AO Orthopaedic Research Summit

16-19 June 2025

Davos, Switzerland

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Welcome Message from the AO Summit Chair

Geoff Richards, FLSW, FBSE, FIOR, FTERM, PhD, Prof.,
Director, AO Research Institute Davos (ARI)
Executive Director AO Foundation Research & Development

Dear esteemed participants,

It is my great pleasure to welcome you to the AO Orthopaedic Research Summit 2025, hosted by the AO Research Institute Davos in the breathtaking alpine town of Davos. As chair of this summit of three congresses, I am honored to host this special gathering with some of the brightest minds in orthopaedics amidst such a stunning backdrop, renowned for fostering world-class exchanges and collaboration.

This year's conference is a particularly special event as three societies combine minds to advance science and clinical impact; ARI Orthopaedics, the European Orthopaedic Research Society (EORS) and the International Society for Computer Assisted Orthopaedic Surgery (CAOS). We have designed three programs to highlight cutting-edge advancements in our fields, featuring a blend of plenary speakers with parallel sessions for their talks, keynote speakers within each congress, panel discussions, and hands-on workshops.

We are honored to announce that the Guest Nation for the 33rd Annual EORS Meeting in 2025 will be China. This was accepted by Professor Zhoujing Luo, MD, PhD, President of the China Orthopaedic Research Society. Other Chinese societies such as International Chinese Musculoskeletal Research Society will also attend with symposia.

Our EORS symposia for sister societies and societies connected to the field will run throughout the congress.

As the field of orthopaedics continues to transform, it is important that we come together to discuss how we can lead in advancing patient outcomes. This conference is not only an opportunity for learning but also a platform for meaningful connections and collaborations. I encourage each of you to take full advantage of this unique setting to share your insights, explore new ideas, and build lasting professional relationships.

It is not just work, but friendly networking and a place to inspire new projects and friendships. On the Tuesday we have organized a run/walk around the lake which will be followed in the evening by the combined congress dinner.

EORS and ARI Orthopaedics will run from Monday until Thursday and the CAOS will finish on Wednesday lunch time with post CAOS congress workshops in the afternoon. We have also left space for post congress workshops on Thursday afternoon for EORS.

I would like to thank our speakers, sponsors, and organizing committee, and most importantly my team whose unwavering support and hard work will contribute to the success of this combined event to ensure that this conference allows us to remain at the forefront of our profession.

Finally, I hope that you take time to explore Davos, a city renowned for its natural beauty, orthopaedic heritage, and its spirit of innovation. Whether you are inspired by the mountain ranges or the vibrant discussions within our sessions, I am confident that your experience here will be both professionally and personally enriching.

To learn a little more on the science in Davos, our institutions, innovation and education, visit: Science City Davos | Excellence meets Science.

To learn a little about the Arts and Culture in Davos, visit: Art & Culture | Davos Klosters and Storybook | Davos Klosters

Thank you for joining us, and I look forward to an extraordinary conference filled with, collaboration, discovery and inspiration.

Warm regards,

Professor R. Geoff Richards FLSW, FBSE, FIOR, FORS, FTERM Director,
AO Research Institute Davos (ARI),
Executive Director AO Foundation Research & Development.

Welcome Message from the EORS President

Boyko Gueorguiev, PhD, Prof.,
President EORS
AO Research Institute Davos

Dear colleagues and friends,

We are delighted to invite you to the 33rd Annual Meeting of the European Orthopaedic Research Society (EORS) which will take place from June 16 to 19, 2025 in Davos, Switzerland. Hosted by the AO Research Institute Davos (ARI), the EORS 2025 congress will be a joint venture along with ARI Orthopaedics (ARI Orthopaedics) and International Society for Computer Assisted Orthopaedic surgery (CAOS).

In line with the EORS mission to promote research and development in orthopaedic surgery and related sciences through interdisciplinary coordination, exchange of scientific and technical experience, and education, we are highly committed to organize an excellent meeting in the beautiful Swiss Alpine setting of Davos.

The meeting will take place in the Conference Center Davos – the traditional venue of the well-known World Economic Forum and the world-renowned AO Davos Courses for education of orthopaedic surgeons (trauma, spine, cranial maxillofacial, sports medicine, reconstruction/joint replacement and veterinary specialties) – together with the annual meeting of the International Society for Computer Assisted Orthopedic Surgery (CAOS) and the ARI Orthopaedics meeting. Having just one registration for all three meetings, you will have the opportunity to exchange ideas with researchers, clinicians and engineers from these societies to transform orthopedic surgery and create new paradigms, to meet colleagues and friends, learn from workshops, and create networks.

Welcome to Davos!
The Organizing Committee

Welcome Message from the CAOS President

Florian Gebhard, MD, PhD, Prof.,
Ulm University Medical Center
Director Department for Orthopaedic Trauma
Deputy Chief Medical Officer

It is with great pleasure and honor that I welcome you to the 25th anniversary of our esteemed society in Davos.

In 2000, a group of highly motivated engineers, computer specialists, and a handful of enthusiastic orthopaedic trauma surgeons founded this unique society. From the very beginning, it has served as a platform for various disciplines, bridging gaps, and fostering innovative ideas to enhance patient care by increasing procedural accuracy and defining efficient workflows. Davos was chosen as the founding location due to the significant influence of the AO Foundation, particularly the Technical Commission, and the Maurice E. Müller (MEM) Institute in Bern.

Over the past 25 years, the landscape of orthopaedic surgery and other operating rooms has changed significantly. The journey has not been straightforward, with its fair share of challenges. However, CAOS, or more appropriately, "surgeon enabling technologies," are now part of daily practice, not only in orthopaedics but also in other surgical disciplines such as robotics in general surgery, urology, and gynecology.
The synergy of clinical research, advanced engineering methodologies, and modern technologies supports the trend towards personalized solutions for optimizing therapy for each individual patient. For more than two decades, CAOS has been dedicated to interdisciplinary research, aiming at the development and evaluation of tools that provide a better link between patient-specific planning information and surgical action. Today, operating rooms offer all-in-one solutions that integrate these technologies, placing the patient at the center.
History has proven that the visionary ideas of 2000 have not only become a reality but have also significantly advanced the field.
Hosting the 25th anniversary in conjunction with EORS aims to perfectly connect professionals dedicated to improving individual patient care through the use of up-to-date technology to enhance outcomes.
I eagerly anticipate this special meeting, which will undoubtedly set the stage for future advancements.

Welcome Message from ARI Orthopaedics 2025 Biofabrication Program Organizers

Matteo D'Este, PhD, Tiziano Serra, PhD
Jacek Wychowaniec, PhD, Alessandro Cianciosi, PhD.

Biofabrication is revolutionizing the ability to produce biological constructs with controlled architecture and properties. The impressive rate of progress achieved in bioprinting and other biofabrication methods has established these techniques as mainstream approaches in musculoskeletal 3D in vitro model development, tissue engineering, and regenerative medicine. Therefore, we are excited to introduce Biofabrication as a topic at the ARI Orthopaedics conference. The program covering the latest advancements, will foster mutual exchange of ideas and concepts from different fields. Prominent invited speakers and selected submitted contributions will illustrate the latest innovations and challenges in the field. Participants will gain increased understanding of the topic and unique opportunities to connect with old and new colleagues in the beautiful scenery offered by the Swiss Alps. Holding the conference in conjunction with EORS2025 and CAOS2025 at the AO Orthopaedic Research Summit, facilitates even more networking and collaborative opportunities for researchers and clinicians. We are looking forward to welcoming some of the brightest minds in biofabrication for orthopaedics at the AO Orthopaedic Research Summit and the ARI Orthopaedics conference!

The Organizers

Organizing Committee

Shannon Smit

Isabella Badrutt

Carla Escher

Ulrich Bentz

Sonia Wahl

Claudia Barblan

Claudia Siverino, PhD

General Information

Conference venue
Congress Center Davos
Talstrasse 49A
7270 Davos Platz, Switzerland
Phone +41 81 414 62 02

Conference secretariat opening hours
Sunday 17:00–18:30
Monday 09:00–18:30
Tuesday to Wednesday 07:30–18:30
Thursday 07:30–17:30
Friday 08:00–14:00

Presentation Facilities & IT
The speaker ready room is located in House A in **room "Dischma".** All speakers are requested to hand in and to check their oral presentations the day before their talks.

Please bring a USB stick of your talk, so that it may be loaded onto the computer by our presentation support team. Mac users must be early to check their presentation is compatible with our PC based system. Please check all your videos run properly with our IT support team at the presenter help desk well before your presentation.

Presentation from own laptop will not be allowed.

Time zone
In Switzerland at the time of the conference, the time zone is Central European Summer Time (UTC+02:00)

Conference program
In case of unforeseen unavailability of the presenters, the program may change on a short notice. We recommend using the online version of program at this link:
Program

The program has two different search functions build in. Under "Search program" you can search only for what is present in the URL landing page (e.g. session name, time and day as well as keynote, plenary and awardee speaker). To find an abstract assigned to a specific session, you need to click on the session cell and access all the information. Alternatively, under "Search conference" in the top blue bar you can search for a specific abstract by author name or abstract title.

Organize your meeting using the mobile version of our Program.
Opening from mobile device through a browser, the web page works just like an app. After signing in once with the same credentials used for conference registration, sessions can be bookmarked.

You will receive a printed pocket guide on-site.
Here you can get a preview of it: Summit-Pocket-Program-WEB.pdf

Promotion
Feel free to promote your session by downloading the promotion material here: Promotion | 33rd Annual Meeting of the European Orthopaedic Research Society (EORS)

Additional bookings
If you have made additional selections to workshops, you can also view them and mark them on the online Program.

Wireless network
The Wi-Fi network name is "Davos Congress". No password is needed.

Talk durations

Plenary	**25 minutes** presentation and 5 minutes Q&A
Keynote	**20 minutes** presentation and 5 minutes Q&A
Oral	**8 minutes** presentation and 2 minutes Q&A

For **oral presentations**, the following equipment will be available:

- Video/Data beam (1024x768), single or double beam projection of the same slide depending upon the presentation room. In the double projection rooms, mouse must be used as pointer to be visible on both screens, please refrain from using the laser pointer.
- Windows system (PC) with PowerPoint - you only need to bring your talk on a USB stick.
- Mac users must convert the talk into PC compatible PowerPoint on a USB stick before the meeting and check it with our Presentation Support team.

- Fixed microphones in the aisles are available for discussions. One must just stand at the microphone after the talk and speak when indicated by the chairperson

To respect other speakers in the session, we insist that speakers keep to their presentation times given and chairs will stop talks that run overtime, designated discussion times will be included. Designated discussion times are for discussion, not for extra minutes of a talk. We encourage critical discussion of presentations, as would occur in a paper peer review.

Poster presentations
A staff member on-site will help you to locate your poster board.
Poster code and locations are explained on page 147.
Double sided sticky tape will be provided for poster mounting.
Posters remaining at the end of the poster sessions that are not removed will be destroyed.

Placing of poster – Monday June 16th 08:00–10:00
Removal time - End of poster session Wednesday 18th June 2025

Poster Presentation Times:
Monday 16th June 2025, 17:15
Wednesday 18th June 2025, 17:15

Intellectual property
Course materials and presentations are the intellectual property of the conference speakers. All rights are reserved.

Recording, photographing, or copying of lectures, or any course materials is strictly forbidden.

Use of mobile phones
Use of mobile phones is not allowed in the lecture halls and in other rooms during educational activities. Please be considerate of others by turning off your mobile phone or turning it on silent.

Name badge
You will have the option to sign in and print your own badge at the conference using the QR provided to you via email, or by searching for your name and surname.

Your name badge is your admission to the scientific sessions as well as to coffee and lunch breaks. If you have registered for the conference dinner, this is marked on your name badge.

If you have signed up with any of the workshops offered, this will also be displayed on your badge, and you will need to scan in at each of these sessions using the QR code on your badge.

Please help us **keep green** by **handing in your badge before you leave**.

Why? Because at the Summit, every badge returned is a win for:
♻️ **Recycling** – let's give those badge holders a second life!
🥙 **Reducing food wastage** – it helps us plan, and budget better for the following day (and 'planet' better).
💸 **Cutting costs &** 💚 **Giving back** – less spent = more chance for us to financially support the societies.
You can keep your lanyard but the badge? …
Please leave that in the **Badge Drop Box** at the entrance on your way out.

Certificate of attendance
After the congress, you will receive an email with a short survey. Once you've completed it, you will be able to download your attendance certificate.

Lost and found
Lost and found items can be recovered at the registration desk.

Insurance
The organizers shall not be held responsible or liable for any theft, accidents, injuries, or personal loss that may occur during or in connection with the event. Please note that the congress organizers do **not provide insurance coverage** for such incidents. Attendees are advised to take appropriate precautions and arrange their own insurance, if necessary.

Transport to/from Zurich Airport
There are at least hourly train connections from Davos Platz or Davos Dorf to Zurich Airport with a total train journey duration of 2 hours 40 minutes. There is a change of train

at Landquart and Zurich Mainstation (Zürich Hauptbahnhof). Tickets can be purchased at the train station or online: www.sbb.ch/en
Mobile App: https://www.sbb.ch/en/travel-information/apps/sbb-mobile.html
Web: https://www.sbb.ch/en

Parking

There is a parking place at the Congress Center. Parking is possible during the day at your own cost. Make sure to buy a ticket. Parking fines may get quite expensive in Switzerland.

