



INTERNATIONAL SECTION
FRACTURE REPAIR
 Orthopaedic Research Society

ORS ISFR/OTA BSFF Joint Meeting

ORS ISFR 18th Biennial Meeting: The Future of Fracture Repair

October 21 - 23, 2024 | Montreal, Canada

Program

Monday, October 21, 2024

Pre-Meeting Activities

5:00 – 6:15 PM ISFR Section Officers Meeting

Location TBD

7:30 – 9:00 PM **Networking Event**

Tavern Midway

1219 St. Laurent Blvd. Montreal, Canada

Tuesday, October 22, 2024

ORS ISFR Symposium - Room 518/519

7:00 – 5:00 PM Registration

8:00 – 8:15 AM **Presidential Address & Welcome**

Hamish Simpson, MD

8:15 – 9:30 AM **TOPIC 1: CROSS-TALK IN FRACTURE HEALING**

Moderator: Matthew Silva, PhD

Bone Marrow, WNT Signaling and Fracture Healing

Rene-Olivares Navarrete, PhD

The Role of Catecholamines in Bone/Immune-Crosstalk

Miriam Tschaffon-Muller, PhD

Systemic Inflammation and Fracture Healing

Jie Shen, PhD

Bone-Nerve Crosstalk

Aaron James, MD, PhD

Compartment Syndrome & FX Healing

Justin Haller, MD

Moderated Discussion

TRANSITION

9:35 – 10:10 AM **PODIUM SESSION 1: SELECTED FROM TOP ABSTRACTS**

Deletion of Piezo1 in Hypertrophic Chondrocytes Affects Bone Development and Fracture Healing

Miriam E.A. Tschaffon-Müller

Multi-tissue Single Cell RNA-Sequencing Identifies Skeletal-innervating Sensory Neurons Which Promote Fracture Healing

Mingxin Xu

RNA Biology: Toward Better Understanding of Bone Regeneration

Reyad A. Elbarbary

A Small Animal Model of Nonunion for the Study of Xenogeneic Endothelial Progenitor Cell Therapy

Matthew Raleigh

The Role of Platelets in Skeletal Stem Cell Recruitment in Fracture Repair; A Role for PRP?

Benjamin Schaffle

Moderated Q&A

20-MINUTE BREAK

10:30 – 11:45 AM

TOPIC 2: FUTURE OF REHAB IN FRACTURE HEALING

Moderator: Augustine Saiz, MD

Fundamentals of Mechano-Regulation in Fracture Healing

Elise Morgan, PhD

Monitoring Weight-bearing and Fracture Healing in Real Time

Ken Kozloff, PhD

Creating Fixation Constructs for Immediate Weight-Bearing

Emil Schemitsch, MD

TBD

Andy Harrison

Enhancing Healing with Mechanical Loading

Esther Wehrle, PhD

Moderated Discussion

TRANSITION

11:50 – 12:25 PM

SESSION 2: SELECTED FROM SCORING ABSTRACTS

Noninvasively Quantifying Distal Femur Fracture Motion

William D. Lack

Sex and Stability Differences in Murine Fracture-Related Pain Behaviors

Molly Czachor

The Application of Deep Learning Methods for Proximal Humerus Fracture Feature Identification

Sarah B. Floyd

LIPUS Mitigates Risk of Scaphoid Fracture Nonunion: Results from a Large Real-World Evidence Clinical Study

Robert Zura

Biomechanical Evaluation of Novel Compliant Fracture Fixation Plates for Diaphyseal Fractures

Connor Huxman

Moderated Q&A

TBD

12:30 – 1:30 PM

1-HOUR LUNCH

1:30 – 2:45 PM

TOPIC 3: NEXT-GENERATION OUTCOMES ASSESSMENT IN FRACTURE

Moderator: Hannah Dailey, MD

FE Models to Assess Outcomes in Clinical Studies

Ashley Weaver, PhD

Strategies for Monitoring to Detect Compartment Syndrome

Edward Harvey, MD

Continuous Monitoring of Fracture Healing – From a Research Tool to an Active Implantable Medical Device

Geoff Richards, PhD

TBD (Reserved for Industry Speaker)

TBD

Optimizing Clinical Trial Design -- Key Challenges, Recruitment/Retention, Outcomes Selection

Sheila Sprague, PhD

Moderated Discussion

TRANSITION

2:50– 3:40 PM

SESSION 3: SELECTED FROM TOP ABSTRACTS

- Aging's Impact on Periosteal Stem/Progenitor Cells During Fracture Healing at a Single-Cell Level Justin S. King
- Romozosumab Promoted Bone Regeneration of Critical-Size Ulnar Defect Filled with Demineralized Bone Matrix in Non-Human Primates Xiaodong Li
- Controllable delivery of inducible BMP2-Lentivirus using macroporous chitosan-agarose-gelatin cryogel scaffolds for treatment of atrophic nonunion fracture in mice Leyi Chen
- Serum Protein Indices of Normal Human Fracture Healing of the Humerus Avani Vaishnav
- Development of a Novel Inorganic Polyphosphate-Releasing Thermoresponsive Hydrogel to Improve Fracture Healing Outcomes Rayan Ben Letaifa
- Spatial Transcriptomics Reveal Distinct Gene Expression Patterns and Treatment Targets During Fracture Healing in (Non)-Union Models in Mice Maria Schröder
- Hoxa10 Maintains the Skeletal Stem Cell Pool and Proper Bone Healing Response Kevin Leclerc
- Moderated Q&A* TBD

20-MINUTE BREAK

4:00 – 4:45 PM

KEYNOTE SPEAKER

Mechanical activation of TGFβ - A player in musculoskeletal healing?

