



8:00-17:00 Speaker Ready Room • Room 524C

8:00-20:00 Registration • 517 Foyer

12:00-17:00 Poster Mounting • Exhibit Hall

13:00-14:00 ICORS Workshop: Chinese ORS - Recent Advances in Intervertebral Disc Research • Room 520AD

Moderators: Zhen Li, Switzerland; Xuenong Zou, China

Objective:

To explore new pathogenesis and therapies of disc degeneration disease.

Speakers:

- Toll Like Receptor Expression and Activation in IVD and Facet Joint Cartilage Degeneration and Pain - Lisbet Haglund, Canada
- Screening of Anti-Inflammatory and Regenerative Drug Therapy in a Bioreactor-Guided Intervertebral Disc Organ Culture Model - Zhen Li, China
- Induced Intervertebral Disc Cells: Hurdles and Consideration for Successful Cell Reprogramming - Jordy Schol, Japan
- The Ideal Time Window for Biological Intervention of Early Disc Degeneration Process Using Quantitated MRI-T1 ρ Values - Xuenong Zou, China

13:00-14:15 ICORS Paper Session: Hip and Knee Arthroplasty 1 • Room 520CF

Moderators: Yuji Uchio, Japan

1 - 13:00

Targeting Physiotherapy to Patients at Risk of Poor Outcomes Following Total Knee Arthroplasty: The Trio Randomized Controlled Trial

David Hamilton, UK; Hamish Simpson, UK; David Beard, UK; Karen Barker, UK; Gary MacFarlane, UK; Andrew Stoddart, UK; Gordon Murray, UK



Wednesday

2 - 13:06

Communication Checklist Increased Patient Satisfaction With Total Knee Arthroplasty

Sylvia Gautreau, NB; Michael E. Forsythe, NB; Odette Gould, NB; Catherine Aquino-Russell, NB; William Allanach, NB; Andrew Clark, NB; Steven Massoeurs, NB

13:12 Discussion

3 - 13:20

Long-Term Follow-Up Results of a Clinical Trial in Total Hip Arthroplasty Utilizing a Bioactive Bone Cement Containing Apatite-Wollastonite Glass-Ceramic Fillers and Bisphenol-a-glycidyl Methacrylate Resin

Koji Goto, Japan; Yutaka Kuroda, Japan; Toshiyuki Kawai, Japan; Shuichi Matsuda, Japan

4 - 13:26

Clinical and Biomechanical Cluster Classification Before TKA Impacts Functional Outcome

Janie Astephen Wilson, Canada; Kathryn Young, Canada; Michael J. Dunbar, Canada; Patrice Roy, Canada; Syed Sibte Raza Abidi, Canada

13:32 Discussion

5 - 13:40

Adjunctive Diclofenac Decreases Opioid Consumption and Increases Satisfaction in the Primary Total Hip Arthroplasty Population

Nequesha Mohamed, US; Nicole George, US; Chukwuweike Gwam, US; Jennifer Etcheson, US; Iciar Dávila Castrodad, US; Alexandra Passarello, US; Ronald Delanois, US; Cheryle Gurk-Turner, US; Thea Recai, US

6 - 13:46

Genetic Predictors for Non-Responders to Total Joint Replacement in Osteoarthritis Patients

Guangju Zhai, Canada; Ming Liu, Canada; Proton Rahman, Canada; Andrew Furey, Canada

13:52 Discussion



Wednesday

13:00-14:30 ICORS Paper Session: Biomaterials 1 • Room 519A

Moderators: James Wang, US; Sabina Gheduzzi, UK

7 - 13:00

Strontium-Substituted Hydroxyapatite and MicroRNA-21 Synergistically Improves Bone Remodeling and Osseointegration

Zhaoyang Li, China; Zhen Geng, China; Zhenduo Cui, China; Shuilin Wu, China; Shengli Zhu, China; Yanqin Liang, China; Xianjin Yang, China

8 - 13:06

Evaluation of Additively Manufactured Porous Ingrowth Biomaterial

Michael Tanzer, Canada; Philp Chuang, US; Chau Ngo, US; Carlos Aponte, US; Lin Song, US; Kevor TenHuisen, US

9 - 13:12

Microenvironment "Self-Gated" Release of BMP-2 Peptide from Manganese Dioxide Nanoparticle / GelMA Hydrogel for Bone Repair

Fengxuan Han, China; Jiaying Li, China; Bin Li, China

13:18 Discussion

10 - 13:30

Does Hemiarthroplasty Implant Compliance Affect Early In Vitro Cartilage Wear and Joint Contact Mechanics?

