

Musculoskeletal Biology and Regeneration Meeting

EPNEC Conference Center, WUSTL, St. Louis MO

May 5-6, 2022

All events will take place in the auditorium unless otherwise noted

THURSDAY | May 5, 2022

11:45 am – 12:20 pm **Registration** (lobby), **poster set-up** (Great Room A)

12:20 pm **Welcome and Opening Remarks**

Regis O’Keefe, MD, PhD

Fred C Reynolds Professor and Head | Department of Orthopedic Surgery

Center of Regenerative Medicine

Division of Biology and Biomedical Sciences

Institute of Clinical and Translational Sciences

Siteman Cancer Center

Washington University in St. Louis

12:25 pm **Keynote Introduction**

Farshid Guilak, PhD

Professor | Department of Orthopaedic Surgery

Co-Director | Center of Regenerative Medicine

Director of Research | Shriners Hospitals for Children St. Louis

Washington University in St. Louis

12:30 pm **Keynote Lecture: Kristi Anseth, PhD**

Tisone Professor and Distinguished Professor

University of Colorado | Boulder, CO

“Engineering Bioresponsive and Adaptable Materials for Regenerative Medicine”

1:35 – 3:03 pm **Session I – ENGINEERING TISSUE REPAIR**

*Session Moderator: **Natasha Case***

1:35 pm **Warren Grayson, PhD**

Professor

Johns Hopkins University | Baltimore, MD

“Autologous Regeneration of Midfacial Bone in Large Animals”

2:02 pm **Stephanie Bryant, PhD**

Professor

University of Colorado | Boulder, CO

“Tissue-Mimetic Hydrogel Composites for Musculoskeletal Tissue Engineering”

2:29 pm **Nate Huebsch, PhD**

Assistant Professor

Washington University | St. Louis, MO

“Designing Alginate Hydrogels to Exploit Integrin Signaling for Musculoskeletal Tissue Engineering”

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2:51 pm **Ning Gao**
The Institute of Materials Science & Engineering
Washington University | St. Louis, MO
"Enriching MSC Paracrine Effects by Enhancing N-Cadherin Interaction For Ischemic Limb Regeneration"

3:15 – 4:00 pm **POSTER SESSION** (Great Room A)

4:10 – 5:20 PM **Session 2 – MECHANISMS OF REGENERATION**
Session Moderator: Sade Williams Clayton

4:10 pm **Bruno Peault, PhD**
Professor
University of California at Los Angeles | Los Angeles, CA
and the University of Edinburgh (UK)
"Mesenchymal Stem Cells, From Natural Niches to Tissue Repair and Remodeling"

4:37 pm **Ken Muneoka, PhD** (virtual)
Professor
College of Veterinary Medicine and Biomedical Sciences
Department of Veterinary Physiology and Pharmacology
Texas A&M University | College Station, TX
"A Digital approach to Regeneration and Regenerative Medicine"

5:04 pm **Feini (Sylvia) Qu, VMD, PhD**
Instructor
Washington University | St. Louis, MO
"Development vs. Regeneration: Skeletal Patterning and Outgrowth of the Murine Digit Tip"

DINNER | Third Degree Glass Factory
5200 Delmar Blvd, St. Louis, MO 63108

6:00 pm Cocktails & Glass blowing demonstration

7:00 pm Dinner

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FRIDAY | May 6, 2022

7:00 – 8:00 am **BREAKFAST** | *Main lobby*

8:15 – 9:30 am **Session 3 – TRANSLATIONAL APPROACHES IN REGENERATIVE MEDICINE**
Session Moderator: M. Farooq Rai

8:15 am **Nenad Bursac, PhD**
Professor of Biomedical
Engineering, Cell biology, and Medicine
Duke University | Durham, NC
“Modeling Rare Skeletal Muscle Diseases in a Dish”

8:42 am **David Brogan, MD, MSc**
Assistant Professor
Orthopaedic Surgery
Washington University | St. Louis, MO
“Intra-operative Imaging of Nerve Injuries: A Paradigm Shift”

9:04 am **Hua Shen, PhD**
Orthopaedic Surgery
Washington University | St. Louis, MO
“Metabolic Regulation of Intrasynovial Flexor Tendon Repair”

9:18 am **Jennifer Brazill, PhD**
BMD
Washington University | St. Louis, MO
“SARM1 Drives Type 1 Diabetes-Associated Bone Suppression and Fragility”

9:32 am **Ryan Potter**
Orthopaedic Surgery
Washington University | St. Louis, MO
“Systemic VEGFA Ablation Blunts Locomotive Deficits and Intradiscal Innervation Following Lumbar Intervertebral Disc Injury”