Martin Stoddart, PhD

ORS ISFR POSTER RECEPTION

5:00 – 6:15 PM

POSTER COMPETITION AND DIVERSITY SESSION

Poster Chairs

ORS ISFR NETWORKING EVENT

7:30 – 9:00 PM

NETWORKING EVENT

Hotel Monville (20th Floor | Monville Room)
1041 Rue de Bleury, Montreal, Canada



Wednesday, October 23, 2024

ORS ISFR/OTA BSFF Joint Meeting - Rooms 512ABCEFG

7:00 AM – 12:00 PM Registration

7:30 – 7:35 AM

Welcome & Introduction

Justin Haller, MD

7:35 – 8:35 AM

SYMPOSIUM I: FRACTURE NONUNION

Moderators: Brian (Vu) Le, MD
Andrew Evans, MD
Cliff Jones, MD, FIOTA
Zachary Working, MD
Georg Duda, PhD
Christopher Evans, PhD

- Culture Positive Nonunion: Now What?
- Early Clinical Determination/Detection of Nonunion
- The Biological Mechanisms for Nonunion Development
- Novel Therapeutic Strategies for Nonunions
- Moderated Discussion*

8:35 – 9:25 AM

PODIUM SESSION I: NONUNION AND EMERGING TECHNOLOGIES

Moderators: Brian (Vu) Le, MD
Andrew Evans, MD

Of Mice and Men: Temporal Comparison of Modified Radiographic Union Scores for Tibia Fractures (mRUST) between Mouse and Human Femoral Shaft Fractures Treated with Intramedullary Nails (IMNs)

Roman Natoli, MD, PhD

Synergistic Coupling of PTH with Cold Therapy to Enhance Fracture Healing

Matthew Zakaria, MSc, BS

Biomarker to Endochondral Phase of Fracture Repair Demonstrates Differences between Early and Delayed Long Bone Healing

Zachary M. Working, MD

Collagen X Fracture Biomarker Suggests Surgical Intervention for Fracture Nonunion Drives Endochondral Bone Response

Natasha McKibben, MD

Discussion

Immunophenotyping to Characterize Immune Dysregulation in a Delayed Fracture Healing Murine Model

Daniel Lind

Fremanezumab Reduces Pain Behavior in Murine Femoral Fractures

Tyler Margetts, BS

Automated Assessment of Post-Fracture Pain in Mice using Novel Imaging and Machine Learning Tools

Chelsea Bahney, PhD

Reducing Radiation Dose During Plate Fixation Using Depth Camera Augmented Fluoroscopy (DeCAF)

Parinaz Ranjbaran, MSc

Discussion

9:25 – 9:40 AM

15-MINUTE BREAK

9:40 – 10:50 AM

SYMPOSIUM II: GERIATRIC FRACTURE
In Collaboration with Fragility Fracture Network (FFN)

Moderators: Justin Haller, MD
Emil Schemitsch, MD, FIOTA

Biology of Aging

Phillip Leucht, MD

Fixation of Geriatric Fractures

Frede Frihagen, MD, PhD

Sarcopenia

Gustavo Duque, MD

Importance of Mobility in the Geriatric Patient

Richard Yoon, MD, FIOTA

Novel Candidates for Accelerating Geriatric Delayed Healing

Susan Bukata, MD

Moderated Discussion

10:50 – 11:40 AM

PODIUM SESSION II: GERIATRIC FRACTURE FIXATION

Moderators: Justin Haller, MD
Emil Schemitsch, MD, FIOTA

Biomechanical Comparison of Cephalomedullary and Reconstruction Nails Used in the Treatment of Subtrochanteric Femur Fractures

Samantha N. Weiss, MD, MBA

Noninvasively Quantifying In Vivo Distal Femur Fracture Motion

William D. Lack, MD

Compression Buttress Screw Fixation for the Treatment of Vertical Femoral Neck Fractures: A Biomechanical Comparison with Traditional Sliding Compression Fixations

Hui Sun, MD, PhD

Evaluating Feasibility of Ultrasound-Guided Insertion of Iliosacral Screws for Pelvic Fracture Fixation Pierre Guy, MD

Discussion

Femoral Neck Prophylaxis with Lateral Femoral Plating: A Biomechanical Study Jacob D. Schultz, MD