- Install the parking app on your smart phone.

ParkingPay App Android

ParkingPay App Apple

- Open the parking pay app
- Deposit vehicle and kind of payment
- Select: car park – 7270 - Davos Platz
- Zone/Parking: 13 Congress P Permit
- Day Permit Congress
- Select start and number of days
- Buy

Currency, money exchange

The Swiss Franc (CHF) is the official currency in Switzerland. There are several banks and cash dispensers in the town. Major international credit cards are accepted in most hotels, shops and restaurants. Occasionally, shops and restaurants accept Euros.

Smoking
Smoking is prohibited at the conference venue or in any other public indoor establishments such as restaurants, bars, etc.

Tipping
Service is included in Switzerland. Tips, however, are given to show appreciation of a good meal or special service.

Tourist Information
Destination Davos Klosters
Talstrasse 41, 7270 Davos Platz
www.davos.ch/en

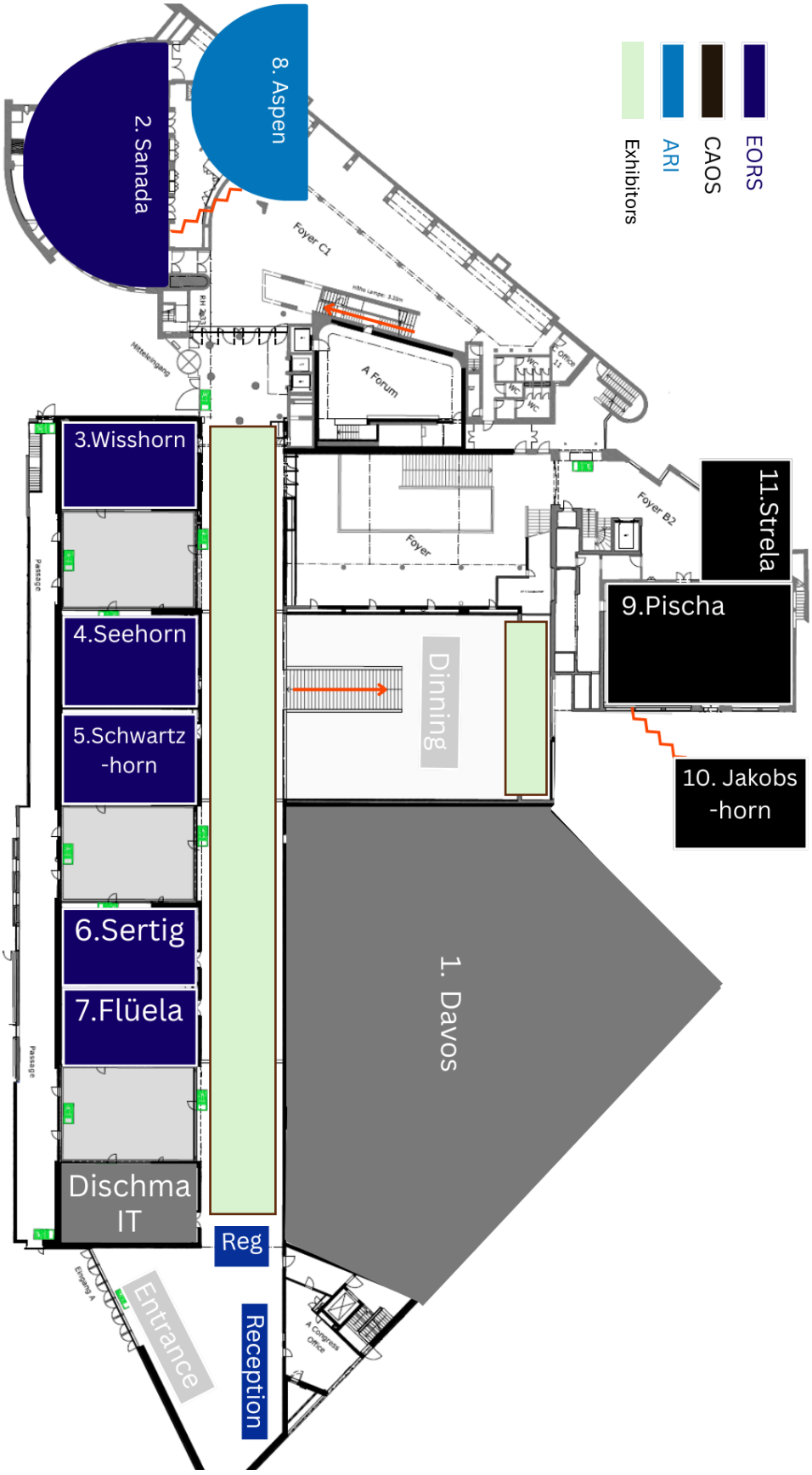
Davos Klosters Inclusive
With the Premium Card, local public transport is free for guest transport from the first night. Trips to the **side valleys** of Dischma, Sertig, Monstein and Davos Wiesen can be reached with the **VBD day ticket (transport operator Davos) for 16 francs**. You can experience offers from the **winter guest program** and the **summer guest program** for between 5 francs (e.g. **mountain bike riding technique**) and 15 francs (e.g. **paragliding taster day**). Cultural activities or visits, such as a **guided tour of the Kirchner Museum** or a **tour of the brewery in Monstein**, can be booked from just 5 francs. This is not part of the official social programs, please contact your designated hotel.
Premium Card for overnight guests

Emergency calls
112 – International emergency call
117 – Police
118 – Fire station
144 – Emergency rescue service
1414 – Rega, air rescue

Pharmacy
There are several pharmacies in Davos. Ask the conference secretariat.

Medical services
Davos Hospital, Promenade 4, 7270 Davos Platz is located in Davos Platz.
Phone +41 81 414 88

Congress Centre Maps



Social Program

Monday, 16th June 2025 at 19:00

New Investigators Evening

Kaffee Klatsch Davos am Platz, Promenade 38, 7270 Davos Platz

Sponsored by

ZEISS

The New Investigators social event will take place at Kaffee Klatsch, Davos on Monday, 16th June 2025 at 19:00.

Registration is mandatory and can be made at the reception desk before 12PM on Monday 16th June 2025.

There are limited seats available with a registration fee of CHF 30 which includes 2 drinks as well as dinner.

How to get there: Kaffee Klatsch Davos am Platz - Google Maps

All new investigators are invited to participate in this social event. It will be a great opportunity to encourage professional networking and start new relations in a relaxed atmosphere.

Please note this event is for new investigators only. A new investigator is an undergraduate, graduate, resident, PhD student, or up to 5 years from PhD.

Tuesday, 17th June 2025

Run/Walk around Lake Davos

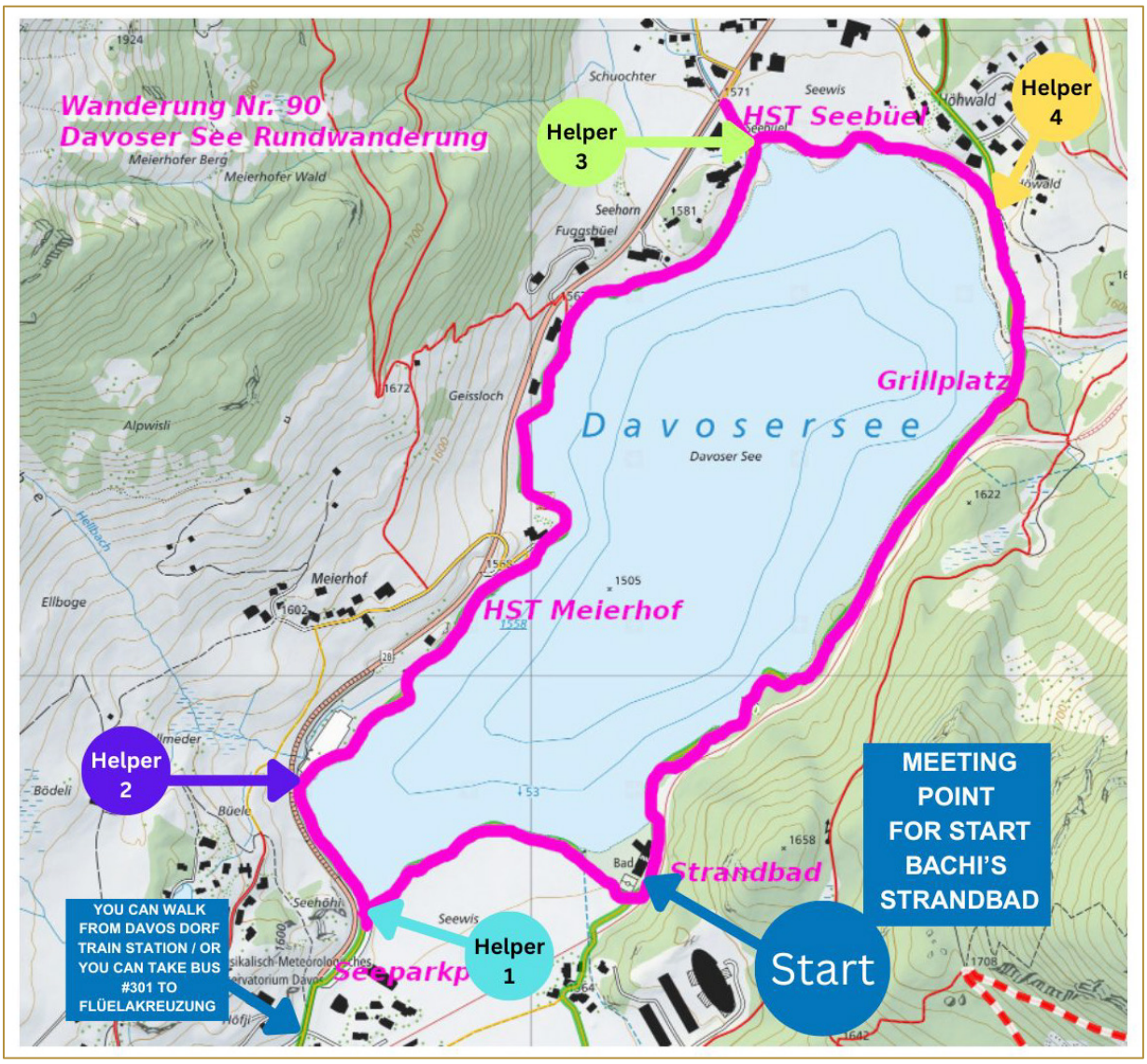
Start Time: 15:00 CET Run / 15:05 Walk
Distance: 4 km
Fee: Included in registration fee.
Included: Bib for time tracking and a bottle of water.
Meeting Point: Bachi's Strandbad Davos at 14:45.

We will get ready to take a group picture at 14:55 and start the run at 15:00 and the walk at 15:05.

There will be a prize giving for the top 3 male and female runners at 14:45.

Getting there:
Bachi's Strandbad Davos, Seepromenade 7, 7260, Davos Dorf.
Coordinates start area:**46.81507, 9.85103**
From Davos Dorf Train station: 15min walk to the Lake. Bus 301: Travels to bus stop Fluela Kreuzung at the Lake – 10 min walk to the Lake

Liability / Insurance:
Participation in the "AO Orthopaedic Research Summit 2025" Run & Walk around Lake Davos is entirely at your own risk. The organizers will not be held responsible for any incidents such as injury, theft or liability towards third parties. Each participant is therefore, responsible for his/her own insurance.


Wanderung Nr. 90
Davoser See Rundwanderung
Helper 3
HST Seebüel
Helper 4
Grillplatz
Davosersee
Davoser See
HST Meierhof
Helper 2
MEETING POINT FOR START BACHI'S STRANDBAD
Strandbad
YOU CAN WALK FROM DAVOS DORF TRAIN STATION / OR YOU CAN TAKE BUS #301 TO FLÜELAKREUZUNG
Seeparkp
Helper 1
Start
Schuochter
Seewis
Seehorn
Fuggsbüel
Geissloch
Alpwisli
Meierhof
Ellboge
Bödeli
Büele
Seehöhi
Meierhofer Berg
Meierhofer Wald

Tuesday, 17th June 2025 at 19:00

Combined Congress Dinner

Davos Congress Center

On Tuesday, 17th June 2025, we welcome you to join us for AO Orthopaedic Research Summit Congress Dinner at Davos Congress Center. The dinner will start at 19:00 and will be followed by musical entertainment.

Tickets are available for you and any accompanying person at an additional cost of CHF 140 per person. You will find an option to book these with your conference registration process.

Dinner Reception
Run of event for the evening
Kindly give your full attention during short addresses or toasts, this will be during the dinner but before the desert.
Please give your attention during this time with no talking.
DJ will start at 10pm.
Please be mindful of the official closing time and venue policies - no later than 11:30PM as they have to prepare the hall for the session starting again at 8:30.

Drinks at the congress dinner
If would like alternative drinks other than that available with dinner, you may order from the waiter at your table who will open a tab for your account.

