

ORS Great Lakes/Midwest Regional Symposium: *Musculoskeletal Health through the Lifespan*
Monday, August 6, 2018
Michigan League, Ann Arbor, Michigan

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

7:30 AM – 9:00 AM	Registration/Check In	2nd Floor Concourse (Outside of the Michigan League Ballroom)
Please plan to pick up your name badge and materials first.		

7:30 AM – 9:00 AM	Poster Setup	Michigan League Ballroom
Please stop by the registration desk if you have questions regarding your poster number.		

7:30 AM – 9:00 AM	Breakfast	Michigan League Ballroom
A continental breakfast will be served.		

8:00 AM – 9:00 AM	Meet the Professor Breakfast	Michigan League Ballroom
Invited established investigators: Rick Sumner, Susan Chubinskaya, Kathleen Derwin, Matthew Allen, Kenneth Kozloff, Steven Goldstein		

9:00 AM – 9:25 AM	Welcome and Opening Remarks	Michigan League Ballroom
Andrea Alford, PhD, ORS Ambassador – Great Lakes, University of Michigan Ryan Ross, PhD, ORS Ambassador – Midwest, Rush University Medical Center		

Session I: Bone Healing and Regeneration	
Moderator: D. Rick Sumner, PhD, Past President, Orthopaedic Research Society, Rush University Medical Center, Department of Cell and Molecular Medicine	
9:30 AM – 9:55 AM	Session I Keynote: <i>Bone and Implant Fixation</i> D. Rick Sumner , PhD, Past President, Orthopaedic Research Society Rush University Medical Center, Department of Cell and Molecular Medicine
9:55 AM – 10:05 AM	<i>Evaluation of a Critical Sized Bone Defect in a Porcine Tibial Model</i> Zachary Gunderson
10:05 AM – 10:15 AM	<i>Gene expression profiling of sclerostin antibody-induced therapeutic response in Brtl/+ mouse model of osteogenesis imperfecta</i> Hsiao Hsin Sung , Rachel Surowiec, Rebecca Falzon, Lauren Battle, Chris Stephan, Michelle Caird, Kenneth Kozloff
10:15 AM – 10:25 AM	<i>Modular microtissues for the regeneration of vascularized bone in critical-sized defects</i> Ramkumar T. Annamalai , Xiaowei Hong, Nicholas Schott, Benjamin Levi, Jan Stegemann,

10:25 AM – 10:45 AM	Session Break
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Session II: Cartilage: OA and PTOA	
Moderator: Susan Chubinskaya, PhD, 2nd Vice President, Orthopaedic Research Society, Rush University Medical Center, Department of Pediatrics	
10:45 AM – 11:10 AM	Session II Keynote: <i>Post-traumatic OA: clinical reality and experimental approaches</i> Susan Chubinskaya , PhD, 2nd Vice President, Orthopaedic Research Society, Rush University Medical Center, Department of Pediatrics

11:10 AM – 11:20 AM	<i>Genetic Inactivation of ZCCHC6 downregulates IL-6 expression and reduces the severity of experimental osteoarthritis in mice</i> Mohammad Ansari , Tariq Haqqi
11:20 AM – 11:30 AM	<i>ACL Rupture-Induced Intra-Articular Recruitment of Peripheral Blood Mobilized Stem Cells is CXCR4 Dependent</i> Mackenzie Fleischer , Michael Newton, Samantha Hartner, Christopher Bush, Stephen Luczak, Asheesh Bedi, Tristan Maerz, Kevin Baker
11:30 AM – 11:40 AM	<i>Automated MicroCT-based Bone and Articular Cartilage Analysis Using Iterative Shape Averaging and Atlas-Based Registration</i> Lucas Junginger , Tristan Maerz, Michael Newton

11:40 AM – 1:00 PM	Lunch/Poster Session
<p><i>Lunch</i> A boxed lunch will be served in the Michigan League Ballroom. If you have noted dietary/allergy restrictions, all options will be clearly labeled.</p> <p><i>Poster Session</i> All authors will be required to stand by their posters from 12:15 PM - 1:00 PM.</p>	

Session III: Bone Quality	
Moderator: Matthew R. Allen, PhD, Indiana University School of Medicine, Department of Anatomy and Cell Biology	
1:00 PM – 1:25 PM	Session III Keynote: <i>Bone Quality: An adventure worth choosing</i> Matthew R. Allen , PhD, Indiana University School of Medicine, Department of Anatomy and Cell Biology
1:25 PM – 1:35 PM	<i>The Relationship among Bone Strength, Age, and Fracture Type</i> Daniella Patton , Erin Bigelow, Fred Finney, Mark Hake, Stephen Schlecht, Tood Bredbenner, Karl Jepsen
1:35 PM – 1:45 PM	<i>TSP2-deficiency leads to reduced collagen matrix maturation and impaired osteoblast lineage progression</i> Haseeb Khan , Anita Reddy, Andrea Alford
1:45 PM – 1:55 PM	<i>Osteonal encroachment as a means of following subtle changes in bone remodeling with estrogen depletion</i> Clifford Les , Shannon Kelley, Carola Pechey, Jennifer MacLeay, Simon Turner