9:46 am **Xiaohong Tan**
Biomedical Engineering
Washington University | St. Louis, MO
“Dual Peptide Functionalized Alginate Hydrogels to Modulate Nucleus Pulposus Cell Phenotype”

9:58 – 10:15 am **BREAK**

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10:15 am – 12:00 pm **Session 4 – SKELETAL STEM CELLS AND REPAIR**

Session Moderator: Nicole Gould

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| 10:15 am | Matt Greenblatt, MD, PhD
Associate Professor
Weill Cornell Medical College New York City, NY
<i>"A Skeletal Stem Cell Basis for Lineage Selection in Bone Homeostasis and Repair"</i> |
| 10:42 am | Celine Colnot, PhD (virtual)
Research Associate Professor
INSERM U955-Mondor Biomedical Research Institute
Paris Est-Creteil University Créteil, France
<i>"Skeletal Stem/Progenitor Cells in Periosteum and Skeletal Muscle Coordinate Endochondral Ossification During Bone Regeneration"</i> |
| 11:09 am | Kareem Azab, PhD
Associate Professor
Radiation Oncology - Div. of Cancer Biology, Department of Radiation Oncology
Biomedical Engineering - Washington University St. Louis, MO
Adjunct Clinical Instructor and Preceptor at Saint Louis College of Pharmacy.
Founder and CSO at Cellatrix LLC; Founder at Targeted Therapeutics LLC;
Co-Founder of CovACE Nanotechnology LLC, Co-Founder of AdaptXRT LLC
<i>"3D Tissue-Engineered Bone Marrow Model as a Tool to Predict Therapeutic Efficacy in Cancer Patient Response"</i> |
| 11:31 am | Neda Rashidi
Mechanical Engineering and Material Science
Washington University St. Louis, MO
<i>"Modulation of Human Adipose Stem Cell Collagen Synthesis by Mechanosensing of Substrate Architecture Through the PIEZO1 Ion Channel"</i> |
| 11:45 am | Wei Zou, PhD
Pathology and Immunology
Washington University St. Louis, MO
<i>"Car Cells Express BMP Inhibitors Negatively Regulating Bone Formation In Vivo"</i> |
| 12:00 – 1:00 pm | LUNCH Main Lobby |

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1:00 – 2:42 pm **Session 5 | SYSTEMIC INFLUENCES ON REPAIR AND REGENERATION**

*Session Moderator: **Natalia Harasymowicz***

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| 1:00 pm | Philipp Leucht, PhD
Associate Professor
NYU Grossman School of Medicine New York City, NY
<i>"Skeletal Stem Cell Aging: Is it reversible?"</i> |
| 1:27 pm | Benjamin Levi, MD
Dr. Lee Hudson-Robert R. Penn Chair
Division Chief of General Surgery
Director, Center for Organogenesis & Trauma
Associate Professor in Surgery
University of Texas Southwestern Medical Center Dallas, TX
<i>"The Power of One: Investing in One Cell and One Lab Member at a Time"</i> |
| 1:54 pm | Jie Shen, PhD
Assistant Professor
Orthopaedic Surgery
Washington University St. Louis, MO
<i>"Fracture Nonunion: New Insights into Mechanism and Therapy"</i> |
| 2:16 pm | Kunjan Khanna, PhD
Orthopaedic Surgery
Washington University St. Louis, MO
<i>"TMEM178 Negatively Regulates IL-1β Production Through Inhibition of NLRP3 Inflammasome"</i> |
| 2:30 pm | Xiao Zhang
Department of Medicine
Washington University St. Louis, MO
<i>"Neural Contributions to Leptin-Mediated Bone Marrow Adipocyte Catabolism"</i> |
| 2:50 – 3:40 pm | POSTER SESSION Great Room A |
| 3:45 pm | Keynote Introduction
Matthew Silva, PhD
Julia and Walter R. Peterson Orthopaedic Research Professor Department of Orthopaedic Surgery,
Co-Director Musculoskeletal Research Center
Washington University St. Louis, MO |

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3:50 pm **Keynote Speaker: Vicki Rosen, PhD**

Professor

Harvard School of Dental Medicine | Boston, MA

"Cues for Enhancing Musculoskeletal Regeneration From Studying BMP Signaling"

4:50 pm **Closing Remarks**

Matthew Silva, PhD

Julia and Walter R. Peterson Orthopaedic Research Professor | Department of Orthopaedic Surgery,

Co-Director | Musculoskeletal Research Center

Washington University | St. Louis, MO