



**7:00-17:00 Speaker Ready Room • Room 524C**

**7:00-17:30 Registration • 517 Foyer**

**7:00-9:30 ORS Board Meeting • Room 523**

**7:30-9:00 ICORS/COA Symposium: Open Fracture Care - Concepts and Controversies • Room 517D**

*Moderators:* Theodore Miclau, *ICORS President*, US; Brad Petrisor, Canada

Objectives:

1. To understand current best evidence for clinical issues in the management of open fracture wounds.
2. To gain an understanding of future research directives around key topic areas in open fracture wounds.

Speakers:

- Antibiotics: What Are the Current Recommendations Regarding Type, Timing and Route of Administration? Is There a Role for Locally Applied Antibiotics: From Loaded Material to Powder – What Works? David Teague, *OTA President*, US
- Surgical Timing: Middle of the Night or the Light of Day, Which Fractures, What Time? Prism Schneider, Canada
- Is There a Current Evidence Based Approach for Critical Size Bone Defects? Steven Papp, Canada
- Tissue Coverage from Wound Vac to Free Flap, When Is the Best Time and With What? Chad P. Coles, Canada
- What Are the Top Three Big Research Questions That Need to be Addressed? Emil H. Schemitsch, Canada

**8:00-9:00 ICORS Workshop: AO Foundation/Chinese ORS - AO/China Collaborative Research in MSK Regeneration • Room 520AD**

*Moderator:* Mauro Alini, Switzerland; Xuenong Zou, China



**Friday**

Objectives:

Demonstrate the achievements in musculoskeletal regeneration research conducted by scientists from ARI and China in collaboration.

Speakers:

- Emerging Trends in Epigenetic Regulation of Stress Response and Homeostasis Maintenance in Bone Grafting - Xuenong Zou, China
- Personalised Bioactive Implant Made by Stereolithography for Orbital Floor Fracture Repair - David Eglin, Switzerland
- Traditional Chinese Medicine (TCM) Compound Delivery System for Treatment of Osteoarthritis – Alick Wang, Canada
- LncRNAs are Dysregulated in the Intervertebral Disc Early Degeneration Within a One Strike Organ Model – Zhen Li, Switzerland

**8:00-9:00 CORS Executive Meeting • Room 522C**

**8:00-9:00 ICORS Workshop: Canadian ORS - Cartilage Repair  
• Room 520BE**

*Moderators:* Michael Grant, Canada; Fackson Mwale, *ICORS Program Chair*, Canada

Objectives:

1. Provide a clinical overview of OA and FDA approved agents used to treat the disease.
2. Discuss the novel findings in short Link N, a recently discovered fragment of the cartilage link protein, in preventing disease progression in a rabbit model of osteoarthritis (OA).
3. Look at bioengineering of tissues for articular cartilage repair.

Speakers:

- Clinical Overview of OA and FDA Approved Agents Used to Treat the Disease – Michael Grant, Canada
- Short Link N Acts as a Disease Modifying Osteoarthritis Drug – Fackson Mwale, *ICORS Program Chair*, Canada
- Biological Cartilage Replacement: Advancing Towards a New Treatment Option – Rita Kandel, Canada



Friday

**8:00-9:00 ICORS Workshop: EORS/TORS - Emerging Molecular Therapeutic Potentials for Treating Osteoarthritis • Room 521**

*Moderators:* Holger Jahr, Germany; Feng-Sheng Wang, Taiwan

Objectives:

1. Shed light on new aspects of molecular regulation of cartilage metabolism, such as microRNA and histone demethylase actions, during articular destruction in human OA and in experimentally-induced OA in transgenic/knockout mice models.
2. Highlight the remedial perspective of specific pharmacological inhibitors and microRNA precursors/inhibitors to alter cartilage erosion, synovitis, and subchondral bone alteration to delay OA development.