A Novel Radiographic Marker to Avoid Dorsal Screw Prominence During Distal Radius Fixation with Volar Locking Plates Kellen Worhacz, MD

Biomechanics of Femoral Neck System (FNS) in Pauwels Type III Fractures Samarth Mittal, MBBS

Deep Learning for Automated Deformity Correction Planning in the Setting of Prior Arthroplasty Joshua K. Helmkamp, MD

Discussion

11:40 – 12:40 PM 1-HOUR JOINT LUNCH | ROOM 517A

11:45 - 12:35 PM **JOINT INDUSTRY LUNCH SESSION WITH ITCF**
Sponsored by: Zimmer Biomet

Treating Infection in Complex Trauma and Joint Reconstruction Cases **Erik Kubiak, MD**

Infection poses a challenging clinical obstacle for Trauma and Joint Reconstruction Orthopaedic surgeons. This presentation will review the hurdles posed by infection and available treatment options.

12:40 – 1:30 AM **PODIUM SESSION III: INFECTION AND PTOA** Moderators: Jack Wixted, MD
Michael Hast, PhD

Characterization of a Transtibial Amputation Model of Osseointegrated Implant Infection Bailey Fearing, PhD

Halicin and Aminoglycosides Synergize Against Staphylococcus aureus in both Planktonic Cultures and Biofilms Joash R. Suryavanshi, MD

Can We Identify at What Point in Recovery Somatosensory Reprogramming Occurs in Patients with Chronic Pain After Surgically Treated Lower Extremity Fractures? William M. Charlton, BS

Discussion

The Effect of Emergency Department Saline Lavage on Synovial Fluid Composition Following Human Intra-Articular Ankle Fracture: a Randomized Controlled Trial Samuel G. Lorentz, MD

IL-1 Receptor Antagonist Rescue Chondrocytes from Cellular Death Following Intraarticular Fractures in a Porcine Pilon Fracture Model Tyler J. Thorne, MD

Preservation of Osteochondral Autografts for Delayed Re-implantation in a Novel Preclinical Canine Model Gregory J. Della Rocca MD,
PhD, MBA

Discussion

ORS ISFR/OTA BSFF JOINT KEYNOTE ADDRESS***Dr. Ilizarov: His Life, and His Method: Learning From Nature*****Svetlana Ilizarov, MD**

Skepticism from the midcentury medical community about the initial clinical results from the Ilizarov unit prompted Ilizarov's early involvement in basic science research. This propelled further development and eventual recognition of his method. Some of Ilizarov's original clinical work and research will be presented.

20-MINUTE BREAK

2:30 – 3:30 AM

Symposium III: Polytrauma
In Collaboration with ESTES (European Society for Trauma & Emergency Surgery)Moderators: Chris Lee, MD &
Hans-Christoph Pape, MD, FIOTA

Soft Tissue Healing in a Polytrauma Patient

Arun Aneja, MD, PhD

Effects of Traumatic Bone Injury and Bone Healing in Polytrauma Patients

Prism Schneider, MD, PhD

Fracture Fixation in Polytrauma Patients

Hans-Christoph Pape, MD, FIOTA

The Impact of Inflammation and Polytrauma on Bone Healing

Melanie Haffner-Luntzer, PhD

Value of a Multi-Center Serum Data Bank for Trauma Patients

Michel Teuben, MD

*Moderated Discussion***TRANSITION**

3:35 – 4:25 PM

Paper Session IV: Basic Science of the Polytrauma PatientModerators: Chris Lee, MD &
Hans-Christoph Pape, MD, FIOTA

Systemic lipidomic Profile Changes Align with Injury Severity and Predict Outcomes in Polytraumatized Patients

Felix Karl-Ludwig Klingbiell, MD

Hypercoagulability and Systemic Inflammation Contribute to Venous Thromboembolism in Orthopaedic Surgery Patients with Metastatic Bone Disease

Prism Schneider, MD, PhD

Novel Fracture-Based Porcine Model of Acute Compartment Syndrome Creates Elevated Intra-Compartmental Pressure Using a Only Simulated Blast Injury

Dillon C. O'Neill, MD

PCMP as a Barrier for Complex Wounds: Impact on Clinical Outcomes, Bioburden, and Gene Expression in a Canine Model

James P. Stannard, MD

Discussion

Developing A Pragmatic Murine Injury Model for Polytrauma Research

Taylor Landis, BA

Indocyanine Laser Angiography Does Not Predict Early Muscle Injury Severity in a Porcine Open Tibia Fracture Model

Joseph Featherall, MD

Intravenous Iron Infusion Mitigates Platelet Exhaustion and Improves Secretory Response to Agonists in Orthopedic Trauma Patients

Danielle Peterson, MD

Intravenous iron therapy alters the inflammatory cascade following orthopaedic trauma: A pilot randomized controlled trial

Danielle Peterson, MD

Discussion

ADJOURN

4:45 - 6:00 PM

EVERYONE IS INVITED TO ATTEND THE OTA INTERNATIONAL RECEPTION

720 Atrium