DINNER

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Tobias Winkler
Walter van der Weegen
Willem-Jan Metsemakers
Yavor Pukalski
Zhen Li

Plenary Speakers

Florian Gebhard

As Director of the Department of Orthopedic Trauma at Ulm University Medical Center and Vice-Dean of the Ulm University Faculty of Medicine, he brings substantial leadership and expertise to the field. A board member of the AO Foundation and current president of CAOS International, he contributes deeply to clinical research in intraoperative imaging, inflammatory responses following major trauma, and the impact of post-acute trauma factors on regenerative potential.

Rocky Tuan

Rocky Tuan, internationally recognized for his pioneering work in musculoskeletal biology and tissue regeneration, served as the 8th Vice-Chancellor and President of The Chinese University of Hong Kong from January 2018 to January 2025. He is affiliated with the Institute for Tissue Engineering and Regenerative Medicine and continues to be a key figure in advancing biomedical science through innovative approaches to tissue engineering.

Britt Wildemann

A professor at Jena University Hospital, she leads research focused on tendon and bone regeneration, osteoarthritis, and infection treatment. As a project leader at the Julius Wolff Institute (Berlin Institute of Health, Charité), her work centers on musculoskeletal healing, particularly tendon pathologies, bone regeneration, arthrosis, tendinopathy, and infection prophylaxis and treatment in orthopaedics. Utilizing both in vitro and in vivo models, her research maintains a strong translational focus through close clinical collaboration.

Jinah Jang

An Associate Professor of Convergence IT Engineering at Pohang University of Science and Technology, Prof. Jang has authored over 130 peer-reviewed articles and her contributions to the field have earned her the 2025 Biomaterials Young Investigator Award, the 2022 SME Sandra L. Bouckley Outstanding Young Engineer Award. She will be presenting on 3D bioprinting, focusing on tissue-derived decellularized extracellular matrix (dECM) bioinks, 3D vascularized tissue constructs, and the use of human pluripotent stem cells to model complex diseases such as cardiovascular disorders, diabetes, and cancer

Keynote Speakers

Aleksandr Ovsianikov
Professor at TU Wien and head of the 3D Printing and Biofabrication research group. He holds a PhD in Physics and leads the Scientific Advisory Board at UpNano GmbH. His expertise lies in additive manufacturing, tissue engineering, hydrogels, and 3D scaffolds.

Aline Van Oevelen
PhD candidate at Ghent University, supported by the Research Foundation – Flanders (FWO). With a background in general and sports medicine, his research focuses on the biomechanics and clinical outcomes of osteotomy surgery for lower-limb joint mechanics.

Andrea Banfi
Group leader in Cell and Gene Therapy at the University Hospital Basel. A medical doctor specialized in oncology, his research spans angiogenesis, wound healing, bone regeneration, and mesenchymal stem cell therapy.

Andrea Mizelli-Ojdanic
Andrea Mizelli-Ojdanic is the Head of Degree Program and a Senior Lecturer based in Vienna, Austria, where she is dedicated to empowering students and shaping the future of engineering education. Specializing in aerosol and materials physics, she contributed to high-impact research at CERN.

Ansgar Petersen
Professor at Charité – Universitätsmedizin Berlin, leading research in architectured biomaterials and cellular biomechanics. He has a background in biomedical engineering and physics and his work focuses on tissue regeneration, biomaterials, and cellular mechanobiology.

Barbara Postolka
Postdoctoral researcher at the University of Basel and KU Leuven. With a PhD in Health Sciences and biomechanics, her work involves IMU-based motion capture for orthosis design and clinical evaluation.

Brian Johnstone
Professor at Oregon Health & Science University (OHSU), specializing in stem cells and regenerative medicine in musculoskeletal tissues, his research includes cartilage and bone regeneration, scaffold-based engineering, and biomaterials influenced by hypoxia and mechanical loading.

Bhushan Borotikar
Head at the Symbiosis Centre for Medical Image Analysis in Pune, India, and an Honorary Associate Professor in the Division of Biomedical Engineering at the University of Cape Town, South Africa, his work focuses on developing clinical tools and procedures using advanced engineering technologies to address musculoskeletal disorders and sports injuries.

Carlos Mota
Assistant Professor at the MERLN Institute, Maastricht University. Expert in tissue engineering, biofabrication, and bioprinting, with a PhD in Biomaterials from Università di Pisa and a background in mechanical engineering.

Deborah Mason
Professor at Cardiff University's School of Biosciences and President of the British Orthopaedic Research Society, her research explores joint disease biomechanics, glutamatergic signaling, and translational therapies for arthritis and osteoporosis.

Denitsa Docheva
Chair of the Department of Musculoskeletal Tissue Regeneration at the Orthopaedic Hospital König-Ludwig-Haus (KLH) of the University of Würzburg, a Ph.D. in Molecular Biology from the Max Planck Institute of Biochemistry her research focus is on stem cell therapies and cell-matrix interactions in musculoskeletal repair.

Dian Enchev
Chief of Clinic at University Hospital N. I. Pirogov, Bulgaria, he specializes in surgical treatment of proximal humerus fractures and complications from humeral shaft fracture repair.

Dimitrios Zevgolis
Professor and Director of REMODEL Lab at University College Dublin, with roles across multiple institutions, his focus areas of research include biomaterials, tissue engineering, and regenerative medicine.

Ebru Oral
Associate Professor of Orthopedic Surgery, Harvard Medical School and Massachusetts General Hospital, her focus areas include implantable polymeric materials; infection; joint prosthesis; local delivery of therapeutics; long bone fracture; materials testing; and preclinical models of periprosthetic infection.

Elisa Liehn
Principal Investigator and Scientist at the National Heart Center Singapore, she leads cutting-edge cardiovascular research initiatives. Her research has yielded significant insights into the mechanisms underlying inflammatory responses and extracellular matrix remodeling after myocardial infarction, as well as the development of regenerative and reconstructive therapies for cardiovascular conditions.

Elizabeth Engel
Associate Professsor at the Department of Materials Science and Metallurgy of the Polytechnic University of Catalonia, Spain and principal investigator at the Biomaterials for Regenerative Therapies Group of the Institute for Bioengineering of Catalonia, her research focus areas include Biomaterials Tissue engineering, Stem cells Angiogenesis and Bone.

Elizabeth Balmayor
Full Professor (W2) of Experimental Trauma Surgery/Mechanobiology since April 2022 and head of the newly established Teaching and Research Division for Experimental Orthopaedics and Trauma Surgery at the University Hospital in Aachen, Regenerative medicine and biomaterials, with a focus on mRNA-based therapies for bone healing and tissue repair are her main research focus areas.

Feng-Sheng Wang
Department of Medical Research, Chang Gung Memorial Hospital at Kaohsiung Taiwan

Fiona Freeman
Associate Professor and Ad Astra Fellow in the School of Mechanical and Materials Engineering at University College Dublin (UCD), her research focus areas include Immuno-engineering, 3D tumor models, nanoparticle delivery, 3D bioprinting, organ-on-chip technologies, bone repair and biomaterials.

Frederic Garcia
Data Expert at Luxembourg Institute of Health, with a Ph.D. in Computer Science, his Expertise range from time-of-flight sensors to Multi-sensor data fusion and Experimental validation and visualization techniques.

Gang Li

Professor in the Department of Orthopaedics and Traumatology at the Chinese University of Hong Kong, he has been on the list of the world's top 2% scientists (ranked among the 1% of the world's top scientists in 2022) and his research interests include biology and clinical applications of distraction histogenesis and stem cells.

Giuseppe Perale

Professor of Regenerative Medicine at the Faculty of Biomedical Sciences, University of Southern Switzerland and Founder of Industrie Biomediche Insubri SA (IBI SA), his focus areas lie in bone tissue regeneration, controlled drug delivery, regenerative medicine and spinal cord injury repair.

Graciosa Teixeira

Dr. Graciosa Quelhas Teixeira is a Postdoctoral researcher at the Institute of Orthopaedic Research and Biomechanics at Ulm University with various research on pathomechanisms of intervertebral disc degeneration, inflammation, complement activation and degeneration and function of the human meniscus.

Gökhan Meriç

Professor at Yeditepe University in Istanbul, he currently serves as the Head of the Department of Orthopedics and Traumatology at Yeditepe University Faculty of Medicine. His expertise is specific to cartilage surgery and transplantation as well as knee and shoulder replacements.

Gosia Wlodarczyk-Biegun

Assistant Professor at the Biofabrication and Bio-inspired Materials, Biotechnology Centre at the Silesian University of Technology, Gliwice, Poland and Project Leader at the Polymer Science of the Zernike Institute for Advanced Materials at the University of Groningen, Netherlands, she specializes in Biomedical engineering, 3D Bioprinting and Tissue Engineering.

Hannah Dailey
Associate Professor and the Director of Graduate Studies in the department of Mechanical Engineering & Mechanics at Lehigh University her expertise lie within Biomechanics, Medical Devices, Mechanical Engineering, Orthopaedics and Traumatology, Biomedical Image Analysis, Entrepreneurship.

Haobo Pan
Prof. Pan is Deputy Director of Institute of Biomedicine and Technology, Shenzhen Institute of Advanced Technology and an honorary professor at the University of Hong Kong. He is an expert in the review of innovative medical devices of the State Food and Drug Administration with great influence in the field of biomaterials.

Hara Episkopou
Vice president of research and development for NOVADIP Biosciences, she specializes in cancer research dedicated to the identification of new therapeutic targets for the treatment of cancers and in the discovery of new biomarkers for personalized medicine.

Henning Madry
Professor Henning Madry is Chair of Experimental Orthopaedics and Director of the Center of Experimental Orthopaedics at Saarland University Medical Center in Homburg, Germany. A leading figure in musculoskeletal research, he is internationally recognized for his work in cartilage repair, osteoarthritis, and tissue engineering.

Hyung-Bin Park
Professor in the College of Medicine at Gyeongsang National University, he is a distinguished figure in the field of Orthopedic Surgery, renowned for his expertise in Shoulder and Elbow trauma as well as Sports Injury management. Serving as a beacon of excellence and innovation, he has made significant contributions to the medical community through his remarkable achievements and extensive experience.

Ines Reichert
Consultant Trauma & Orthopaedic Surgeon and lecturer at King's College London, her clinical expertise lie in hand & wrist surgery and diabetic foot reconstruction.

Jennifer Weiser
Associate Professor, Chemical Engineering in New York, she specializes in the development of polymeric biomaterials for drug delivery, wound healing, and medical devices, bridging chemical engineering and biomedical applications.

Jerome Guicheux
Director of the Regenerative Medicine and Skeleton Research Centre (INSERM UMR 1229-RMeS) in Nantes, France, he holds a Ph.D. in Cell Biology and Health Sciences from Nantes University School of Dental Medicine. His work focuses on stem cell biology and the development of biomaterials for musculoskeletal repair and regeneration.

Jiandong Ding
Professor at Fudan University, China, he earned his Ph.D. in Macromolecular Science from Fudan University in 1995 and completed postdoctoral research in Materials Science at the University of Cambridge, UK. His research focuses on polymeric biomedical materials, cell-biomaterial interactions, tissue engineering, tissue regeneration materials, and sustained-release technologies.

Joyce Suang Bee Koh
Clinical Associate Professor at SingHealth Duke-NUS Musculoskeletal Sciences Academic Clinical Program in Singapore as well as Academic Research Vice Chair in the Musculoskeletal Sciences Academic Clinical Program, her interest lie in complex trauma specifically in upper extremity and OrthoGeriatric trauma.

Karina Nakayama
Assistant Professor of Biomedical Engineering at Oregon Health & Science University. She holds a Ph.D. and a B.S. in Bioengineering and Biomedical Engineering from the University of California system. Her research centers on developing regenerative and immunomodulatory biomaterials aimed at treating cardiovascular and musculoskeletal disorders, with a strong focus on translational biomedical innovation.

Konstanze Aurich
Head of Quality Control and Manufacturing at the Stem Cell Harvesting Cooperation Center at University Medicine Greifswald, where she also serves as Stepwise Plan Coordinator and Specialist Pharmacist for Drug Information. With a Ph.D. from Universität Greifswald focused on magneto-optical relaxation immunoassays, her expertise lies in magnetic labeling and MRI-based tracking of blood and stem cell products, contributing to safer and more effective alternative methods for therapeutic manufacturing.

Ling Qin
Director of the Musculoskeletal Research Laboratory in the Department of Orthopaedics & Traumatology at The Chinese University of Hong Kong. He also holds joint appointments at the Shenzhen Institutes of Advanced Technology (SIAT) of the Chinese Academy of Sciences. With a Ph.D. from the German Sports University in Cologne and postdoctoral training at AO Research Institute in Switzerland, Professor Qin's expertise lies in advanced diagnostics and treatments for bone metabolic disorders and musculoskeletal injuries, with interdisciplinary collaboration across medicine, geriatrics, and biomaterials.