Speakers:

- Microenvironmental Regulation of Chondrocyte Function - Holger Jahr, Germany
- MicroRNA Control of Chondrocyte Fate and Osteoarthritis Development - Feng-Sheng Wang, Taiwan
- Trimethyl H3K27 Assembly Modulation of Cartilage Integrity and Osteoarthritis - Wei Shiung Lian, Taiwan

**8:00-9:00 ICORS Workshop: JOA - Win or Not? Biological Tug-of-War in Hip Periprosthetic Joint Infection • Room 520CF**

*Moderators:* Yutaka Inaba, Japan; Michiaki Takagi, Japan

Objective:

Periprosthetic joint infection (PJI) is one of serious complications of total hip replacements. Microbes are always flexible to escape from human endeavor, and biological tug of war continues. This workshop looks for clues and hints to stop the endless war via discussion of patho-immunology, diagnosis, prophylaxis and therapeutic trends in hip PJI.

Speakers:

- Current Trend in the Diagnosis of Hip PJI - Yutaka Inaba, Japan
- Treatment Strategy for Hip PJI - Masahiro Hasegawa, Japan
- Perspective of Anti-Microbial Technology I: Iodine Coating - Daisuke Inoue, Japan
- Perspective of Anti-Microbial Technology II: Silver-Oxide Containing Hydroxyapatite Coating - Shuichi Eto, Japan



Friday

**9:15-10:45 ICORS Paper Session: Cartilage and Synovium 2**

**• Room 520AD**

*Moderators:* Susan Chubinskaya, US; Linda Sandell, US

**69 - 9:15**

**Investigating the Potential of Combined Therapy Using Mesenchymal Stem Cell Exosomes With Hyaluronic Acid for Functional Osteochondral Regeneration in a Rabbit Model**

**Keng Lin, Francis Wong, Singapore;** Ming Wang, Singapore; Kristeen Ye Wen Teo, Singapore; Shang Jiunn Chuah, Singapore; Xiafei Ren, Singapore; Yingnan Wu, Singapore; Afizah Hassan, Singapore; Ruenn Chai Lai, Singapore; Sai Kiang Lim, Singapore; James, Hoi Po Hui, Singapore; Wei Seong Toh, Singapore; Eng Hin Lee, Singapore; Shipin Zhang, Singapore

**70 - 9:21**

**Free Calcium Regulates the Expression of Proteoglycan and Collagen in Human Cartilage**

**Michael Grant, Canada;** Laura Mery Epure, Canada; Omar Salem, Canada; Olga L. Huk, Canada; John Antoniou, Canada; Fackson Mwale, Canada

9:27 Discussion

**71 - 9:35**

**Wnt and TGF $\beta$  Pathway Protein, DACT1, is Important in Chondrocyte and Mesenchymal Stem/Stromal Cell Survival**

**Anna Albiero, UK;** Virginia Piombo, UK; Lila Diamanti, UK; Mark Birch, UK; Andrew W. McCaskie, UK

**72 - 9:41**

**Global Proteomic and Genomic Expression Characterization of Synovial MSC From Normal and OA Knee Joint**

**Nedaa Al-Jezani, Canada;** Pamela Railton, Canada; James Powell, Canada; Antoine Dufour, Canada; Roman Krawetz, Canada

**73 - 9:47**

**MicroRNA-128a Provokes Cartilage Loss and Impairs Joint Kinematics of Osteoarthritis**

**Yi-Chih Sun, Taiwan;** Feng-Sheng Wang, Taiwan

9:53 Discussion



Friday

**74 - 10:05**

**Irisin Compromises Infrapatellar Adipogenesis and Knee Osteoarthritis**

**Chin Kuei Hsieh, Taiwan;** Wei Shiung Lian, Taiwan; Feng-Sheng Wang, Taiwan

**75 - 10:11**

**Sliding Induced Solute Transport in Articular Cartilage**

**Kathryn Culliton, Canada;** Andrew Speirs, Canada; Paul-Edgar Beaulé, Canada

**76 - 10:17**

**An in Vivo Defect Model for Testing Cell-Based Tissue Engineering Strategies for Early Osteoarthritis**

**Girish Pattappa, Germany;** Matthias Koch, Germany; Johannes Weber, Germany; Siegmund Lang, Germany; Andreas Bohrer, Germany; Brian Johnstone, US; Denitsa Docheva, Germany; Johannes Zellner, Germany; Peter Angele, Germany; Jonas Krueckel, Germany; Dustin Franke, Germany