G. Daniel G. Langohr, Canada; Sarah DeDecker, Canada; Alana Khayat, US; Jim Johnson, Canada; Graham J.W. King, Canada; John Medley, Canada

11 - 13:36

Internal Fixation of Patellar Fracture With Microarc Oxidation-Treated Magnesium Pins Enhanced Fracture Healing in Rabbits

Dick Ho Kiu Chow, Hong Kong; Ling Qin, Hong Kong; Jiali Wang, Hong Kong; Ke Yang, China; Peng Wan, China

12 - 13:42

Degradation Behaviour and Biocompatibility of Additively Manufactured Porous Metallic Implants

Holger Jahr, Germany; Prathyusha Pavanram, Germany; Yageng Li, Netherlands; Karel Lietaert, Belgium; Yusuke Kubo, Germany; Harrie



Wednesday

Weinans, Netherlands; Jie Zhou, Netherlands; Thomas Pufe, Germany; Amir A Zadpoor, Netherlands

13:48 Discussion

13 - 14:00

A Novel Regenerative Scaffold for Intervertebral Disc Repair With Enhanced Mechanical Properties

Atma Adoungotchodo, Canada; Sophie Lerouge, Canada; Yasaman Alinejad, Canada; Fackson Mwale, Canada; Michael Grant, Canada; Laura Mery Epure, Canada; John Antoniou, Canada

14 - 14:06

Freeze-Dried Chitosan Solubilized in Platelet-Rich Plasma in a Sheep Model of Rotator Cuff Repair

Anik Chevrier, Canada; Mark Hurtig, Canada; François-Xavier Lacasse, Canada; Marc Lavertu, Canada; Hollis Potter, US; Sarah Pownder, US; Scott Rodeo, US; Michael Buschmann, US

14:12 Discussion

14:20 Keynote Speaker Ling Qin, Hong Kong

13:00-14:30 ICORS Paper Session: Cartilage and Synovium 1
• Room 519B

Moderators: Frank Beier, US

15 - 13:00

Alk5 Gene is Critical for Maintaining the Superficial Layer of Articular Cartilage and Preventing Osteoarthritis Initiation

Qiaoyan Tan, China; Yangli Xie, China; Lin Chen, China

16 - 13:06

Application of Size-Based Spiral Microchannel Sorted Zonal Chondrocytes for Articular Cartilage Regeneration

Ching Ann Tee, Singapore; Zheng Yang, Singapore; Lu Yin, Singapore; Yingnan Wu, Singapore; Vinitha Denslin, Singapore; Xiafei Ren, Singapore; Chwee Teck Lim, Singapore; Jongyoon Han, US; Eng Hin Lee, Singapore

13:12 Discussion



Wednesday

17 - 13:20

Nanotopography and Substrate Stiffness Enhances Mesenchymal Stem Cell Chondrogenesis for Articular Cartilage Regeneration

Ching Ann Tee, Singapore; Yingnan Wu, Singapore; Vinitha Denslin, Singapore; Xiafei Ren, Singapore; Chang Sheng Lee, Singapore; Fung Ling Yap, Singapore; Zheng Yang, Singapore; Eng Hin Lee, Singapore

18 - 13:26

Evidence for Early Molecular OA in Articular Cartilage of the Impingement Zone in FAI Hips

Cecilia Pascual-Garrido, US; Masahiko Haneda, US; Muhammad Farooq Rai, US; John Clohisy, US; Robert Brophy, US; Lei Cai, US

13:32 Discussion

19 - 13:40

The Electrostatic Contribution of Proteoglycans to Mechanical Stiffness of the Human Meniscus

Fahd Mahmood, UK; Jon Clarke, UK; Philip Riches, UK

20 - 13:46

Cartilage Regenerates Directly on Subchondral Porous Polycaprolactone Coated With 99% DDA Chitosan

Caroline Hoemann, US; Janet Henderson, Canada; Jessica Guzman-Morales, Canada; Javier Rodriguez, Canada; Ebrahim Jalali Dil, Canada; Basil Favis, Canada; Gaoping Chen, Canada