1:55 PM – 2:15 PM	Session Break
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Session IV: Soft Tissue Injury and Repair	
Moderator: Kathleen Derwin, PhD, Cleveland Clinic, Department of Biomedical Engineering	
2:15 PM – 2:40 PM	Session IV Keynote: <i>Rotator Cuff Repair: Challenges and Opportunities</i> Kathleen Derwin , PhD, Cleveland Clinic, Department of Biomedical Engineering
2:40 PM – 2:50 PM	<i>Mobilization and Recruitment of Marrow-Derived Stem Cells to Enhance Bone Tunnel Healing in ACL Reconstruction</i> Samantha Hartner , Mackenzie Fleischer, Michael Newton, Brian Acker, Christopher Bush, Stephen Luczak, Asheesh Bedi, Tristan Maerz, Kevin Baker,
2:50 PM – 3:00 PM	<i>Contralateral Lateral Femoral Condyle Allografts Provide an Acceptable Surface Match for Simulated Classic Osteochondritis Dissecans Lesions of the Medial Femoral Condyle</i>

	Nabeel Salka , John Grant
3:00 PM – 3:10 PM	<i>Network Analysis of Skeletal Muscle During Spaceflight in Male Mice</i> Michael Savaglio

3:10 PM – 3:30 PM	Session Break
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Session V: What's the Secret to a Successful Collaboration?	
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3:30 PM – 4:15 PM	<i>Osteogenesis Imperfecta- A collaborative journey to improve patients' lives</i> Kenneth Kozloff , PhD, University of Michigan, Department of Orthopaedic Surgery Michelle Caird , MD, University of Michigan, Department of Orthopaedic Surgery
4:15 PM – 4:45 PM	Panel Discussion

4:45 PM – 5:00 PM	Closing Remarks
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Andrea Alford, PhD, ORS Ambassador – Great Lakes, University of Michigan Ryan Ross, PhD, ORS Ambassador – Midwest, Rush University Medical Center	
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5:00 PM – 5:30 PM	Poster Take Down
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Thank you to the following for their generous support of the symposium.

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Department of Cell & Molecular Medicine



Susan Chubinskaya, PhD, Rush

University Medical Center

Klaus Kuettner Chair of Osteoarthritis Research

Parking Information

All attendees are encouraged to park in the Palmer Structure ([view parking map](#)).

Visitor parking is available on Central Campus at the Palmer Drive structure located on Palmer Drive just west of Washtenaw Avenue. The visitor parking rate is \$.85 per half hour.

Campus Map and Symposium Location

[University of Michigan Campus Interactive Map](#)

Michigan League

911 N University Ave.
Ann Arbor, MI 48109



Poster List	
<i>Names in bold indicate the presenting author.</i>	
1	<i>Estimation of Allograft Remodeling in a Rat Model of the Masquelet Technique using MicroCT</i> Nishant Gohel, University of Michigan, Orthopaedic Research Laboratory Nishant Gohel, Kurt Hankenson, Steve Goldstein, Kenneth Kozloff, Mark Hake, Andrea Alford
2	<i>Endothelial invasion and Hox11-expressing mesenchymal stem cell migration in developing bone marrow</i> Lauren Koch, University of Michigan Lauren Koch, Elena Lafata
3	<i>Multimode Ultrasound Viscoelastography (MUVE) for the Interrogation Of Microscale Mechanical Properties in Heterogeneous Biomaterials</i> Eric Hobson, University of Michigan Eric Hobson, Xiaowei Hong, Ramkumar T. Annamalai
4	<i>Age trajectories of musculoskeletal morbidities in adults with cerebral palsy</i> Daniel Whitney, University of Michigan Daniel Whitney, Edward Hurvitz, Maureen Devlin, Michelle Caird, Zachary French, Elie Ellenberg, Mark Peterson
5	<i>Visualization of the Mouse Femur Vascular Network by Barium Sulfate Perfusion</i> Michael Casden, University of Michigan, School of Kinesiology Michael Casden, Bonnie Nolan, Jaron Scott, Erin Bigelow, Andrea Clark, Stephen Schlecht, Karl Jepsen
6	<i>The Effect of Radial Head Hemiarthroplasty Stem Fit on Radiocapitellar Contact Mechanics: Is Loose Fit better than Rigidly Fixed?</i> Jakub Szmít, Western University Jakub Szmít, Graham King, Jim Johnson, G. Daniel Langohr
7	<i>Minimally Invasive, Non-Terminal In Vivo Muscle Testing of a Porcine Tibia Fracture Model</i> Alexander Peters, Indiana University School of Medicine Alexander Peters
8	<i>Do Drug Allergies Impact Clinical Outcomes after Lumbar Spinal Fusion?</i> Jannat Khan, Rush University Medical Center Jannat Khan, Bryce Basques, Philip Louie, Joe Michalski, Jennifer Hwang, Konstantin Tchalukov, Peter Derman, Howard An, Matthew Colman
9	<i>Does Obesity Impact Clinical Outcomes after a Posterior Lumbar Spine Fusion?</i> Jannat Khan, Rush University Medical Center Jannat Khan, Bryce Basques, Philip Louie, Kyle Kunze, Gagan Grewal, Christian Vetter, Edward Goldberg, Howard An
10	<i>Bisphosphonate Treatment Prevents Pregnancy and Lactation - Induced Bone Loss when Administered During Early Stages of Neonatal Skeletal Development</i> Diana Dillstrom, University of Michigan, Orthopaedic Research Laboratory Diana Dillstrom, Rachel Stolzenfeld, Emily Fisher, Michelle Caird, Kenneth Kozloff
11	<i>A Survey of Skeletal Adaptations in Young Male Mice after Four Weeks of Microgravity Aboard the International Space Station</i> Alex Brinker, Indiana University School of Medicine Alex Brinker
12	<i>Stratification by Preoperative Structural Morphology Reveals Inherent Gender Differences in Arthroscopic Treatment of Femoroacetabular Impingement</i> Rachel Bergman, University of Michigan Medical School Rachel Bergman, Eilish O'Sullivan, Bryan Kelly, Asheesh Bedi, Tristan Maerz
13	<i>Identification of secreted factors coupling bone resorption to bone formation in humans using denosumab as a biological probe</i> Megan Weivoda, University of Michigan Megan Weivoda, David Monroe, Elizabeth Atkinson, Josh Farr, Ming Ruan, Brittany Negley, Brianne Thicke, Merry Jo Oursler, Sundeep Khosla