10:23 Discussion

**10:35 Keynote Speaker:** Muneaki Ishijima, Japan

**9:15-10:45 ICORS Paper Session: Hip and Knee Arthroplasty 3**

**• Room 520BE**

*Moderators:* Hyuk-Soo Han, Korea

**77 - 9:15**

**Corrosion of Modular Head Neck Junctions and Local and Distant Organ Responses in Total Hip Replacements Retrieved Postmortem**

**Deborah Hall, US;** Robin Pourzal, US; Joshua Jacobs, US; Robert Urban, US

**78 - 9:21**

**Resorption Activity of Osteoclasts Derived from Patients With Metal-on-Metal Hip Resurfacing**

**J. Mark Wilkinson, UK;** Alison Gartland, UK; Daniel Morell, UK; Karan Shah, UK; Pacharamnee Sudsok, UK

9:27 Discussion



Friday

**79 - 9:35**

**The Prevalence of Coronal Tibial Bowing in a Western Population**  
**Fahd Mahmood, UK;** Justine Burt, UK; Oliver Bailey, UK; Jon Clarke, UK; Joe Baines, UK

**80 - 9:41**

**Effect of Dexamethasone on Post-Operative Pain Management in Patients Undergoing Total Knee Arthroplasty**  
**Junaid Khan, Pakistan;** Riaz Ahmed, Pakistan  
Discussion 9:47

**81 - 9:55**

**Comparison Between Intra-Articular and Intravenous Tranexamic Acid Application in Primary Unilateral Knee Joint Replacement**  
**Junaid Khan, Pakistan;** Rahman Rasool Akhtar, Pakistan; Riaz Ahmed, Pakistan

**82 - 10:01**

**Metal Ion Concentrations After Metal-on-Metal Hip Arthroplasty Are Not Correlated With Habitual Physical Activity Levels**  
**Jetse Jelsma, Netherlands;** Martijn Schotanus, Netherlands; Rachel Senden, Netherlands; Ide Heyligers, Netherlands; Bernd Grimm, Germany

10:07 Discussion

**9:15-10:15 ICORS Paper Session: Tumour • Room 521**

*Moderators:* Xiaoling Zhang, China; Toru Akiyama, Japan

**83 - 9:15**

**A Phase One Trial on the Use of Photodynamic Therapy in Vertebral Metastases.**

**Albert J.M. Yee, Canada;** Zakariya Ali, Canada; Arjun Sahgal, Canada; Elizabeth David, Canada; Edward Chow, Canada; Shane Burch, US; Brian Wilson, Canada; Cari Whyne, Canada; Jay Detsky, Canada; Carl Fisher, Canada

**84 - 9:21**

**Icariin, a Potent Flavonoid, in Attenuating Methotrexate Chemotherapy-Induced Bone Loss and Bone Marrow Micro-Vascular Damage in Rats**



**Friday**

**Mohammadhossein Hassanshahi, Australia; Yu-Wen Su, Australia; Samira Khabbazi, Australia; Chia-ming Fan, Australia; Ke-Ming Chen, China; Cory Xian, Australia**

9:27 Discussion

**85 - 9:35**

**The Use of a Novel PORCN Inhibitor in the Treatment of Osteosarcoma**

**Kenon Chua, Singapore**

**86 - 9:41**

**MiR-144 Inhibits Tumor Growth and Metastasis in Osteosarcoma via Dual-Suppressing RhoA/ROCK1 Signaling Pathway**

**Xiaoling Zhang, China; JinLong Liu, China; Jing Li, China; PengLei Cui, China; Xiaodong Chen, China; ZhiGuang Qiao, China; JiaJia Xu, China; Fei Xiao, China**

