



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

7:00-16:00 Registration • 517 Foyer

8:00-9:00 ICORS Workshop: JOA - Biomechanics of the Ankle Ligaments for True Anatomical Reconstruction • Room 520AD

Moderators: Hisateru Niki, Japan; Yasuhito Tanaka, Japan

Objectives:

1. In order to perform an anatomical reconstruction accurately, it is necessary to know the correct functional anatomy of the ankle ligaments, but there are many misunderstandings.
2. In recent years, with the progress of small strain sensors, new findings on the function of the ankle ligaments has been reported.
3. The purpose of this session is to learn the state-of-the art knowledge of the anatomy and biomechanics of the ankle ligaments.

Speakers:

- Theories That Have Been Believed, The Doubts About Them, and Further Unresolved Problems - Satoru Ozeki, Japan
- Recent Topics for Biomechanics of The Lateral Ligaments Complex - Mark Glazebrook, Canada
- Recent Topics for Biomechanics of Deltoid Ligaments Complex – Masato Takao, Japan
- What is The Best Placement for Bone Tunnels for Lateral Ligaments Reconstruction - Masato Takao, Japan

8:00-9:00 ICORS Workshop: KORS - How Do We Improve Tissue Regeneration? Cartilage and Bone • Room 520CF

Moderator: Gun-il Im, Korea

Objective:

To provide an update in recent advancement and development in the field of bone and cartilage regeneration.

Speakers:

- Inflammation Modulating Hyaluronic Acid Hydrogel for Osteoarthritis Cartilage Repair - Nathaniel Hwang, Korea
- Cartilage Regeneration Using 3D MSCs Culture - Jong-Keun Seon, Korea



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- Repositioning of Bile Acid for Bone Tissue Regeneration - Songhee Lee, Korea
- Bone-Forming Peptide-3 Induces Osteogenic Differentiation of Bone Marrow Stromal Cells - Hyung Keun Kim, Korea

8:00-9:00 ICORS Workshop: KORS - Multi-Scale Biomechanics From Cells to Organs in Orthopaedics • Room 524B

Moderators: Su-Jin Heo, US; Dohyung Lim, Korea

Objectives:

1. Introduce the Recent research of biomechanics in orthopaedics in the Republic of Korea.
2. Discuss future directions with a wide range of the research fields in orthopaedic biomechanics.

Speakers:

- Nuclear Mechanobiology for Musculoskeletal Repair - Su-Jin Heo, US
- Paraspinal Muscle Weakness in Lapine Model for Studying Lumbar Degeneration - Sang Kuy Han, Korea
- Adipose Derived Stem Cell Based Therapy in Posttraumatic Osteoarthritis (PTOA) - Hongsik Cho, US
- Micro-Mechanical Analysis of Inhomogenous Fibrocartilage: Native vs. in situ Engineered - Chang Lee, US

8:00-9:30 ICORS/COA Symposium: Peri-Prosthetic Joint Infection: An Evidence-Based Approach • Room 517D

Moderator: Paul E. Beaulé, CORS President, Canada

Objectives:

1. To understand biomarkers.
2. To understand surgical options in PJI.
3. How to diagnose PJI.
4. How to manage complex PJI.

Speakers:

- Defining the Burden of PJI: Is This an Epidemic? Fares Haddad, UK
- Making the Diagnosis - Systematic Review - Hesham Abdelbary, Canada
- Surgical Management - What to Do in the Acute Phase - James Howard, Canada
- Will Direct Exchange Become the New Standard? Bas A. Masri



Saturday

8:00-9:00 ICORS Paper Session: Osteoarthritis • Room 521

Moderator: Hiromu Ito, Japan

122 - 8:00

Medial Femoral Condyle Cystic Lesions in Juvenile Horses Arise From Focal Trauma to the Osteochondral Junction in First Two Months of Life

Sheila Laverty, Canada; Thibaut Lemirre, Canada; H el ene Richard, Canada; Jennifer Janes, US; Ursula Fogarty, Ireland; Christiane Girard, Canada; Elizabeth Santschi, US