Lisbet Haglund
Professor in the Department of Surgery, Division of Orthopaedics, at McGill University and Co-Director of the Orthopaedic Research Laboratory at Montreal General Hospital. She received her Ph.D. in Cell and Molecular Biology from Lund University and completed postdoctoral training at Shriners Hospital for Children in Montreal. Her research explores musculoskeletal injury, inflammation, and regeneration, with a particular emphasis on intervertebral disc degeneration, spine disorders, and translational approaches to spinal reconstruction.

Lorenzo Moroni
Professor in Biofabrication for Regenerative Medicine at Maastricht University's MERLN Institute. With a Ph.D. in Tissue Regeneration from the University of Twente and dual master's degrees in nanoscale science and biomedical engineering, their work focuses on complex tissue regeneration using 3D scaffolds, biomaterials, and stem cell-based strategies. They are actively involved in the global TERMIS network for tissue engineering and regenerative medicine.

Luca Cristofolini
Professor of Biomechanics at the University of Bologna. He holds a Ph.D. in Bioengineering and a Master's in Mechanical Engineering. His research centers on biomechanics, orthopedic implant testing, and experimental stress analysis to improve musculoskeletal treatments.

Lutz Nolte
Senior Innovation Advisor and Professor Emeritus at the University of Bern, affiliated with the ARTORG Center for Biomedical Engineering Research, his contributions span from civil engineering, nonlinear mechanics, and pioneering research in biomedical engineering for orthopedic applications.

Makarand Risbud
Professor of Spine Research and Director of Orthopaedic Surgery at Thomas Jefferson University, with a Ph.D. in Biotechnology and advanced degrees in biomedical engineering and biochemistry, he is a leading expert in intervertebral disc biology, mesenchymal stem cells, hypoxia signaling, and regenerative scaffolds for spine repair.

Manuel Gomez-Florit
Research Associate at the Health Research Institute of the Balearic Islands (IdISBa) and an Associate Professor in the Department of Biology at the University of the Balearic Islands he holds a Ph.D. in Cell Therapy and Tissue Engineering. His research includes biomaterials, regenerative medicine, and tissue engineering for orthopedic and biomedical applications.

Maria Chatzinikolaidou

Professor of Biomaterials in Bioengineering at the University of Crete and Head of its Laboratory for Biomaterials in Tissue Engineering, she has a Ph.D. in Biochemistry from the University of Duisburg-Essen and specializes in cell-material interactions, tissue engineering, bioprinting, and electrospinning for regenerative therapies.

Mario Morgenstern

Senior Physician and Head of Clinical Research in Orthopaedics and Traumatology at University Hospital Basel, he is a specialist in trauma surgery and musculoskeletal infections. His research addresses fracture-related infections, surgical outcomes, and infection prevention strategies in complex trauma cases.

Martijn van Griensven

Professor of Regenerative Medicine at Maastricht University, he attained a Ph.D. from Hannover Medical School and serves as a visiting professor in Peru and Cuba. He is a leading figure in musculoskeletal regeneration, tissue engineering, and mechanistic studies of cell–biomaterial–immune interactions with strong collaborations with the Mayo Clinic on gene therapy research.

Martin Stoddart

Program Leader for Regenerative Orthopaedics at the AO Research Institute Davos and Lecturer at ETH Zürich, he attained an M.Phil. and Ph.D. in cartilage biology and cancer angiogenesis and his work focuses on mechanoregulation, progenitor cell biology, and autologous MSC therapies for musculoskeletal tissue repair.

Mazda Farshad

Chief of Orthopaedic and Spine Surgery and Medical Director at Balgrist University Hospital in Zurich and professor at the University of Zurich, he is renowned for surgical innovation in spine care, leading initiatives such as OR-X and SURGENT. With fellowships at HSS and Memorial Sloan Kettering, his work bridges clinical excellence with cutting-edge translational research in spinal surgery, musculoskeletal degeneration, and minimally invasive techniques.

Michael Gelinksy
Professor and head of the Centre of Bone, Joint and Soft Tissue Research in Dresden, he specializes in biomaterial synthesis, the development of novel scaffolds for tissue engineering applications, additive manufacturing (extrusion printing and bioprinting), 3D in vitro tissue models (bone, osteochondral, kidney, liver) and engineered Living Materials and biotechnological applications of 3D bioprinting.

Paolo Cinelli
As head of Research Surgery at the University of Zurich, his specialties include stem cell biology, trauma immunology and bioengineering.

Philipp Fürnstahl
Dr. Philipp Fürnstahl is a Tenure-Track Assistant Professor at the University Hospital Balgrist, University of Zurich, and Executive Board Member of OR-X, Zurich's translational center for surgery. He leads the hospital's 3D Planning and Printing Center, focusing on computer-assisted surgical planning, augmented reality, and machine learning in orthopedic surgery.

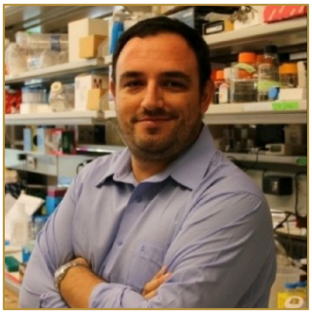
Peter Fratzl
Director of the Department of Biomaterials at the Max Planck Institute of Colloids and Interfaces and co-director of the Max Planck Queensland Centre., he is an Honorary Professor at HU Berlin and the University of Potsdam and his research focuses on biological and bio-inspired composite materials, including mechanosensing biomaterials and bone regeneration. He is a member of several scientific advisory boards and the German Academy of Sciences Leopoldina.

Philippe Hernigou
Chief of Orthopedic Surgery at Henri Mondor Hospital and former Professor at the University of Paris Est. A global leader in orthopedics, he served as President of SICOT and SOFCOT and is renowned for pioneering stem cell therapies in osteonecrosis and orthopedic surgery.

Rainer Birkenbach
As CEO for Brainlab, his focus involves digitizing medical workflows and improving access and consistency of treatment for patients through innovation and collaboration.

Ralph Mueller
Professor of Biomechanics at ETH Zurich's Department of Health Sciences and Technology, he leads the Laboratory for Bone Biomechanics with expertise in multiscale mechanobiology, multimodal imaging, and biomaterials engineering.

Riccardo Gottardi
Assistant Professor at the University of Pennsylvania and Children's Hospital of Philadelphia, his research integrates tissue engineering, nanotechnology, and controlled drug release systems, with a focus on cartilage repair and pediatric bioengineering.



Tiziano Serra
Focus Area Leader for Field-Assisted Biofabrication at the AO Research Institute Davos and assistant professor at Maastricht University's MERLN Institute, he specializes in biofabrication, 3D cell culture, biomaterials, and tissue engineering. He earned his PhD in tissue engineering from the Institute for Bioengineering of Catalonia and his MSc in Materials Science from the University of Salento.

Séverine Le Gac
Professor at the University of Twente, she leads the AMBER group at the MESA+ Institute and TechMed Institute. Her work centers on microfluidics and organ-on-chip systems for biomedical research, with applications in cancer, reproductive biology, and environmental toxicology.

Shihuan Kuang
Director and professor of Orthopaedic Stem Cell Research at Duke University, he also holds an PhD in physiology and cell biology from the University of Alberta. His research explores stem cell biology, muscle regeneration, adipose tissue plasticity, and metabolic disease. He previously held a professorship at Purdue University.

Silvia Farè

Professor at the Department of Chemistry, Materials and Chemical Engineering at Politecnico di Milano with a PhD in Biomaterials and an MSc in Management and Industrial Engineering, she is a leading researcher in biomaterials, regenerative medicine, and biomedical engineering. Her work focuses on biodegradable polymers, hydrogels, additive manufacturing, and 3D printing for musculoskeletal tissue models. She also serves on the Council of the European Society for Biomaterials.

Sloan Kulper
As CEO and Co-founder of Lifespans, the global leader of in silico testing of the failure, migration, and fatigue performance of new orthopaedic implants, Sloan is a biomedical engineer with deep ties to the Silicon Valley startup community. With a Ph.D. in Biomedical Engineering from the University of Hong Kong Faculty of Medicine (Dept. of Orthopaedics & Traumatology) he is both, entrepreneur and inventor, he has served as an engineering consultant to several multinational medical device companies.

Stuart Goodman

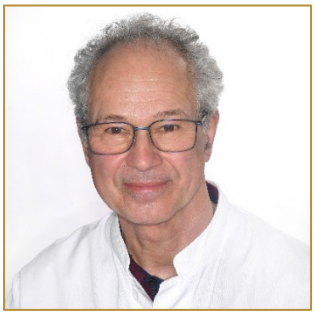
A Fellow at the Institute for Chemistry, Engineering and Medicine for Human Health at Stanford University in the USA, with a clinical background, he is a leading expert in orthopaedics and focuses on bone-implant interactions, immune responses, tissue engineering, and joint replacement.

Sylvia Nürnberger
Leading experimental Trauma Surgery and Mechanobiology at RWTH Aachen University Hospital, with a PhD from the University of Minho, her research centers on biomaterials and gene-based therapies, particularly using chemically modified mRNA for musculoskeletal regeneration.

Zeinab Niloofar Tahmasebi Birgani
Assistant Professor and Principal Investigator at the MERLN Institute, Maastricht University, she specializes in microengineered biomaterials and bone-instructive platforms for bottom-up tissue engineering.

Theodore Miclau
Professor and Chair at the Orthopaedic Trauma Institute at Zuckerberg, San Francisco, his research focuses on clinical studies of musculoskeletal injury care and basic research of bone repair.

Thomas M. Grupp
Principal Expert Engineer in R&D Biomechanics at Aesculap AG and Scientific Director of the Aesculap Biomechanics Research Laboratory, he attained a PhD in Engineering from the University of Stuttgart and a habilitation in orthopaedics from LMU Munich and specializes in biomechanics, biotribology, biomaterials, and orthopedic and spine surgery.



Thomas Peter
As Professor based in Munich, he specializes in studying immunological and allergology responses to implant materials, particularly metal-based implants for the German Society of Orthopaedics and Orthopaedic Surgery.

Tomasz Jüngst

Junior Professor for Biofabrication Technologies in the Department of Functional Materials in Medicine and Dentistry at the University of Würzburg. He earned his Dipl.-Ing. and Ph.D. in Biofabrication from the Julius Maximilians University of Würzburg. His research bridges materials engineering and biomedical applications, specializing in scaffold design, bioprinting, additive manufacturing, electrospinning, and the development of biodegradable hydrogels and polymers for tissue engineering.

Uwe G. Kersting

Professor at the German Sport University Cologne, Institute of Biomechanics and Orthopaedics and Aalborg University in Denmark, with a PhD in Biomechanics, his research focuses on sports performance, neuromechanics, and clinical biomechanics.

Wilhelm Friedl

Chief Physician for Orthopaedics and Trauma Surgery at Rotkreuzklinik Wertheim, Germany, he is a specialist in trauma, hand surgery, and physical therapy.

Yixian Qin

Chair of Biomedical Engineering at Stony Brook University, he also directs the Orthopaedic Bioengineering Lab. His research includes bone regeneration, ultrasound technologies, and tissue biomechanics.

Chair Guidelines

1. Arrive Early & Be Prepared

- Arrive at the session room at least 15 minutes early.
- Familiarize yourself with the session flow, speaker order, presentation titles, and technical setup.
- Confirm that all speakers are present and have uploaded their slides (if required).

2. Stick to the Schedule

- Start and end on time, regardless of audience size.
- Remind audience to turn phones on silent and to please refrain from taking photos and posting pictures of presentations on social media
- Briefly introduce each speaker with name, title, and institution at the beginning of their talk.
- Use time cue cards to keep each presentation on track (2mins, conclude, Q&A)
- Politely intervene if a speaker exceeds their allotted time.
- In the case of a 'no-show' for an oral, commence to the next speaker and allow for more discussion time at the end of the session.

3. Maintain Neutrality and Professionalism

- Announce if your comment is a personal opinion on a subject.
- Keep your tone respectful and inclusive.
- Ensure balanced attention to all speakers, regardless of status or reputation.

4. Facilitate Audience Engagement

- Moderate Q&A sessions professionally:
- Ask the audience to keep questions concise.
- Have a few backup questions prepared in case of silence.

5. Respect Speaker Time and Flow

- Do not interrupt unless necessary (e.g., major time overrun).
- If technical issues occur, help resolve them calmly and quickly with help of room technicians.

6. Ensure Inclusivity and Equity

- Encourage participation from diverse audience members.
- Use inclusive language and foster a welcoming tone.
- Be alert to any inappropriate behavior or comments and manage it tactfully.