**87 - 9:47**

**Core Needle Biopsy of Musculoskeletal Lesions**

**Abdullah Bin Shabib, Saudi Arabia; Fares Al-Jahdali, Saudi Arabia; Wazzan Aljuhani, Saudi Arabia; Bandar Ahmed, Saudi Arabia; Mahmoud Salam, Saudi Arabia**

9:53 Discussion

**10:05 Keynote Speaker: Toru Akiyama, Japan**

**9:15-10:45 ICORS Paper Session: Late Breaking Research**

**• Room 520CF**

*Moderator: Caroline Hoemann, US*

**88 - 9:15**

**Engineered Vascularized Tubular Bone Shafts**

**Baptiste Charbonnier, Canada; Aslan Baradaran, Canada; Edward Harvey, Canada; Mirko Gilardino, Canada; Nicholas Makhoul, Canada; Jake Barralet, Canada**

**89 - 9:21**

**Effects of Sensory Neuropeptides Substance P and  $\alpha$ -calcitonin Gene-Related Peptide on Osteoporotic Fracture Healing**



**Friday**

**Tanja Niedermair, Germany;** Rainer Straub, Germany; Susanne Grassel, Germany

**90 - 9:27**

**Revisiting the Vascularity and Resident Stem Cell Population of the Meniscal Avascular Zone**

**Dmitriy Sheyn, US;** Angela Papalamprou, US; Jorge Chahla, US; Virginia Chan, US; Orr Limpisvasti, US; Melodie Metzger; Bert Mandelbourn, US

9:33 Discussion

**91 - 9:45**

**Bone Defect Size Dictates Both the Ultrastructural Properties and the Gene Expression of Early Fracture Hematoma**

**Anna Woloszyk, US;** Kelvin Tuong, UK; Kevin Tetsworth, Australia; Vaida Glatt, US

**92 - 9:51**

**Regeneration and Osteointegration of the ACL With a New Silk Fiber Based Scaffold**

**Thomas Nau, Austria;** Andreas Teuschl, Austria; Heinz Redl, Austria

**93 - 9:57**

**frHMGB1 Improves Healing of Injured Entesis by Recruiting Mesenchymal Stem Cells**

**Feng Li, US;** Jianying Zhang, US; Arthur R. McDowell, US; MaCalus Hogan, US; Kelly Williamson, US; James H-C. Wang, US

10:03 Discussion

**94 - 10:15**

**Senolytic and Anti-Inflammatory Effects of Curcumin and o-Vanillin to Reduce Intervertebral Disc Degeneration and Low Back Pain**

**Hosni Cherif, Canada;** Daniel Bisson, Canada; Semsi Kocabas, Canada; Lisbet Haglund, Canada

**95 - 10:21**

**Toll-Like Receptors and Facet Joint Degeneration in Adolescent Idiopathic Scoliosis**

**Daniel Bisson, Canada;** Semsi Kocabas, Canada; Jean Ouellet, Canada; Neil Saran, Canada; Lisbet Haglund, Canada





Friday

96 - 10:27

**Impaired Secretion of Annexins and Fibronectin in Osteoblast-Extracellular Vesicles of Osteogenesis Imperfecta Patients: A Proteomic Analyses**

**Monther Abuhantash, Canada;** Frank Rauch, Canada; Janusz Rak, Canada; Reggie C. Hamdy, Canada; Hadil Al-Jallad, Canada

10:33 Discussion

**10:45-11:15 Break – Food and Beverage for Purchase in Exhibit Hall**

**11:15-12:15 ICORS Workshop: EORS/ANZORS - Digital Mobility Parameters from Wearable Devices - The Future of Orthopaedic Outcome Assessment? Why, How, and What Do We Know?**

• **Room 520CF**

*Moderators:* Bernd Grimm, Germany; Dominic Thewlis, Australia

Objectives:

1. Describe why and how wearable devices and activity monitors will innovate outcome assessment in orthopaedic trials and can be used towards patient empowerment during rehabilitation after surgery.
2. Start a discussion about the challenges, hurdles, including regulatory aspects and best approaches to establish digital mobility parameters as valid and impactful outcomes towards the benefit of patients, doctors and other stakeholders.