123 - 8:06

Capsaicin-Induced Sensory Denervation Aggravates Osteoarthritis in Mice

Zongping Luo, China; Yijie Shao, China; Xi Chen, China

124 - 8:12

Radiographic Measurements of Osteoarthritis Severity vs. Functional Outcomes

Akshay Padki, Singapore; Winston Lim, Singapore; Daryl Cheng, Singapore; Tet Sen Howe, Singapore; Joyce Suang Bee Koh, Singapore; Meng Ai Png, Singapore; Mann Hong Tan, Singapore

8:18 Discussion

125 - 8:30

Association Between Matrix Metalloproteinase-3 and the Progression of Rapidly Progressive Osteoarthritis of the Hip

Tadashi Yasuda, Japan; Eijiro Onishi, Japan; Satoshi Ota, Japan; Satoshi Fujita, Japan; Tatsuya Sueyoshi, Japan; Takumi Hashimura, Japan

126 - 8:36

Mg²⁺ Attenuates Cartilage Degeneration in Osteoarthritis through Modulating the Fate of Mesenchymal Stem Cell From Synovial Fluid

Hao Yao, China; Jiankun Xu, Hong Kong; Ling Qin, Hong Kong; Nianye Zheng, China; Jiali Wang, China; Ki Wai Ho, China

8:42 Discussion

8:50 Keynote Speaker: Linda Sandell, US



Saturday

9:15-10:15 ICORS Paper Session: Bone 2 • Room 520BE

Moderator: Nathaniel Hwang, Korea

127 - 9:15

Accelerating Fracture Repair By Activating Wnt/ β -Catenin Signaling Pathway via Tideglusib Release

Marianne Comeau-Gauthier, Canada; Magdalena Tarchala, Canada; Jose Ramirez-Garcia Luna, Canada; Edward Harvey, Canada; Geraldine Merle, Canada

128 - 9:21

New Insights into the Role of Methionine 199 in the Function of Receptor Activator of Nuclear Factor Kappa-B Ligand (Rankl) and Bone Homeostasis

Heng Qiu, Australia; Taksum Cheng, Australia; Shek Man Chim, US; Sipin Zhu, China; Huazi Xu, China; An Qin, China; Chao Wang, Australia; Dian Teguh, US; Ge Zhang, China; Jennifer Tickner, Australia; Felix Yao, Australia; Alice Vrielink, Australia; Luke Smithers, Australia; Nathan Pavlos, Australia; Jiake Xu, Australia

9:27 Discussion

129 - 9:35

Density Distribution Analysis of the E2-Type Glenoid

Sejla Abdic, Canada; Matthew Mahaffy, Canada; George Athwal, Canada; Jim Johnson, Canada; Nikolas Knowles, Canada; Carolyn Berkmortel, Canada; Gilles Walch, France

130 - 9:41

Targeting Pathogenic Bone Loss By Epigenetic Regulation of Osteoclasts and Osteoblasts In Vitro

Kent Algate, Australia; Melissa Cantley, Australia; Tracy Fitzsimmons, Australia; Sharon Paton, Australia; Florence Wagner, US; Andrew Zannettino, Australia; Edward Holson, US; David Fairlie, Australia; David Haynes, Australia

9:47 Discussion



Saturday

9:15-10:55 ICORS Paper Session: Biomaterials 2 • Room 520AD

Moderators: Joan Bechtold, US; Akira Taniguchi, Japan

131 - 9:15

Magnesium Promotes Bone Formation During Distraction Osteogenesis in a Critical Size Defect Model

Ye Li, China; Jiankun Xu, Hong Kong; Jie Mi, China; Ling Qin, Hong Kong

132 - 9:21

DNA-Based Injectable Hydrogel as a New Therapeutic Platform for Controlled Drug Delivery: Implication in Cranial Defect Repair

Arghya Paul, US; Sayantani Basu, US; Settimio Pacelli, US; Jinxi Wang, US

133 - 9:27

Engineering Extracellular Matrix-Rich Supramolecularly Assembled Tissue Substitutes