13:52 Discussion

14:04 Keynote Speaker: Brian Johnstone, US

14:14 Discussion

13:00-14:30 ICORS Paper Session: Spine 1 • Room 520BE

Moderators: James Iatridis, US

21 - 13:00

Vertebral Fracture Risk Assessment Using Decision Tree Model Based on Bone Mineral Density of Different Compartments of Vertebral Body

Chi Ma, Hong Kong; Chentian Li, Hong Kong; Yongqiang Jin, Hong Kong; William W. Lu, Hong Kong



Wednesday

22 - 13:06

Comparing Cellular Bone Matrices for Posterolateral Spinal Fusion
Clifford Lin, US; Brian Johnstone, US; James Ryaby, US; Nianli Zhang, US; Erik Waldorff, US; Paolo Punsalan, US; Jung Yoo, US; Eric Semler, US

23 - 13:12

Fibrosis and Markers of Pain are Upregulated in the Intervertebral Disc Following Prolonged Tungsten Exposure: An In Vivo Study
Michael Grant, Canada; Laura Mery Epure, Canada; Fackson Mwale, Canada; John Antoniou, Canada; Alicia Bolt, Canada; Koren Mann, Canada; Hsiang Chou, Canada

13:18 Discussion

24 - 13:30

Development of an Open-Source 3D Virtual Simulator as a Teaching Tool for Spinal Decompression Surgery
Hikmat Sahak, Canada; Michael Hardisty, Canada; Joel Finkelstein, Canada; Cari Whyne, Canada

25 - 13:36

A Novel Function of Tenomodulin in Prevention of Intervertebral Disk Degeneration
Denitsa Docheva, Germany; Dasheng Lin, Germany

13:42 Discussion

26 - 13:50

PLLA Electrospun Fibrous Scaffold Modified With CD80 Monoclonal Antibody Promote Neurological Recovery in Rat Spinal Cord Injury
Qin Shi, China; Junchao Luo, China; Wenguo Cui, China

27 - 13:56

Link N Reverses Interleukin-1 β -induced Loss of Proteoglycan Content in Human Cartilage Through Inhibition of NF κ B Activation
Michael Grant, Canada; Laura Mery Epure, Canada; Motaz Alaqeel, Canada; John Antoniou, Canada; Fackson Mwale, Canada

14:02 Discussion



Wednesday

14:10 Keynote Speaker: Albert Yee, Canada

14:20 Discussion

14:30-15:00 Break

15:00-16:00 ICORS Workshop: BORS Regenerative Medicine - Coming to a Clinic Near You Soon? • Room 519B

Moderators: Hamish Simpson, UK; J. Mark Wilkinson, UK

Objective:

The purpose of this workshop is to give an overview of the scope of the problems that may be in the future solved using regenerative medicine and the emerging technologies we will be applying to the problem, but will this happen any time soon? The workshop will follow an instructional course format including interactive floor discussion.

Speakers:

- Overview and Regenerative Solutions in Fracture Repair - Hamish Simpson, UK
- Regenerative Medicine Solutions in Osteoarthritis - Andrew W. McCaskie, UK
- Regenerative Medicine Approaches and Technologies for Bone Augmentation - Richard Oreffo, UK

15:00-16:00 ICORS Workshop: Chinese ORS - Chondrocytes and Osteoblasts in Development, Aging, and Repair • Room 519A

Moderators: Gang Li, China; Liu Yang, China

Objectives:

1. Address the importance of Hedgehog signaling in cartilage-bone transition.
2. The importance of the epigenetic control of mesenchymal stem cells.
3. The importance of maintaining tissue homeostasis and their roles in aging.
4. Introduce a simple and cost-effective method of cell manipulation (so called "pre-conditioning" or "de-differentiation") to promote bone and cartilage repair and regeneration.



Wednesday

Speakers:

- Constitutively Activated Hedgehog Signalling Impaired Chondrocyte-Osteoblast Transition - Liu Yang, China
- Epigenetic Control of Chondrogenic Progenitor Populations Associated with Bone Aging - Xiaohua Jiang, Hong Kong
- Dedifferentiation of Mesenchymal Stem Cells as a New Strategy for Cartilage Repair - Gang Li, China

15:00-16:00 ICORS Workshop: Chinese ORS - Degradable Biometals for MSK Disease Treatments • Room 520BE

Moderators: Bin Li, China; Kelvin Yeung, Hong Kong

Objectives:

1. To highlight the latest developments of degradable metals.
2. Discuss their applications and risks in orthopaedic applications.