Program at a glance (subject to change)

16th June 2025									
	1. Room Davos	2. Sanada	3. Room Wisshorn	4. Room Seehorn	5. Room Schwarzhorn	6. Room Sertig	7. Room Flüela	8. Room Aspen	9. Room Pischa/Parsenn
08:00 - 08:45	**Registration**								
08:45 - 09:30	**Opening** SUMMIT OPENING: Geoff Richards, Florian Gebhard, Boyko Gueorguiev, Matteo D'Este								
09:30 - 10:00	**Plenary - Florian Gebhard** Martin Stoddart CAOS								
10:00 - 10:45	**Coffee Networking and Exhibition**								
10:45 - 12:10		**EO.2.S1** Benedikt Braun, Bernd Grimm WEARABLES Digital Outcomes and Data Science: New Methods and Applications	**EO.3.S1** Sang-soo Lee, Hyung Bin Park CLINICAL Innovative Perspectives in Shoulder Disorder: From Regenerative Medicine to Clinical Solutions	**EO.4.S1** Tina Frankenbach-Désor, Jacqui McGovern BONE Personalised models for understanding and treating bone diseases and tumors	**EO.5.S1** Marcia Mürner, Gianluca Vadala SPINE ISSLS Interdisciplinary Symposium on Low Back Pain	**EO.6.S1** Mario Rothbauer, Alan Li Zhong GUEST NATION Organs-on-chips for musculoskeletal disease modeling and regenerative medicine		**AR.8.S1** Maria Chatzinikolaidou, Julietta Rau 3D (bio)printing multifunctional materials in patients' healthcare	**CA.9.S1** Session 4 Fundamental Technology Innovations
12:15 - 13:00		**Lunch Networking and Exhibition**					**Johnson & Johnson MedTech Workshop**	**Lunch Networking and Exhibition**	
13:00 - 13:15									
13:15 - 14:10		**EO.2.S2** Maria Chatzinikolaidou, Julietta Rau INFECTION Clinical Bridge: Advancing Antimicrobial Surfaces for Orthopaedic Implants	**EO.3.S2** Yağmur Orta, ELİF TUĞÇE ÇİL CARTILAGE Osteochondral Allograft Transplantation Operation in Turkey and Intensıve Physiotherapy and Rehabilitation Program	**EO.4.S2** Liesbet Geris, Claudia Siverino BONE To heal or not to heal: a multi-disciplinary view on non-unions	**EO.5.S2** Peter Fratzl, Dietmar W Hutmacher BIOMATERIALS Convergence of Materials Learning and Learning Materials – Lessons from the Extracellular Matrix of the Organ Bone	**EO.6.S2** Ping Hu, Huating Wang GUEST NATION Innovative Perspectives in Shoulder Disorder: From Regenerative Medicine to Clinical Solutions		**AR.8.S2** Catherine Le Visage, Derek Rosenzweig Go small to go big: high-resolution biofabrication and its orthopaedic applications	**CA.9.S2** Session 5 Clinical Outcomes
14:10 - 14:40									**CA.9.S3** Session 6 Special Poster with Teaser
14:45 - 15:30	**Coffee Networking and Exhibition**								
15:30 - 16:40		**EO. 2.S3** Berna Richter, Fabrizio Russo CLINICAL Challenges in total hip replacement	**EO.3.S3** Jerome Guicheux, Arnaud Scherberich BONE Novel approaches for bone repair and regeneration: Cells or not cells?	**EO.4.S3** TENDON AND LIGAMENT	**EO.5.S3** Corne Baatenburg de Jong, Denitsa Docheva OSTEOARTHIRITIS OSTASKILLS: Holistic approach to understanding and managing osteoarthritis	**EO.6.S3** Wilhelm Friedl, Peter Thaller CLINICAL Translational Skeletal Trauma Surgery		**EO.8.S3** Zsuzsa Jenei-Lanzl, Gundula Rösch TISSUE ENGINEERING Novel approaches for musculoskeletal regeneration	**CA.9.S4** Session 7 Intra-Operative Technologies
17:00 - 17:15									
17:15 - 18:30	**Poster Session**								
19:00 - 23:00	**New Investigators event**								

17th June 2025									
	1. Room Davos	2. Sanada	3. Room Wisshorn	4. Room Seehorn	5. Room Schwarzhorn	6. Room Sertig	7. Room Flüela	8. Room Aspen	9. Room Pischa/Parsenn
08:00 - 08:30	**Registration**								
08:30 - 09:00	**Plenary - Rocky Tuan** Geoff Richards								
09:00 - 09:10									
09:10 - 10:40		**EO.2.S4** Holger Jahr, Wei-Shiung Lian STEM CELLS A multifaceted approach to joint homeostasis: Small molecules, cells and scaffolds	**EO.3.S4** Elizabeth Rosado Balmayor, Dimitrios Zeugolis BONE Cellular and acellular constructs in bone repair and regeneration	**EO.4.S4** Henning Madry, Andreas Martin Seitz STEM CELLS Translational Frontiers in Meniscus Research: Integrating Imaging, Biomechanics, Animal Models, and Computational Advances for Clinical Innovation	**EO.5.S4** Zhen Li, Chunyi Wen CARTILAGE OARSI joint symposium - Frontiers in Osteoarthritis Research	**EO.6.S4** Manuel Gomez-Florit, Dimitrios Zeugolis TENDON & LIGAMENT Advanced tendon regenerative strategies (TENET COST Action)	**EO.7.S4** Matt Silva, Hamish Simpson INFECTION ISFR: How does infection affect the Fracture Repair Process.	**AR.8.S3** Markus Laubach, Janin Reifenrath Patient individualised 3D-printing in Orthopaedic Surgery	**CA.9.S5** Session 12 3D Surgical Planning
10:45 - 11:15	**Coffee Networking and Exhibition**								
11:15 - 12:25 12:25 - 12:30		**EO.2.S5** Philippe Hernigou, Sophie Verrier Joint preservation from basic science, cell therapy, and techniques to delay collapse	**EO.3.S5** Dian Enchev, Yavor Pukalski Pukalski Innovative surgical treatment of complex fractures: from biomechanical research to clinical practice	**EO.4.S5** Matteo D'Este, Jerome Guicheux Spine of the Future: Advancing therapeutic discovery through innovative models	**EO.5.S5** Martin Clauss, Mario Morgenstern Fracture related Infection - a clinical perspective	**EO.6.S5** Marta Kerstan-Huber, Alexandra Poulsson Harmonised Approach to Early Feasibility Studies for Medical Devices in the European Union		**AR.8.S4** Transformative orthopaedic research: a spectrum of innovations	**CA.9.S6** Session 13 Patient-Specific Treatment & Personalized Health
12:40 - 12:45							**Siemens Workshop** Clinical experiences: robotic Mobile C-arm CIARTIC Move.		
12:45 - 13:00	**Lunch Networking and Exhibition** Packed Lunch - Grab & Go						Lunch served here for those who registered.	**Lunch Networking and Exhibition**	
13:00 - 13:25		**EORS General Assembly**							
13:25 - 13:30									
13:30 - 13:45									**CA.9.S7** Session 14 Artificial Intelligence in Orthopaedics
15:00 - 15:30	**Run around the lake**								**Coffee Networking and Exhibition**
15:30 - 17:00	The meeting point is at "Bachi's Strandbad Davos" at 14.45. We will get ready, take a group picture at 14:55, and start the run at 15:00 and the walk at 15:05								**CA.9.S8** Session 15 Education & Training
17:00 - 17:45									**CAOS General Assembly** Session 16
19:00	**Combined Congress Dinner**								

18th June 2025											
	1. Room Davos	2. Sanada	3. Room Wisshorn	4. Room Seehorn	5. Room Schwarzhorn	6. Room Sertig	7. Room Flüela	8. Room Aspen	9. Room Pischa/Parsenn	10. Room Jakobshorn	11. Rinerhorn/Strela
08:00 - 08:30	**Registration**										CAOS meeting Room
08:30 - 09:00	**Plenary - Britt Wildemann** Boyko Gueorguiev										
09:10 - 10:40		**EO.2.S6** Ling Qin, Martin Stoddart GUEST NATION Meet the Editors	**EO.3.S6** Gabriela Graziani, Jennifer Weiser EDUCATION Developing an Education Pipeline into Orthopaedics	**EO.4.S6** Peter V. Giannoudis, Hans Pape PRE-CLINICAL Bone defects: from bench to bedside	**EO.5.S6** Annemarie Lang, Richard Stange BONE Cell-Tissue Crosstalk in Bone Regeneration	**EO.6.S6** Valentina Basoli, Sylvia Nürnberger OSTEOARTHRITIS The NetwOArk - Building an open European Network on OsteoArthritis research		**AR.8.S5** The good and the bad progenitor cells: periosteum, bone, and cancer	**CA.9.S9** Session 19 Intraoperative 3D Imaging		
10:45 - 11:15	**Coffee Networking and Exhibition**										
11:15 - 12:25		**EO.2.S7** Peter Smitham, Sophie Verrier BONE Diabetic bone - new approaches to the understanding of the role of neuropathy on bone joint integrity and repair	**EO.3.S7** CARTILAGE Regenerative mechanobiology: bending the rules of musculoskeletal tissue engineering	**EO.4.S7** Shima Gholinezhad, John OTHER Computer-Assisted Planning and Navigation for Lower Limb Osteotomy	**EO.5.S7** CLINICAL Current challenges in the treatment of shoulder injuries	**EO.6.S7** Catherine Le Visage, Elizabeth Rosado Balmayor TENDON & LIGAMENT TERMIS-EU & E-ORS: Critical Discoveries of the last 20 years		**AR.8.S6** From orthopaedics research breakthroughs to their translation	**CA.9.S10** Session 20 Applied Biomechanics for CAOS		
12:25 - 12:40									**Lunch networking and Exhibition**		
12:40 - 12:45											
12:45 - 13:00	**Lunch networking and Exhibition**						**AO Access Workshop**	**Lunch networking and Exhibition**			
13:00 - 13:30									**Awards and Closing**		
13:30 - 13:45									Session 21		
13:45 - 15:15		**EO.2.S8** Peter Schwarzenberg, Esther Wehrle BONE Mechanobiology in orthopaedics and musculoskeletal regeneration – in vivo, in silico, in vitro	**EO.3.S8** Sloan Kulper, Kerstin Schneider BIOMECHANICS New Computational Methods in Orthopaedic Surgery: Simulation and 3D Printed Patient-Specific Implants	**EO.4.S8** SPINE Advancing Spine Surgery: Biomechanics and Innovations in Minimally InVasive Techniques	**EO.5.S8** Gang Li, Luo Zhuojing GUEST NATION Chinese ORS: Advances in orthopaedic techniques and enabling technologies	**EO.6.S8** BIOMATERIALS Injectable and printable materials for orthopaedic challenges		**EO.8.S8** Matteo D'Este, Ling Qin GUEST NATION Biomaterials and tissue engineering	**CAOS Workshop** Session 22A Applied Biomechanics	**CAOS Workshop** Session 22B Oncology	**CAOS Workshop** Session 22C Pre-Operative XR-Assisted Technologies
15:15 - 15:45	**Coffee networking and Exhibition**								**Coffee networking and Exhibition**		
15:45 - 17:15		**EO.2.S9** BIOMATERIALS Materials to instruct cells and regenerate tissues	**EO.3.S9** Alexander Joeris, Theodore Miclau CLINICAL Conducting International Clinical Research: Key Considerations	**EO.4.S9** BONE New insights into bone homeostasis and regeneration	**EO.5.S9** Joyce Koh, Merng Koon Wong BIOMECHANICS Optimising construct stability in locking compression plate fixations	**EO.6.S9** CLINICAL TRANSLATION Advancing Orthopaedics to meet today's clinical demands		**EO.8.S9** Sibylle Grad, Lisbet Haglund SPINE Translational Spine Research; What have we Accomplished and Where	**CAOS Workshop** Session 23A Ultrasound & AI	**CAOS Workshop** Session 23B Skills Training with DEHST	**CAOS Workshop** Session 23C Intra-Operative XR-Assisted Technologies
17:15 - 18:30	**Poster Session**										

19th June 2025

	1. Room Davos	2. Sanada	3. Room Wisshorn	4. Room Seehorn	5. Room Schwarzhorn	6. Room Sertig	7. Room Flüela	8. Room Aspen	9. Room Pischa/Parsenn
08:00 - 08:30	**Registration**								
08:30 - 09:00	**Plenary - Jinah Jang** Matteo D'Este								
09:10 - 10:40		**EO.2.S10** Claudio Belvedere, Arne Burssens CLINICAL Orthopaedic Applications of Lower Limb Weightbearing CT Imaging	**EO.3.S10** Dietmar W Hutmacher, Markus Laubach TISSUE ENGINEERING Bone Tissue Engineering – From Bench to Bedside	**EO.4.S10** Tim Hopkins, Ines Richert CARTILAGE Modelling OA - What's New?'	**EO.5.S10.** Kate Duquesne, Audenaert Emmanuel BIOMECHANICS 3rd EORS Shape Mini symposium	**EO.6.S10** Borotikar Bhushan, Aline Van Oevelen OTHER Computational Orthopedics: Deep learning applications		**EO.8.S10** Jérôme Noailly SPINE Explorative models of the Intervertebral disc across lab cultures, animals, humans and computers	**EO.9.S10** Thomas Grupp, Ana Laura Puente Reyna BIOMATERIALS Delayed-type hypersensitivity to implant materials: clinical findings, in vitro testing & alternatives in orthopaedic joint replacements today & future perspective
10:45 - 11:15	**Coffee Networking and Exhibition**								
11:15 - 12:40		**EO.2.S11** Petek Korkusuz, Mustafa Çelebier OSTEOARTHRITIS Theragnostic in Musculoskeletal Conditions	**EO.2.S11** Award Lectures	**EO.4.S11** Andrea Banfi, Nunzia Di Maggio BONE Blood vessels and bone regeneration: It takes two to tango	**EO.5.S11** Giulia Giuffredi, Dimitrios Zeugolis CELL MODELS Three-dimensional in vitro organotypic musculoskeletal models	**EO.6.S11** Gang Li GUEST NATION Emerging Regenerative Technologies in Musculoskeletal Research		**EO.8.S11** Giovanni Barbanti Bròdano, Luca Cristofolini SPINE Fracture risk in patients with vertebral metastases: stratification and personalised treatment	**EO.9.S11** Borotikar Bhushan, Uwe G. Kersting OTHER Tech-driven advances in the treatment of paediatric musculoskeletal injuries and disorders
12:40 - 12:45									
12:45 - 13:30	**Awards and Closing** EORS & ARI ORTHOPAEDICS								