Speakers:

- The Need, Benefit and Challenges for Ambulant Activity Monitoring With Wearables in Orthopaedics – Bernd Grimm, Germany
- From Sensor and Signal to Activity Classification and Outcome Parameter: Approaches, Devices, Algorithms and Available Solutions – Dominic Thewlis, Australia
- Clinical Applications and New Insights From Physical Activity and Sleep Monitoring in Orthopaedic Patients – Dominic Thewlis, Australia
- Wearable Sensors and Activity Monitors in Rehabilitation and Sports: Review of the Status Quo and Future Outlook - Gabrielle Tuijthof, Netherlands
- From Wearables to Smart Implants: The AO Fracture Monitor to Assess Bone Healing - Boyko Gueorgueiev, Switzerland



**Friday**

**11:15-12:15 ICORS Workshop: ORS - Musculoskeletal Pain Measurements in Animals and Humans • Room 524B**

*Moderators:* James Iatridis, US; Grace Mosley, US; Laura Stone, Canada

Objectives:

1. Bring together experts in musculoskeletal pain measurement in rodents and humans.
2. Present an overview of how we can study pain in both human and animal models.
3. Discuss how pain measures have been used in models of the two most prevalent musculoskeletal diseases: low back pain and osteoarthritis.

Speakers:

- Overview of Musculoskeletal Pain Measurements in Rodents - Tamara King, US
- Behavioural Tests for Back Pain Using Rodent Models - Grace Mosley, US
- Translational Considerations in Osteoarthritis Pain Assays: Mouse, Human and the Relationship Between the Two Species - Rachel Miller, US
- Assessing Pain in Humans - Timothy Wideman, Canada

**11:15-12:15 ICORS Workshop: ORS - Osteonecrosis: Is Cell-Based Therapy the Future? • Room 521**

*Moderators:* Qunjun Cui, US; Lynne Jones, US

Objectives:

1. Introduce osteonecrosis.
2. Provide a framework on which current treatments are, and future treatments will be, based.

Speakers:

- Are There Suitable Animal Models for Osteonecrosis of the Femoral Head? Stuart B. Goodman, US
- Joint Preserving Procedures as Treatment Options for Osteonecrosis - Michael A. Mont, US



**Friday**

- Current Concepts for Cell-Based Therapy for Treatment of Osteonecrosis - Philippe Hernigou, France
- What Does the Future Hold: Scaffolds, Cytokines, Modified Cells? Lynne Jones, US

**11:15-12:15 ICORS Workshop: ORS: The Pre-OA Hip: From Bench to Bedside • Room 520BE**

*Moderators:* George Grammatopoulos, Canada; Cecilia Pascual-Garrido, US

Objectives:

Provide an open discussion of the contemporary approach to pre-arthritis young adult hip disorders. Topics that will be highlighted include:

1. Physiopathology of joint degeneration.
2. Morphological abnormalities of the hip, clinical, radiological (including three-dimensional imaging) parameters that impact treatment decision making.
3. Future therapies for cartilage joint restoration and interventions to prevent joint degeneration.

Speakers:

- The Etiology of Joint Degeneration in the Young Adult Hip. Is it all About Inflammation? Cecilia Pascual-Garrido, US
- The Pre-OA Hip: FAI-DDH - John Clohisy, US
- Clinical Outcomes (FAI and DDH) - George Grammatopoulos, Canada
- Effects for Current Surgical Treatment in Restoring Cartilage Joint Homeostasis - Paul E. Beaulé, Canada
- Engineering New Biologic Therapies for Hip OA - Cecilia Pascual-Garrido, US

**12:15-13:30 Lunch- Food and Beverage for Purchase in Exhibit Hall**

**13:30-14:30 ICORS Workshop: Canadian ORS- Adverse Reactions to Total Hip Implants, What Should We Know About the Metals? • Room 520CF**

*Moderator:* Rizhi Wang, Canada



**Friday**

Objectives:

Discuss and establish both clinical and laboratory procedures of assessing and alleviating adverse tissue reactions to total hip implants.