Andrea De Pieri, Ireland; Stefanie Korntner, Ireland; Yuri Rochev, Ireland; Dimitrios Zeugolis, Ireland

9:33 Discussion

134 - 9:45

Development of a Hydrogel Scaffold Containing Eggshell Particles for Bone Regeneration

Nicholas Calvert, Canada; Tamer Ahmed, Canada; Maxwell Hincke, Canada; Isabelle Catelas, Canada

135 - 9:51

Acellular Tripased Book-Type Scaffold With Rabbit Autologous Bone Mesenchymal Stem Cell Sheets for Tendon-Bone Interface Healing and the Related Mechanisms

Yifu Tang, China; Can Chen, China; Hongbin Lu, China

136 - 9:57

Osteoimmunomodulatory Effect of 3D Rapid-Prototyped Mg-Based Composite Scaffolds

Jacob Liangbin Zhou, China; Ki Wai Ho, China; Ling Qin, Hong Kong

10:03 Discussion



Saturday

137 - 10:15

The Synergistic Effect of Topography and Substrate Rigidity on the Development of a Collagen Scaffold for Tendon Tissue Engineering

Ignacio Sallent , Ireland; Dimitrios Zeugolis, Ireland

138 - 10:21

Role of Yes-Associated Protein (YAP) in Topography-Induced Differentiation of Annulus Fibrosus-Derived Stem Cells

Genglei Chu, China; Bin Li, China

10:27 Discussion

10:35 Keynote Speaker: Eng Hin Lee, Singapore

9:15-10:45 ICORS Paper Session: Kinematics/Mechanics

• Room 524B

Moderators: Catherine Holt, UK; Eiichi Tsuda, Japan

139 - 9:15

Total Knee Arthroplasty RSA in a Standing Low-Dose Biplanar X-Ray Imager

Jennifer Hurry, Canada; Alan Spurway, Canada; Michael J. Dunbar, Canada; Ron El-Hawary, Canada

140 - 9:21

The Effect of Ankle OA and Total Ankle Arthroplasty on Joint Power During Walking

Robin Queen, US; Daniel Schmitt, US; James Campbell, US

141 - 9:27

Hip Microinstability After Cam FAI Surgery

Geoffrey Ng, UK; Hadi El Daou, UK; Marcus Bankes, UK; Ferdinando Rodriguez y Baena, UK; Jonathan Jeffers, UK

9:33 Discussion

142 - 9:45

Femoral Head Shape in Developmental Dysplasia of the Hip has Fundamental Differences Compared to Femoroacetabular Impingement

Cecilia Pascual-Garrido, US; Michael Harris, US; John Clohisy, US; Brecca Gaffney, US



Saturday

143 - 9:51

Surgical Correction for FAI: Motion Analysis During Stairs Task at Two-Year Follow-Up

Mario Lamontagne, Canada; Erik Kowalski, Canada; Danilo Catelli, Canada; Paul E. Beaulé, Canada

144 - 9:57

Platelet-Rich Plasma Incorporated Autologous Granular Bones Graft Improves Outcome for Post-Traumatic Osteonecrosis of the Femoral Head

Dasheng Lin, China

10:03 Discussion

145 - 10:15

Comparison of Supine vs. Standing RSA Exams for in Vivo Wear Measurement of Total Knee Replacements

Trevor Gascoyne, Canada; Sara Parashin, Canada; Matthew Teeter, Canada; Eric Bohm, Canada; Elise Laende, Canada; Michael J. Dunbar, Canada; Thomas Turgeon, Canada

146 - 10:21

Does Gait Retraining Have the Potential of Reducing Medial Knee Loading in Individuals With Osteoarthritis Whilst Not Adversely Affecting the Hip and Ankle Joints? A Systematic Review

Jake Bowd, UK; Paul Biggs, UK; Catherine Holt, UK; Gemma Whatling, UK

10:27 Discussion

10:35 Keynote Speaker: Eiichi Tsuda, Japan

9:15-10:30 ICORS Paper Session: Spine 4 • Room 520CF

Moderators: Albert Yee, Canada

147 - 9:15

How Do Additional Rods Reduce Loading of the Primary Rods in Adult Spinal Instrumentation With Pedicle Subtraction Osteotomy?