Oral Abstracts (subject to change)

PL-01 Advancing Orthopedic Trauma Surgery: The Integration of AI, 3D Navigation, and Robotic Intraoperative Imaging Systems

Florian Gebhard
Ulm University Medical Center, Ulm, Germany
Chair: Martin Stoddart

EO.2.S1 - WEARABLES
Digital Outcomes and Data Science: New Methods and Applications

10:45 - 12:10 Monday, 16th June, 2025
Chair: Benedikt Braun, Bernd Grimm

EO.2.S1-K1 ML/AI on wearable sensor signals to monitor the clinically relevant episodes of gait
Frederic Garcia
Luxembourg Institute of Health, Strassen, Luxembourg

EO.2.S1-O1 Methods to harvest wearable sensor data from patients - review & example
Benedikt J Braun
Eberhard Karls University Tuebingen, BG Unfallklinik Tuebingen, Tuebingen, Germany

EO.2.S1-O2 Methods to scrape public databases for research & application towards sports injury prevention.
Pedro Diniz
Centre Hospitalier de Luxembourg, Eich, Luxembourg

EO.2.S1-O3 Beyond PROMS: Ecological Momentary Computerised Adaptive Testing (EMCAT).
Conrad Harrison[1], Bernd Grimm[2]
[1]University of Oxford, Oxford, United Kingdom. [2]Luxembourg Institute of Health, Eich, Luxembourg

EO.2.S1-O4 Wearable Sensor Monitoring of Walking on Different Surfaces as a Digital Outcome: Deep Learning Model Performance with Sensor and Class Reduction
Gabriella Vinco[1], Oussama Jlassi[2], Frederic Garcia[1], Christophe Ley[3], Philippe C Dixon[2], Bernd Grimm[1]
[1]Luxembourg Institute of Health, Eich, Luxembourg. [2]McGill University, Montreal, Canada. [3]University of Luxembourg, Belval, Luxembourg

EO.2.S1-O5 Motion Capture and Anterior Cruciate Injury Risk: Is there a Gold Standard? A Systematic Review.
Tomos LL Mather, Ava O Machesney, Elizabeth MA Mainwaring, Ben D Gomples, Matthew J.M Dowsett, Veronica Phillips, Stephen McDonnell, Simone Castagno
University of Cambridge, Cambridge, United Kingdom

EO.2.S1-O6 Web Camera-Based Gamified Rehabilitation System for Improving Fine and Gross Motor Skills: Pilot Study
Züleyha Şen, Elif Tuğçe Çil, Tacha Serif - Yeditepe University, İstanbul, Turkey

EO.3.S1 – CLINICAL
Innovative Perspectives in Shoulder Disorder: From Regenerative Medicine to Clinical Solutions

10:45 - 12:10 Monday, 16th June, 2025
Chair: Hyung Bin Park, Sang-soo Lee

EO.3.S1-K2 Potential Associations Between Metabolic Syndrome, and Shoulder Disorders: Insights into Rotator Cuff Tears and Frozen Shoulder
Hyung Bin Park
College of Medicine, Gyeongsang National University, Jinju, Korea, Republic of. Gyeongsang National University Changwon Hospital, Changwon, Korea, Republic of

EO.3.S1-O1 Frozen Shoulder: Bench to Bedside Research
Chul-Hyun Cho, Chulhyun Cho
Keimyung University Schoo of Medicine, Daegu, Korea, Republic of Korea

EO.3.S1-O2 Advancing Tendon Healing with Collagen in Rotator Cuff Tear
Hyungsuk Kim, Hyun Seok Song
Eunpyeong St Mary's Hospital, The Catholic University of Korea, Seoul, Korea, Republic of Korea

EO.3.S1-O3 Effect of adiposed-driven mesenchymal stem cell spheroid sheet on tendon-to-bone healing in rotator cuff repair
Myung-Seo Kim
Kyung Hee University Hospital at Gangdong, Seoul, Korea, Republic of

EO.3.S1-O4 Massive Rotator Cuff Tear: Experimental Perspectives on Overcoming Challenges,
Jong Pil Yoon
Department of Orthopedic Surgery, College of Medicine, Kyungpook National University, Daegu, Korea, Republic of Korea

EO.3.S1-O5 Regeneration of tendon in the rat rotator cuff defect model with adipose derived stem cells.
Jun-Gyu Moon, Seong-Min Jeong, Seung-Hee Cheon, Hee-Kyung Song, Sung-Eun Kim
Korea University Guro Hospital, Seoul, Korea, Republic of Korea

EO.3.S1-O6 Effect of adiposed-driven mesenchymal stem cell spheroid sheet on tendon-to-bone healing in rotator cuff repair.
Myung-Seo Kim
Kyung Hee University, Seoul, Korea, Republic of Korea

EO.4.S1 – BONE
Personalised models for understanding and treating bone diseases and tumors

10:45 - 12:10 Monday, 16th June, 2025
Chair: Jacqui McGovern, Tina Frankenbach-Désor

EO.4.S1-K3 3D bioprinting of organotypic bone fracture models for personalized medicine
Ralph Müller - ETH Zurich, Zurich, Switzerland

EO.4.S1-O1 Personalized Bone Tumour Models with a Humanized Bone Niche for Enhanced In Vitro Studies.
Tina Frankenbach-Désor[1], Natalia Cabeza-Boeddinghaus[1], Isabella Niesner[1], Giles M Cheers[1], Sandy Walter[1], Hans Roland Dürr[2], Alexander Klein[2], Thomas Knösel[3], Dietmar W Hutmacher[4,5], Boris M Holzapfel[1], Susanne Mayer-Wagner[1]
[1]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Center Munich (MUM), LMU University Hospital, LMU Munich, Munich, Germany. [2]Department of Orthopaedics and Trauma Surgery, Orthopaedic Oncology, Musculoskeletal UniversityCenter Munich (MUM), LMU University Hospital, LMU Munich, Munich, Germany. [3]Institute of Pathology, Ludwig-Maximilians-Universität (LMU) Munich, Munich, Germany. [4]Centre for Biomedical Technologies, School of Medical, Mechanical and Process Engineering, Queensland University of Technology (QUT), Brisbane, Australia. [5]Max Planck Queensland Center for the Materials Science of Extracellular Matrices, Queensland University of Technology (QUT), Brisbane, Australia

EO.4.S1-O2 Triply Periodic Minimal Surface Architecture Improves Bone Growth in 3D Printed Polycaprolactone Scaffolds.
Hisham Omar[1], Paulina Bargallo Gonzalez Lugo[2], Rachel Bonfini[1], Matthew Fainor[2], Sarah E. Gullbrand[2], Michael W. Hast[1]
[1]University of Delaware, Newark, USA. [2]University of Pennsylvania, Philadelphia, USA

EO.4.S1-O3 Developing Personalized 3D Osteosarcoma Models for Drug Screening and Predicting Patient Responses

Sugandha Bhatia[1,2,3,4], Briony Claxton[1,2,3], Erik W Thompson[1,2,5], Wayne Nicholls[6], Philip D Rowell[7], Jacqui A McGovern[1,2,3,4,8]

[1]School of Biomedical Sciences, Faculty of Health, Queensland University of Technology (QUT), Brisbane, Australia. [2]Translational Research Institute, Woolloongabba, Australia. [3]Centre for Biomedical Technologies, School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [4]Max Planck Queensland Centre (MPQC) for the Materials Sciences of Extracellular Matrices, QUT, Brisbane, Australia. [5]Centre for Genomics and Personalised Health, Faculty of Health, QUT, Brisbane, Australia. [6]Oncology Services Group, Children's Health Queensland Hospital and Health Service, Queensland Children's Hospital, Brisbane, Australia. [7]Orthopaedics Department, Princess Alexadra Hospital, Metro South Hospital and Health Services, Brisbane, Australia. [8]ARC Training Centre for Cell and Tissue Engineering Technologies (CTET), QUT, Brisbane, Australia.

EO.4.S1-O4 Functionalized bone ECM for advancing osteosarcoma organoid culture.

Wilhelmina Dekker[1,2], Luke Hipwood[1,2], Akhilandeshwari Ravichandran[1,2], Christoph Meinert[3], Dietmar W Hutmacher[4], Jacqui McGovern[1,2]

[1]Queensland University of Technology (QUT), Brisbane, Australia. [2]Centre for Biomedical Technologies, Brisbane, Australia. [3]Gelomics, Brisbane, Australia. [4]Max Planck Queensland Centre on the Materials Science for Extracellular Matrices, Brisbane, Australia

EO.4.S1-O5 Cold Plasma Targeted Redox Therapy for Breast Cancer Bone Metastasis

Laura M. Bouret[1], Jean-Baptiste Billeau[1], Michael Weber[2], Stephan Reuter[1], Derek Rosenzweig[2]

[1]Polytechnique Montréal, Montréal, Canada. [2]McGill University, Montréal, Canada

EO.4.S1-O6 Exploring lacunocanalicular network specificity along the cement line in human osteons.

Lena Demeuldre[1], Astrid Cantamessa[1], Stéphane Blouin[2], Maximilian Rummler[3], Andrea M Berzlanovich[4], Richard Weinkamer[3], Markus A Hartmann[2], Davide Ruffoni[1]

[1]University of Liège, Liège, Belgium. [2]Ludwig Boltzmann Institute of Osteology, Vienna, Austria. [3]Max Planck Institute of Colloids and Interfaces, Potsdam, Germany. [4]Center of Forensic Medicine, Vienna, Austria

EO.5.S1 – SPINE
ISSLS Interdisciplinary Symposium on Low Back Pain

10:45 - 12:10 Monday, 16th June, 2025

Chair: Stefan Dudli, Marcia Mürner

EO.5.S1-K4 Cell Senescence and Senolytic Treatment for Low Back Pain.

Lisbet Haglund[1], Hosni Cherif[1], Saber Ghazizadeh[1], Matthew Mannarino[1], Magali Millecamps[1], Jean A Ouellet[1], Laura S Stone[2]

[1]McGill University, Montreal, Canada. [2]University of Minnesota, Minneapolis, USA

EO.5.S1-O1 Machine learning in spine research and clinical practice.

Fabio Galbusera

Schulthess Clinic, Zurich, Switzerland

EO.5.S1-O2 Annulus Fibrosus Micro-Damage in early IVD Degeneration.

Parisa Akhlaghi[1], Remco Doodkorte[1], Peter Lafranca[2], Bert van Rietbergen[1], Keita Ito[1]

[1]Eindhoven University of Technology, Eindhoven, Netherlands. [2]University Medical Center Utrecht, Utrecht, Netherlands

EO.5.S1-O3 Modic change-like lesion presence and extent correlate with pain-like behavior in a lumbar endplate injury rat model.

Irina Heggli[1], Alon Lai[1], Denise Illiff[1], Niklas Koehne[1], Harsev Singh[1], Marco D Burkhard[2], Alan C Seifert[3], Damien Laudier[1], Levon Rodriguez[1], Timothy Jacobsen[1], James C Iatridis[1]

[1]Leni and Peter W. May Department of Orthopedics, Icahn School of Medicine at Mount Sinai, New York, NY, USA, New York, USA. [2]Department of Orthopaedic Surgery, Hospital for Special Surgery, New York, NY, USA, New York, USA. [3]Department of Radiology, Icahn School of Medicine at Mount Sinai, Leon and Norma Hess Center for Science and Medicine, New York, NY, USA, New York, USA

EO.5.S1-O4 HTRA1-Induced Matrix Fragmentation Drives Pro-Inflammatory Mechanisms in Modic Type 1 Discs.