Speakers:

- Mechanisms of Corrosion, Wear and Metal Release from Total Hip Implants - Rizhi Wang, Canada
- Total Hip Implants: Metal Ions Sources, Assessing Systemic Level and Their Clinical Impacts - Pascal-André Vendittoli, Canada
- Clinical Diagnosis of ALTRs and Implant Selection for Revision Surgery - Bas A. Masri, Canada
- Towards New Biomarkers for the Diagnosis of Adverse Local Tissue Reactions in Total Hip Replacements - Isabelle Catelas, Canada

**13:30-14:30 ICORS Workshop: Canadian ORS - Machine Learning in Orthopaedic Research • Room 520BE**

*Moderators: David Burns, Canada; Cari Whyne, Canada*

Objectives:

1. Provide an overview of machine learning methods, from classical algorithms to the state-of-the-art.
2. Highlight relevant and emerging applications in orthopaedic research enabled by the rapid technological advancements in this field.

Speakers:

- Human Activity Recognition - Methods and Emerging Applications in Orthopaedics- David Burns, Canada
- Machine Learning Oncologic Fracture Risk - From Classical to Deep Learning - Anthony Bozzo, Canada
- Operating Room Black Box- Improving Surgical Safety With Machine Learning - James Jung, Canada



**Friday**

**13:30-14:30 ICORS Workshop: ON Foundation/EORS - Novel Trends in Anterior Cruciate Ligament Repair and Arthritis: Translating Lab Research to the Clinic and Clinical Challenges to Open Research Questions • Room 521**

*Moderators:* Denitsa Docheva, Germany; Christian Latterman, US

Objective: The goal of this workshop is to consider the importance of the ACL structural and anatomical properties, and in particular to focus on regenerative potential and clinical significance.

Speakers:

- What Surrogate Markers After ACL Injury Reveal About Risk for Post-Traumatic OA - Virginia Kraus, US
- Does ACL Healing vs. Reconstruction Play a Role in PTOA? Early Results of the BEAR (Bridge Enhanced ACL Repair) Trials - Dennis Kramer, US
- ACL Tear and Muscle - The Forgotten Connection? Daniel B.F. Saris, US
- Translation of Today's Science Into the Clinical Practice: Successes, Challenges and Open Questions - Christian Lattermann, US

**14:30-15:30 Poster Session and Coffee • Exhibit Hall, Room 516**

**15:15-16:15 ICORS Workshop: AO Foundation/ORS- The 3Rs in Orthopaedic Research- Practical Examples • Room 524B**

*Moderator:* Stephan Zeiter, Switzerland

Objective:

To initiate further application / development and discussion of the 3R within orthopaedic research by providing real world examples.

Speakers:

- Complex Bioreactors in the Assessment of Cartilage Repair Strategies - Markus Wimmer, US
- Use of Non-Invasive Tools to Reduce Use of Animals in Orthopaedic Research – Cari Whyne, US
- Refining Methods for Fracture Generation in Rodents - Kurt Hankenson, US



Friday

**15:15-16:45 ICORS Paper Session: Spine 3 • Room 521**

*Moderators: Xuenong Zou, China; Soohong Lee, China*

**97 - 15:15**

**Longitudinal Electrophysiological Changes After Cervical Hemi-Contusion Spinal Cord Injury in Non-Human Primates**

**Junhao Liu, China;** Qingan Zhu, China; Rong Li, China; Zucheng Huang, China; Xiaoliang Wu, China; Zhiping Huang, China; Yong Hu, China; Jie Liu, Canada