14	<p><i>Pay for Performance Design: Choosing the Proper Attainment Model to Drive Quality Improvement in Orthopaedics</i></p> <p>Omar Gad, University of Toledo Omar Gad, Richard Hughes, Brian Hallstrom</p>
15	<p><i>Bone Quality Arising from Nanoscale Chemical Heterogeneity and Porosity</i></p> <p>Taeyong Ahn, University of Michigan Taeyong Ahn, Max Jueckstock, David Gidley, Bard Orr, Ken Kozloff, Mark Banaszak Holl</p>
16	<p><i>Defining Hox11 function in adult skeletal homeostasis and injury repair</i></p> <p>Jane Song, University of Michigan Jane Song, Kyriel Pineault</p>
17	<p><i>Pain Management During Space Mission: A Transcriptomic Study using Brain Tissues Obtained from NASA/Rodent Research 4 (RR4) Program</i></p> <p>Venkateswaran Ganesh, Indiana University School of Medicine, Dept. of Orthopaedic Surgery Venkateswaran Ganesh</p>
18	<p><i>Autophagy suppression by Atg5 deletion led to osteopenia in mice through mTORC1 downregulation</i></p> <p>Han Kyoung Choi, University of Michigan School of Dentistry Han Kyoung Choi</p>
19	<p><i>In Vitro and In Vivo Treatment Response of Osteogenesis Imperfecta Bone Tissue to Bone Forming Sclerostin Antibody</i></p> <p>Rachel Surowiec, University of Michigan, Orthopaedic Research Laboratory Rachel Surowiec, Lauren Battle, Stephen Schlecht, Michelle Caird, Kenneth Kozloff</p>
20	<p><i>Female rats bred for a positive adaptive response to aerobic training are protected against age- associated trabecular bone loss</i></p> <p>Erin Finn, University of Michigan, Orthopaedic Research Laboratory Erin Finn, Stacy Kaneko, Steven Britton, Lauren Koch, Ronald Zernicke, Kenneth Kozloff</p>
21	<p><i>The Effect of Lipid Levels on Patient-Reported Outcomes in Patients with Rotator Cuff Tears</i></p> <p>Joel Gagnier, University of Michigan</p>
22	<p><i>Validating equivalence of physes from different anatomical regions</i></p> <p>Ashley Mohrman, Akron Children's Hospital Ashley Mohrman, Ben Petrinc, Dennis Weiner, Melanie Morscher, Robin Childs, Fayez Safadi, Mark Adamczyk</p>
23	<p><i>Recruitment of Mesenchymal Stem Cells to the Intervertebral Disc via Local Chemokine Delivery from an Injectable Hydrogel</i></p> <p>Michael Newton, Beaumont Health Michael Newton, Sapan Gandhi, Mackenzie Fleischer, Samantha Hartner, Meagan Salisbury, Klara Gellci, Kevin Baker</p>
24	<p><i>Rod Metal Composition Predicts the Development of Proximal Junctional Kyphosis in Posterior Spine Fusions in Adult Spine Deformity Patients</i></p> <p>Jannat Khan, Rush University Medicine Center Jannat Khan, Phillip Louie, Bryce Basques, Michael Nolte, Kamran Movassaghi, Jonathan Markowitz, Howard An, Christopher Dewald</p>