Tamara Mengis[1,2,3], Bernd Roschitzki[4], Jan Devan[1,2,3], Irina Heggli[5], Nick Herger[1,2,3], Florian Brunner[3], Mazda Farshad[3], Oliver Distler[1,2], Stefan Dudli[1,2,3] [1]University of Zurich, Zurich, Switzerland. [2]University Hospital Zurich, Zurich, Switzerland. [3]Balgrist University Hospital, Zurich, Switzerland. [4]University and ETH Zurich, Zurich, Switzerland. [5]Icahn School of Medicine at Mount Sinai, New York, USA

EO.5.S1-O5 Autologous MSCs for the treatment of patients affected by chronic low back pain due to multilevel intervertebral disc degeneration: a phase IIB RCT (ACTIVE study)

Gianluca Vadala[1], Fabrizio Russo[1], Giorgia Petrucci[1], Luca Ambrosio[1], Giuseppina Di Giacomo[1], Claudia Cicione[1], Veronica Tilotta[1], Lorenza Lazzari[2], Elisa Montelatici[2], Cristiana Lavazza[2], Silvia Budelli[2], Rocco Papalia[1], Vincenzo Denaro[1]

[1]Università Campus Bio-Medico di Roma, Rome, Italy. [2]Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

EO.5.S1-O6 The Impact of Sleep Quality on Disability, Pain, Mental Health, and Work Capacity in Patients with Chronic Low Back Pain: A Cross-sectional study
Giorgia Petrucci[1], Fabrizio Russo[1], Giuseppe Francesco Papalia[2], Luca Ambrosio[1], Rocco Papalia[1], Gianluca Vadalà[1], Vincenzo Denaro[1] - [1]Fondazione Policlinico Campus Bio Medico, Roma, Italy. [2]Università Campus Bio-Medico, Roma, Italy

EO.6.S1 - GUEST NATION: PRE-CLINICAL
Organs-on-chips for musculoskeletal disease modeling and regenerative medicine

10:45 - 12:10 Monday, 16th June, 2025
Chair: Mario Rothbauer, Alan Li Zhong

EO.6.S1-K5 Joint-on-chip models: opportunities and challenges in OA research.
Séverine Le Gac -University of Twente, Enschede, Netherlands

EO.6.S1-O1 Biomechanics-on-a-chip: Employing organoids and microphysiological systems to unravel mechanotransduction.
Julia Wille[1], Christopher Schröder[1], Sven Klimaschewski[2], Anne Bernhardt[3], Georgi Wassilew[1], Frank Schulze[1]
[1]Center for Orthopaedics, Trauma Surgery and Rehabilitation Medicine, University Medicine Greifswald, Greifswald, Germany. [2]University of Applied Sciences Stralsund, Stralsund, Germany. [3]Centre for Translational Bone, Joint and Soft Tissue Research, Faculty of Medicine and University Hospital Carl Gustav Carus, TU Dresden, Dresden, Germany

EO.6.S1-O2 In Vitro Angiogenesis Assay for Studying Vascular Invasion in Endochondral Ossification.
Annemarie Lang[1], Riccardo Gottardi[2], Joel D. Boerckel[3]
[1]University of Michigan, Ann Arbor, USA. [2]Children's Hospital of Philadelphia, Philadelphia, USA. [3]University of Pennsylvania, Philadelphia, USA

EO.6.S1-O3 Biomechanically loaded three-dimensional tissue-mimetic lab-on-a-chip models for human inflammation and fibrosis modelling.
Eva Ingeborg Reihs[1], Jonathan Strauss[1], Johannes Heidenberger[1], Florien Jenner[2], Stefan Toegel[1], Peter Ertl[3], Reinhard Windhager[1], Mario Rothbauer[1,3]
[1]Medical University of Vienna, Vienna, Austria. [2]VetMed Uni Vienna, Vienna, Austria. [3]Technische Universitaet Wien, Vienna, Austria

EO.6.S1-O4 Organ-on-a-chip modeling of cartilage degeneration and regeneration

The Chinese University of Hong Kong, Hong Kong, Hong Kong

EO.6.S1-O5 Localized Oxygen Control in a Microfluidic Osteochondral Interface Model Recapitulates Bone–Cartilage Crosstalk During Osteoarthritis

Louis Ong[1,2], Antonia Sun[2], Zhongzheng Wang[2], Indira Prasadam[2], Yi-Chin Toh[2]

[1]Temasek Polytechnic, Singapore, Singapore. [2]Queensland University of Technology, Brisbane, Australia

EO.6.S1-O6 Introducing a model to investigate neutrophil-mediated biomaterials immunomodulation in osteogenesis.

Ezgi Irem Bektas[1], Chiara Lorenzetti[1,2], Clara Presciutti[1], Gregor Miklosic[1], Jacek K. Wychowaniec[1], Matteo D'Este[1]

[1]AO Research Institute, Davos Platz, Switzerland. [2]ETH Zurich, Zurich, Switzerland

AR.8.S1 - 3D (bio)printing multifunctional materials in patients' healthcare.

10:45 - 12:10 Monday, 16th June, 2025

Chair: Maria Chatzinikolaidou, Julietta Rau

AR.8.S1-K1 Architected Biomaterials for skeletal regeneration.

Lorenzo Moroni

Maastricht University, MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht, Netherlands

AR.8.S1-K2 3D printing of synthetic and natural polymer based inks for 3D in vitro models of muscoloskeletal tissues.

Silvia Fare'

Politecnico di Milano, Department of Chemistry, Materials and Chemical Engineering, Milan, Italy. INSTM, National Consortium of Materials Science and Technology, Local Unit Politecnico di Milano, Milan, Italy

AR.8.S1-O1 3D printing of green and antibacterial ceramics for bone regeneration.

Gabriela Graziani

Politecnico di Milano, Milan, Italy

AR.8.S1-O2 Cuttlefish bone as a sustainable osteoinductive biomaterial in 3D printed biocomposite scaffolds promoted osteogenesis.

Aikaterini Gialouri[1,2], Konstantinos Loukelis[1], Nikolaos Bouropoulos[2,3], Maria Chatzinikolaidou[1,4]

[1]University of Crete, Heraklion, Greece. [2]University of Patras, Patra, Greece. [3]Foundation for Research and Technology Hellas, Patra, Greece. [4]Foundation for Research and Technology Hellas, Heraklion, Greece

AR.8.S1-O3 Volumetric Biofabrication Strategies for Regenerative Medicine Applications and Tissue Vascularization.

alessia longoni[1], Paulina Nunez Bernal[1], Marc Falandt[2], Davide Ribezzi[1], Riccardo Levato[1,2]

[1]UMC Utrecht, Utrecht, Netherlands. [2]Utrecht University, Utrecht, Netherlands

CA.9.S1 – Session 4: Fundamental Technology Innovations

10:45 – 12:15 Monday, 16th June, 2025

Chair: Klaus Rademacher and Florian Gebhard

CA.9.S1-K1: The 25-Year Journey from the Lab to the Operating Room.

Lutz Nolte

ARTORG Center for Biomedical Engineering Research, University of Bern, Bern, Germany

CA.9.S1-O1 OR-X: Building the Digital Foundations for the Operating Room of the Future.

Fabio Carrillo

ROCS OR-X Balgrist University Hospital, Zurich, Switzerland

CA.9.S1-O2 Accurate Localization of 2D Ultrasound Probes Using Inside-Out Tracking When Scanning the Neonatal Hip.

Jakub Piwowarczyk, Kishore Mulpuri, Antony Hodgson

Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada

CA.9.S1-O3 Feasibility Study on a Device for Ultrasound-assisted Placement of External Fixator Pins in Low-Resource Settings.

Peter Brößner[1], Luisa Berger[1], Lovis Phlippen[2], Felix Lebe[3], Stefan Krieger[4], Klaus Radermacher[1]

[1]RWTH Aachen University, Aachen, Germany. [2]hair of Medical Engineering, Helmholtz Institute for Biomedical Engineering, RWTH Aachen, Aachen, Germany. [3]Chair of Medical Engineering, Helmholtz Institute for Biomedical Engineering, RWTH Aachen, Aachen, Germany. [4]Médecins Sans Frontières, Berlin, Germany

CA.9.S1-O4 Towards Scalable Data Collection for RGB-D Based Computer Aided Surgery.

Connor Daly, Daniel Elson, Ferdinando Rodriguez Y Baena, Jinendra Ekanayake

Imperial College London, London, United Kingdom

CA.9.S1-O5 Ultrasound-Integrated Spinal Surgery Tools: Emulating Proposed Designs with Conventional Probes.

Luke MacLean[1], John Street[2], Antony Hodgson[3]

[1]School of Biomedical Engineering, University of British Columbia, Vancouver, Canada. [2]Department of Orthopaedics, University of British Columbia, Vancouver, Canada. [3]Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada

CA.9.S1-O6 Comparative Study on Methods for Scaphoid Bone Model Completion from Sonography.

Peter Brößner[1], Kristian Welle[2], Klaus Radermacher[3]
[1]Chair of Medical Engineering, RWTH Aachen University, Aachen, Germany. [2]University Hospital Bonn, Bonn, Germany. [3]RWTH Aachen University, Aachen, Germany

EO.2.S2 – INFECTION
Clinical Bridge: Advancing Antimicrobial Surfaces for Orthopaedic Implants

13:15 - 14:40 Monday, 16th June, 2025
Chair: Julietta Rau, Gabriela Graziani

EO.2.S2-K6 Investigating in vitro-in vivo correlations in bacterial behavior to design antibiotic-eluting implants for peri-prosthetic joint infection management.

Amita Sekar[1,2], Baiqi Pan[1], Nicoletta Inverardi[1,2], Mehmet Asik[1,2], Orhun Muratoglu[1,2], Ebru Oral[1,2]
[1]Massachusetts General Hospital, Boston, USA. [2]Harvard Medical School, Boston, USA

EO.2.S2-O1 Developing a possible research tool for home-based monitoring of pin site infection.

Søren Kold
Aalborg University Hospital, Aalborg, Denmark

EO.2.S2-O2 Antimicrobial strategies used in the design of coating materials for biomedical implants.

Julietta V. Rau
Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche (ISM-CNR), Via del Fosso del Cavaliere, 100 - 00133, Rome, Italy

EO.2.S2-O3 Biomimetic surface modification to mitigate bacterial adhesion and improve the antibacterial efficacy of titanium implants.

Ketul C Popat
George Mason University, Fairfax, USA

EO.2.S2-O4 Advances in Orthopaedic Infection and Strategies for Their Treatment.

Gianluca Vadalà
Università Campus Bio-Medico di Roma, Rome, Italy

EO.2.S2-O5 Combining sitafloxacin and sugars in a nanodrug to targeting stationary phase Staphylococcus aureus.

Elian M. A. Kuhn[1,2], Xiyue Chen[3], Marco Chittò[1], Xing Wang[3], Fintan Moriarty[1]
[1]AO Research Institute, Davos, Switzerland. [2]Universität Basel, Basel, Switzerland. [3]Beijing University of Chemical Technology, Beijing, China

EO.2.S2-O6 Functionalized nanoparticles for the treatment of implant-related or intracellularly persistent infections.

Nina Angrisani[1,2], Nina Ehlert[3], Timo Herrmann[3], Valentin Hagemann[3], Janin Reifenrath[1,2]
[1]Hannover Medical School, Department of Orthopedic Surgery, DIAKOVERE Annastift, Hannover, Germany. [2]NIFE - Lower Saxony Center for Biomedical Engineering, Implant Research and Development, Hannover, Germany. [3]Leibniz University Hannover, Institute of Inorganic Chemistry, Hannover, Germany

EO.3.S2 – CARTILAGE
Osteochondral Allograft Transplantation Operation in Turkey and Intensive Physiotherapy and Rehabilitation Program

13:15 - 14:40 Monday, 16th June, 2025
Chair: Gokhan Meric, Elif Tuğçe Çil

EO.3.S2-K7 Osteochondral Allograft Transplantation.

Gökhan Meriç[1], Yağmur Orta[1], Elif Tuğçe Çil[2]
[1]Yeditepe University Hospital, İstanbul, Turkey. [2]Yeditepe University, İstanbul, Turkey

EO.3.S2-O1 Osteochondral Allograft Transplantation Operation in Turkey and Intensıve physiotherapy and rehabilitation Program.

Gökhan Meriç[1], Yağmur ORTA[1], Elif Tuğçe Çil[2]
[1]Yeditepe University Hospital, İstanbul, Turkey. [2]Yeditepe University, İstanbul, Turkey

EO.3.S2-O2 Unlocking Recovery: The Role of Physiotherapy and Rehabilitation After Osteochondral Allograft Transplantation.

Elif Tuğçe Çil[1], Yağmur Orta[2], Gökhan Meriç[2]
[1]Yeditepe University, İstanbul, Turkey. [2]Yeditepe University Hospital, İstanbul, Turkey

EO.3.S2-O3 Reproduced chondrons maintain chondrocyte phenotype and promote inflammatory response in a 3D osteoarthritic cartilage model.

Huan Meng, Sibylle Grad, Martin Stoddart, Zhen Li
AO Research Institute Davos, Davos Platz, Switzerland

EO.3.S2-O4 Disruption of the chondrocyte loading response by the neuropeptide αCGRP.