**98 - 15:21**

**BDNF Mediated Akt-mTORC1、 Erk-MAPK via Gai1/Gai3 Protein to Promote the Growth of Axons and Dendritic Spines**

**Zhou Xiaozhong, China;** Bai Jinyu, China; Shan Hua Jian, China; Gao Xiang, China

15:27 Discussion

**99 - 15:35**

**Prediction of Cervical Spinal Loading After Anterior Arthrodesis Using Musculoskeletal Multi-Body Dynamics Model During the Head Flexion/Extension Movement**

**Hao Diao, China;** Hua Xin, China; Zhongmin Jin, China

**100 - 15:41**

**Radiostereometric Analysis as a Diagnostic for Assessing Vertebral Fusion – A Phantom Study**

**Trevor Gascoyne, MB;** Sara Parashin, MB; Mohammad Zarrabian, MB

15:47 Discussion

**101 - 15:55**

**In Vivo Load History Dictates Annulus Fibrosus Microstructure**

**Arthur Michalek, US;** Sarah Duclos, US; Samantha Denning, US

**102 - 16:01**

**Fibroblast Growth Factor Receptor 3 Inhibits Progression of Degeneration in the Intervertebral Disc in Mice**

**Yangli Xie, China;** Lin Chen, China

16:17 Discussion



Friday

16:25 Discussion

**15:15-16:15 ICORS Paper Session: Tendon and Ligament**

**• Room 520AD**

*Moderators:* Bruce Beynnon, US; Stavros Thomopoulos, US

**103 - 15:15**

**HMGB1 Induces Tendinopathy Development Due to Mechanical Overloading**

**Jianying Zhang, US;** Guangyi Zhao, US; Feng Li, US; James H-C. Wang, US

**104 - 15:21**

**Quantitative Morphological Analysis of the Capsulo-Osseous Layer of the Distal Iliotibial Band**

**Timothy Burkhart, Canada;** Alan Getgood, Canada; Mark Abbott, Canada; Amanda Dentremont, Canada

15:27 Discussion

**105 - 15:35**

**Effect of Low-Intensity Pulsed Ultrasounds After Autologous Adipose-Derived Stromal Cells Transplantation for Bone-Tendon Healing in a Rabbit Model**

**Can Chen, China;** Hongbin Lu, China

**106 - 15:41**

**Creating and Evaluating a Novel Sheep Abductor Tendon Tear Model**

**Jillian Cornish, New Zealand;** Maek Zhu, New Zealand; Simon Young, New Zealand; David Musson, New Zealand; Jacob Munro, New Zealand

15:47 Discussion

**15:55 Keynote Speaker:** Stavros Thomopoulos, US

16:05 Discussion



Friday

**15:15-16:45 ICORS Paper Session: Trauma and Fractures**

**• Room 520CF**

*Moderators: Theodore Miclau, ICORS President, US*

**107 - 15:15**

**Low-Magnitude High-Frequency Vibration Modulates Macrophage Polarization and Restores Inflammatory Response in Osteoporotic Fracture Healing in Rat Model**

**Wing Cheung, Hong Kong;** Yu Ning Chim, Hong Kong; Simon Kwoon-ho Chow, Hong Kong

**108 - 15:21**

**How Much Do We Know About Mechano-Sensitivity in Osteoporotic Bone? Role of Osteocytes in Osteoporotic Metaphyseal Fracture Healing Enhanced by Low-Magnitude High-Frequency Vibration**

**Wing Cheung, Hong Kong;** Victoria Man Huen Choy, Hong Kong; Ronald Man Yeung Wong, Hong Kong; Simon Kwoon-ho Chow, Hong Kong; Jack Chun Yiu Cheng, Hong Kong

**109 - 15:27**

**Early Mortality Triples in Atypical Hip Fractures**

**Lauren Nowak, Canada;** Melanie MacNevin, Canada; David William Sanders, Canada; Abdel-Rahman Lawendy, Canada; Michael D. McKee, US; Emil H. Schemitsch, Canada; Rob Walker, US; Ryan DiGiovanni, US