Speakers:

- Electrochemical Side of Metallic Orthopaedic Biomaterials - Guigen Zhang, China
- The Journey Seeking Biometals for Orthopaedic Applications - Ling Qin, Hong Kong
- Are Those Degradable By-Products Harmful/Beneficial to Bone Healing? Kelvin Yeung, Hong Kong
- Magnesium Supplementation Promotes Osseointegration of Orthopaedic Implants - Bin Li, China

15:00-16:00 ICORS Workshop: EORS - Orthopaedic Research from Bench to Bedside and Vice Versa • Room 520CF

Moderators: Thomas Grupp, Germany; Dennis Janssen, Netherlands

Objectives:

1. A snapshot of recent experimental & in silico biomechanical methods with clinical impact count.
2. Musculoskeletal biomechanics for a better understanding of patients muscular and ligamentous status, kinematics and *in vivo* loading conditions.
3. Retrieval analysis as a basis for the development of new or modified biomaterials and advanced device testing methods.
4. Hypersensitivity to implant materials - patient derived factors influencing immune reactivity to orthopaedic implants. An overview of different mechanisms and patient examples will be given.



Wednesday

Speakers:

- Advanced Biomechanical Methods – A Basis for Orthopaedic Device Optimisations in Cementless Hip Arthroplasty - Thomas Grupp, Germany
- Musculoskeletal Analyses for a Better Understanding of the Effect of Joint Replacement on Muscular and Ligamentous Biomechanics - Dennis Janssen, Netherlands
- Retrieval Research Programs - A Main Source to Create Sustainable Arthroplasty Technologies for the Future - Steven Kurtz, US
- Patient Derived Factors Influencing Immune Reactivity to Orthopaedic Implants - Peter Thomas, Germany

15:00-16:30 ICORS Workshop: ORS Spine/JOA/AO Foundation - Recent Advances in Scoliosis Research: Biological Signatures and Morphological Features • Room 525A

Moderators: Lisbet Haglund, Canada; Daisuke Sakai, Japan

Objectives:

Biological Signatures

1. Provide background clinical overview.
2. Discuss the recent novel findings in cells of the intervertebral disc of scoliotic spine, followed by responses of facet joint cells and tissues to 3D deformity.
3. Biological signatures in 3D deformity of the scoliotic spine will deliver useful information in an understanding the unknown aetiology.

Morphological Features

1. Present advancement in 3D reconstruction and finite element analysis of the forces put on a scoliotic spine.
2. The delivered information will be useful in understanding the biomechanical aspects that affect the morphological characteristics of scoliosis.

Speakers:

- Biological Signatures in 3D Deformity – Zhen Li, Switzerland
- Clinical Overview of Spinal Deformity - Jean Ouellet, Canada
- A Biomechanical Study of Scoliosis Surgery Using Computational - Experimental Analyses - Jun Takahashi, Japan
- Biomechanical Modeling and Simulation to Improve the Treatment of Complex Spine Deformities - Carl-Éric Aubin, Canada
- 3D Analysis of Vertebral Morphology in Idiopathic Scoliosis - Takashi Kaito, Japan



Wednesday

15:00-16:30 ICORS Workshop: EORS - Highly Cross-Linked Polyethylene in Hip Arthroplasty: Did Something Go Wrong Again? • Room 520AD

Moderator: Michael Tanzer, QC

Objectives:

1. Provide attendees with up-to-date data on highly cross-linked polyethylene (HXLPE) in hip arthroplasty.
2. Argue the results and limitations of first generation HXLPEs along with their potential oxidative degradation.
3. Discuss different anti-oxidant solutions and present early clinical results.

Speakers:

- Introduction - Michael Tanzer, QC
- Long-Term *in vivo* Results of First Generation Highly Cross-Linked Polyethylene (HXLPE): So Far So Good - Charles Bragdon, US
- Mechanisms of PE Oxidation Including First Generation HXLPE - Pierangiola Bracco, Italy
- Addition of Vitamin E Is the Ultimate Solution, In Vitro Data Says It All! But How To? Claude Rieker, Switzerland
- Do We Have in vivo Evidence Second Generation HXLPE is the Current Gold-Standard or Third Generation is Coming? Charles Bragdon, US

17:30-19:00 ICORS / COA Opening Ceremonies • Room 517D

Presidential Guest Speaker

Change, Adaptation & Risk

Roberta Bondar, Canada

19:00-21:00 President's Welcome Reception & Posters • Exhibit Hall