Carl-Éric Aubin, Canada; Xiaoyu Wang, Canada; Jeremy Rawlinson, US; Rex Armstrong, US



Saturday

148 - 9:21

Vitamin-D Levels and Low Back Pain in Patients Presenting to a Tertiary Care Hospital

Rahman Rasool Akhtar, Pakistan; Junaid Khan, Pakistan; Riaz Ahmed, Pakistan

9:27 Discussion

149 - 9:35

Impact of Resident Involvement on Cervical and Lumbar Spine Surgery Outcomes

Kim Vu, Canada; Philippe Phan, Canada; Alexandra Stratton, Canada; Stephen Kingwell, Canada; Mohamad Hoda, Canada; Eugene Wai, Canada

150 - 9:41

Predicting the DSIC Scheme Grade Using Machine Learning: A CSORN Study

Audrey Maher, Canada; Philippe Phan, Canada; Mohamad Hoda, Canada

9:47 Discussion

151 – 9:55

Can Radiomic Features Differentiate Between Osteoblastic and Healthy Bone Tissue in Metastatically Involved Vertebrae?

Allison Clement, Canada; Cari Whyne, Canada; Michael Hardisty, Canada; Phoenix Wilkie, Canada; Margarete Akens, Canada

152 - 10:01

Tauroursodeoxycholic Acid Suppresses Catabolic Enzyme Expression In Human Osteoarthritic Chondrocytes Induced By Prolonged Exposure To Proinflammatory Cytokine IL-1 β

Michael Grant, Canada; Fackson Mwale, Canada; John Antoniou, Canada; Stéphane Bergeron, Canada; Andrew Karaplis, Canada; Dibyendu Panda, Canada

10:07 Discussion

10:15 Keynote Speaker: James Iatridis, US



Saturday

9:45-10:45 ICORS Workshop: Chinese ORS - Paper Writing and Review for Publication in International Orthopaedic and Related Journals • Room 517D

Moderator: Ling Qin, Hong Kong

Objectives:

1. Participants will be briefed on the essentials of good scientific papers, strategies for submission and review process, writing and responding to reviews.
2. Discuss the specifics of publishing for non-native English-speaking authors.
3. The following areas will be addressed:
 - Journal paper preparation, including the formulation of important topic(s) with originality and advancement in sciences.
 - Good study design with adequate sample size and appropriate statistics.
 - Reporting of results with significant novelty.
 - Importance of translational impact.

Speakers:

- Publishing in the Journal of Orthopaedic Research: Content and Style – Linda Sandell, US
- How to Publish in eCM, a Journal Founded and Run by Scientists for the Benefit of Science Rather Than Profit - Geoff Richards, *FIOR Chair*, Switzerland
- A Platform for Publishing Translational Research Work in JOT - Ling Qin, Hong Kong
- Bone & Joint Research: A Strong Family and Heritage – Fares Haddad, UK

10:45-11:15 Poster Session with Coffee • Exhibit Hall, Room 516

11:15-12:15 ICORS FIOR Panel Discussion • Room 517D

Moderators: Theodore Miclau, ICORS President, US; Geoff Richards, FIOR Chair, Switzerland

Topics:

- Orthopaedic Research: Who Should be Doing It?
- Orthopaedic Innovation: What Does the Future Hold for our Practices?



Saturday

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

**12:30-13:30 ICORS Closing Ceremonies and Transfer of Office
• Room 517D**

- FIOR Induction Ceremony - Geoff Richards, *FIOR Chair*
- CORS Founders Award - Top Canadian Research for 2019 – Paul E. Beaulé, *CORS President*
- ICORS Outgoing President Address - Theodore Miclau, *ICORS President*
- ICORS/AO Foundation Scholarship Awards - Kay Horsch, AO Foundation
- ICORS Transfer of Office Ceremony, and President-Elect Address - Gun Il Im, *ICORS President-Elect*
- ICORS 2022 Presentation