15:33 Discussion

**110 - 15:45**

**Intramedullary Nail in a Novel Model of Atrophic Non-Union**

**Murtadhah M. K. Jalal, UK;** Robert Wallace, UK; Hamish Simpson, UK

**111 - 15:51**

**The Effects of Different Insertion Variables on Achieved Screw Tightness**

**Boyko Gueorguiev, Switzerland;** James Fletcher, UK; Verena Neumann, Switzerland; Lisa Wenzel, Germany; Geoff Richards, Switzerland; Harinderjit Gill, UK; Michael Whitehouse, UK; Ezio Preatoni, UK

15:57 Discussion





Friday

112 - 16:05

**SystemFix – Using Computer Simulations to Optimise Proximal Humeral Fracture Fixation**

**Boyko Gueorguiev, Switzerland;** James Fletcher, UK; Markus Windolf, Switzerland; Geoff Richards, Switzerland; Peter Varga, Switzerland

113 - 16:11

**The Masquelet Technique in an Animal Model of Segmental Bone Defect - Impact of Antibiotic-Impregnated Spacers on the Induced Membrane**

**Charles Godbout, Canada;** Aaron Nauth, Canada; Emil H. Schemitsch, Canada; Benjamin Fung, Canada; Heta Lad, Canada; Evan Watts, Canada; Sarah Desjardins, Canada; Kimberley Lam Tin Cheung, Canada

16:17 Discussion

**16:25 Keynote Speaker: Clare Rimnac, US**

16:35 Discussion

**15:15-16:45 ICORS Paper Session: Shoulder and Elbow  
• Room 520BE**

*Moderators:* Jung-Ho Park, Korea; Atsushi Yokota, Japan

114 - 15:15

**Global and Functional Arc of Motion: Quantifying Shoulder ROM and Function using an Intuitive Globe Model**

**Brandon Yew, Singapore;** Jowell Cheng, Singapore; Alex Choh, Singapore; Andy Yew, Singapore; Denny Tijauw Tjoen Lie, Singapore; Siaw Meng Chou, Singapore

115 - 15:21

**Early Experience With Force-Space Navigation for Shoulder Arthroplasty**

**Bogdan Matache, Canada;** Corey Smith, Canada; George Athwal, Canada; Louis Ferreira, Canada

116 - 15:27

**The Rationale for Lower Stiffness Hemiarthroplasty Implants**

**Carolyn Berkmortel, Canada;** James A. Johnson, Canada; G. Daniel G.



## Friday

Langohr, Canada; Graham J.W. King, Canada; Sarah DeDecker, Canada

15:33 Discussion

**117 - 15:45**

### **Comparing Surgical Techniques for Irreparable Rotator Cuff Tear Management: A Cadaveric Biomechanical Study**

**Kathak Vachhani, Canada;** Cari Whyne, Canada; Diane Nam, Canada; Jenna Wong, Canada; Justin Chou, Canada; Ryan Paul, Canada

**118 - 15:51**

### **Development of a Statistical Shape and Density Model of the Shoulder**

**Pendar Soltanmohammadi, Canada;** Ryan Willing, Canada

15:57 Discussion

**119 - 16:09**

### **The Influence of Rotator Cuff Tears on Shoulder Joint-Contact Loading After Reverse Total Shoulder Arthroplasty**

**David Ackland, Australia;** Kwong Ming Tse, Australia; Dale Robinson, Australia; Wen Wu, Australia; Peter Vee Sin Lee, Australia; Martin Richardson, Australia; Adam Wilkosz, Australia

**120 - 16:15**

### **Are Underweight, Overweight and Obese Patients at Higher Risk for Complication Following Elective Arthroscopic Procedures?**

**Richard Nicolay, US;** Ryan Selley, US; Michael Terry, US; Vehniah Tjong, US

**121 - 16:21**

### **Quantifying the Distribution of Scapular Bone Density to Guide Optimal Screw Placement in Reverse Shoulder Arthroplasty**

**Josh Ehrlich, Canada;** Tim Bryant, Canada; Michael Rainbow, Canada; Ryan Bicknell, Canada

16:27 Discussion