</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Effect of local and systemic CCR2 blockade on knee hyperalgesia in a mouse model of osteoarthritis</td>
<td>Shingo Ishihara, Rush University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shingo Ishihara, Rachel Miller, Richard Miller, Anne-Marie Malfait</td>
</tr>
<tr>
<td>40</td>
<td>Thrombopoietin: Role in Fracture Healing and Pain</td>
<td>Luke McVeigh, BS, Indiana University School of Medicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luke McVeigh, Deepa Kanagasabapathy, Rachel Blosser, Eric Thompson, Jill Fehrenbacher, Fletcher White, Melissa Kacena</td>
</tr>
<tr>
<td>41</td>
<td>Testing the Efficacy of Targeted Anabolic Agents on Maxillofacial Defects in a Rodent Model</td>
<td>Jonathan Hicks, Purdue University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jonathan Hicks, Cheyanne Woolwine</td>
</tr>
<tr>
<td>42</td>
<td>Sclerostin Antibody Treatment Improves Mineralization of Periodontal Bone in the HYP Mouse Model</td>
<td>Christopher Mestyanek, Rush University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Christopher Mestyanek, Kelsey Carpenter, Anne George, Elizabeth Guirado, Yinghua Chen, Ryan Ross</td>
</tr>
</tbody>
</table>