Helen F. Dietmar[1], Nicole Hecht[1], Carina Binder[1], Tilman Walker[2], Wiltrud Richter[1], Solvig Diederichs[1]
[1]Experimental Orthopaedics, Research Centre for Molecular and Regenerative Orthopaedics, Department of Orthopaedics, Heidelberg University Hospital, Heidelberg, Germany. [2]Department of Orthopaedics, Heidelberg University Hospital, Heidelberg, Germany

EO.3.S2-O5 A robotic test setup for biotribological investigations on complex shaped cartilage surfaces.
Luisa de Roy[1], Moritz Roderigo[1], Jonas Schwer[1], Klaus Schlickenrieder[2], Anita Ignatius[1], Andreas Martin Seitz[1]
[1]Institute of Orthopedic Research and Biomechanics, Center for Trauma Research, Ulm University Medical Center Ulm, Ulm, Germany. [2]Ulm University of Applied Sciences, Faculty of Production Engineering and Management, Ulm, Germany

EO.3.S2-O6 Cartilage blood biomarkers are linked to 2-year changes in knee cartilage thickness and composition after anterior cruciate ligament injury.
Simon Herger[1,2], Yi He[3], Christian Thudium[3], Anne Christine Bay-Jensen[3], Corina Nüesch[1,2], Christian Egloff[4], Annegret Mündermann[1,2]
[1]University Hospital Basel, Basel, Switzerland. [2]University of Basel, Basel, Switzerland. [3]Nordic Bioscience, Herlev, Denmark. [4]Schulthess Clinic, Zurich, Switzerland

EO.4.S2 – BONE
To heal or not to heal: a multi-disciplinary view on non-unions

13:15 - 14:40 Monday, 16th June, 2025
Chair: Claudia Siverino, Liesbet Geris

EO.4.S2-K8 Fracture non-union: clinical insights and innovations.
WJ Metsemakers[1,2], Mario Morgenstern[3]
[1]University Hospitals Leuven, Leuven, Belgium. [2]Department of Development and Regeneration, Leuven, Belgium. [3]Centre for Musculoskeletal Infections Department of Orthopaedic and Trauma Surgery, Basel, Switzerland

EO.4.S2-O1 Uncovering mechanically induced molecular mechanisms of non-union fractures.
Esther Wehrle
AO Research Institute Davos, Davos Platz, Switzerland

EO.4.S2-O2 In silico perspectives on bone regeneration: from virtual patients to living implants.
Liesbet Geris

University of Liège, Liège, Belgium. KU Leuven, Leuven, Belgium

EO.4.S2-O3 COX-2 Expression in Osteoclasts Supports Bone Fracture Healing.
J. Patrick O'Connor[1], Marc Teitelbaum[1,2], Maya D. Culbertson[1], Charlene Wetterstrand[1], Chris Grieg[1,2]
[1]Rutgers-New Jersey Medical School, Newark, USA. [2]Rutgers School of Graduate Studies, Newark, USA

EO.4.S2-O4 Bone marrow adipose tissue modulates bone healing depending on the metabolic environment.
Mareen Storbeck[1], Georg Duda[1], Tim Schulz[2], Katharina Schmidt-Bleek[1,3]
[1]Julius Wolff Institute, Berlin Institute of Health at Charité, Berlin, Germany. [2]Department of Adipocyte Development and Nutrition, German Institute of Human Nutrition, Potsdam, Germany. [3]2Berlin Institute of Health Centre for Regenerative Therapies, BIH at Charité, Berlin, Germany

EO.4.S2-O5 The Wnt1$^{G177C/G177C}$ mutation impairs fracture healing in mice.
Mubashir Ahmad[1], Humma Sarwar[1], Oliver Küppers[1], Jasmin Bülow[1], Christoph Kölbl[1], Sandra Dietrich[1], Melanie Haffner-Luntzer[1], Astrid Schoppa[1], Timur Yorgan[2], Michael Amling[2], Thorsten Schinke[3], Anita Ignatius[1]
[1]Institute of Orthopedic Research and Biomechanics, Ulm, Germany. [2]Department of Osteology and Biomechanics, Hamburg, Germany. [3]Department of Osteology and Biomechanics, Ulm, Germany.

EO.4.S2-O6 Longitudinal trajectories of oxygen saturation and blood flow in human bone fractures allow monitoring of fracture healing: observational cohort study.
Oana Scholz, Cedric Nowicki, Elke Warmerdam, Bergita Ganse
Saarland University, Homburg, Germany

EO.5.S2 – BIOMATERIALS
Convergence of Materials Learning and Learning Materials – Lessons from the Extracellular Matrix of the Organ Bone

13:15 - 14:40 Monday, 16th June, 2025
Chair: Dietmar W Hutmacher, Peter Fratzl

EO.5.S2-K9 Learning how a Material Learns –Lessons from Bone Remodeling and Adaptation.
Peter Fratzl
Max Planck Institute of Colloids and Interfaces, Department of Biomaterials, Potsdam, Germany. Max Planck Queensland Centre, Brisbane, Australia

EO.5.S2-O1 Conceptualisation of Water Research in Mechanotransduction.
Dietmar Werner W. Hutmacher
Queensland University of Technology, Brisbane, Australia

EO.5.S2-O2 Understanding Cancer-Bone Interactions using Bioengineered Models of the Bone Extracellular Matrix.
Jonathan P Gospos[1,2,3,4], Siamak Saifzadeh[5,6], Markus Laubach[2,4,7], Flavia Medeiros Savi[1,2,4], Jacqui A McGovern[1,3,4,6,8]
[1]Max Planck Queensland Centre (MPQC) for the Materials Sciences of Extracellular Matrices, Queensland University of Technology (QUT), Brisbane, Australia. [2]School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [3]Translational Research Institute, Woolloongabba, Australia. [4]Centre for Biomedical Technologies, School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [5]Medical Engineering Research Facility (MERF), Faculty of Engineering, QUT, Chermside, Australia. [6]ARC Training Centre for Cell and Tissue Engineering Technologies (CTET), QUT, Brisbane, Australia. [7]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Center Munich, LMU University Hospital, Ludwig Maximilian University of Munich, Munich, Germany. [8]School of Biomedical Sciences, Faculty of Health, Queensland University of Technology (QUT), Brisbane, Australia

EO.5.S2-O3 Unravelling tissue remodeling processes at the bone-implant interface of biodegradable medical grade polycaprolactone scaffolds.
Flavia Medeiros Savi[1,2,3], Dietmar W. Hutmacher[1,2,3]
[1]School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [2]Centre for Biomedical Technologies, School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [3]Max Planck Queensland Centre (MPQC) for the Materials Sciences of Extracellular Matrices, QUT, Brisbane, Australia

EO.5.S2-O4 Bone adaptability at the tendon-bone insertion and communication pathways with fibrocartilage.
Alexandra Tits[1,2,3], Stéphane Blouin[4], Maximilian Rummler[1,2], Jean-François Kaux[3], Pierre Drion[3], G Harry van Lenthe[5], Richard Weinkamer[1,2], Markus A Hartmann[4], Davide Ruffoni[3]
[1]Department of Biomaterials, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany. [2]Max Planck Queensland Center for the Materials Science of Extracellular Matrices, Potsdam, Germany. [3]University of Liege, Liege, Belgium. [4]Ludwig Boltzmann Institute of Osteology, Vienna, Austria. [5]Katholieke Universiteit Leuven, Leuven, Belgium

EO.5.S2-O5 Functional implications of the lacunocanalicular network structure in bone

Alexandra Tits[1,2], Jana Ciecierska-Holmes[1], Pascal Buenzli[3,4], Maximillian Rummler[1,2], Richard Weinkamer[1,2]
[1]Department of Biomaterials, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany. [2]Max Planck Queensland Center for the Materials Science of Extracellular Matrices, Potsdam, Germany. [3]School of Mathematical Sciences, Queensland University of Technology, Brisbane, Australia. [4]Max Planck Queensland Center for the Materials Science of Extracellular Matrices, Brisbane, Australia

EO.5.S2-O6 Humanized *in vivo* bone tissue engineering: *In vitro* preculture conditions control the structural, cellular, and matrix composition of humanized bone organs
Nathalie Bock[1,2], Agathe Bessot[1,2], Flavia Medeiros Savi[1,2], Jenni Gunter[1], Jayanti Mendhi[1], Shahrouz Amini[3], David Waugh[4], Jacqui McGovern[1,2], Dietmar W Hutmacher[1,2]
[1]Queensland University of Technology, Brisbane, Australia. [2]Max Planck Queensland Centre, Brisbane, Australia. [3]Max Planck Institute for Colloids and Interfaces, Potsdam, Germany. [4]University of South Australia, Adelaide, Australia

EO.6.S2- GUEST NATION - STEM CELLS
Innovative Perspectives in Shoulder Disorder: From Regenerative Medicine to Clinical Solutions

13:15 - 14:40 Monday, 16th June, 2025
Chair: Huating Wang, Ping Hu

EO.6.S2-K10 Metabolic regulation of muscle stem cells and regeneration.
Shihuan Kuang
Duke University, Durham, USA

EO.6.S2-O1 Multiomics mapping and characterization of cellular senescence in aging human skeletal muscle uncovers a novel senotherapeutic for sarcopenia,
Huating Wang
The Chinese University of Hong Kong, Hong Kong, Hong Kong

EO.6.S2-O2 Profound cellular defects attribute to muscular pathogenesis in DMD rhesus monkey model,
Ping Hu[1], Yongchang Chen[2], Weizhi Ji[3]
[1]Guangzhou Laboratory, Guangzhou, China. [2]Kunming Univerisity of Science and Technology, Kunming. [3]Kunming Univerisity of Science and Technology, Kunming, China
EO.6.S2-O3 Mapping Human Muscle Cell Dynamics: From Development to Aging
Hongbo Zhang, Sun Yat-sen University, Guangzhou, China

EO.6.S2-O4 DNA G-quadruplexes Profiling Reveals Functional and Mechanistic Role of G4s in Skeletal Muscle Stem Cells.

Xiaona Chen[1], Feng Yang[1], Suyang Zhang[1], Xiaofan Guo[1], Jieyu Zhao[2], Yulong Qiao[1], Liangqiang He[1], Yang Li[1], Qin Zhou[1], Michael Tim Yun Ong[1], Chun Kit Kwok[2], Hao Sun[1], Huating Wang[1]
[1]The Chinese University of Hong Kong, Hong Kong, China. [2]The City University of Hong Kong, Hong Kong, China

EO.6.S2-O5 Single-nucleus RNA-seq identifies transcriptional heterogeneity of the supraspinatus muscle after rotator cuff tear.
Ziying Sun, Xi Cheng, Dongquan Shi, Nirong Bao, Zheng Wang
Nanjing University, Nanjing, China

EO.6.S2-O6 Impact of polytrauma on the healthy muscle.
Prof. Dr. Claudia Neunaber[1], Esther R. Molinski[1], Borna Relja[2], Katrin Bundkirchen[1]
[1]Hannover Medical School, Department of Trauma Surgery, Hannover, Germany. [2]Ulm University Medical Center, Department of Trauma, Hand, Plastic and Reconstructive Surgery, Translational and Experimental Trauma Research, Ulm, Germany

AR.8.S2 - Go small to go big: high-resolution biofabrication and its orthopaedic applications.

13:15 - 14:40 Monday, 16th June, 2025
Chair: Catherine Le Visage, Derek Rosenzweig

AR.8.S2-K3 Scaffolded Spheroids – A New Strategy for Osteochondral Tissue Engineering.
Aleksandr Ovsianikov
TU Wien, Vienna, Austria

AR.8.S2-K4 Engineering Hard-Soft Tissue Interfaces via 3D Printing and Melt Electrowriting.
Malgorzata (Gosia) Wlodarczyk-Biegun
University of Groningen, Groningen, Netherlands. Silesian University of Technology, Gliwice, Poland

AR.8.S2-O1 Personalized Treatment of Cleft/Lip Palate Deformities of Canine Patients with Organo-Mineral 4D scaffolds.
Pierre Maitre[1], Vincent Biscaccianti[1], Nicolas Touya[1], Maeva Dutilleul[1], Joelle Veziers[1], Justine Loin[2], Olivier Gauthier[1], Pierre Weiss[1], Pierre Corre[1], Baptiste Charbonnier[1]
[1]Nantes Université, Oniris, INSERM, Regenerative Medicine and Skeleton - UMR 1229, Nantes, France. [2]CHU Nantes, Nantes, France

AR.8.S2-O2 Development of an integrated melt-electrowriting and cell jetting biofabrication platform to generate 3D cellular gradients and regional mechanical properties for cartilaginous tissue regeneration.
Fraser Shields[1], Bilal Barkatali[2], Marco Domingos[1], Stephen M Richardson[1]
[1]University of Manchester, Manchester, United Kingdom. [2]The Knee Clinic, Manchester, United Kingdom

AR.8.S2-O3 Physicochemical characterization of high β-TCP content polymeric composite for 3D printed bone scaffolds: Investigating the effect of calcium phosphate coating on composite properties under simulated physiological conditions.
Elham Seifi[1,2], Mina Mohseni[1,2], Sacha Cavelier[1,2,3], Scott Taylor[4], Brian Gaerke[4], Kerr Samson[5], Buddhi Herath[2,6], Dietmar Hutmacher[1,2,3,6]
[1]ARC Training Centre for Cell and Tissue Engineering Technologies, Brisbane, Australia. [2]School of Mechanical, Medical and Process Engineering, Faculty of Engineering, Queensland University of Technology, Brisbane, Australia. [3]Max Planck Queensland Centre for the Materials Science of Extracellular Matrices, Brisbane, Australia. [4]Poly-Med, Inc, Anderson, USA. [5]School of Chemistry and Physics, Faculty of Science, Queensland University of Technology, Brisbane, Australia. [6]ARC Industrial Transformation Training Centre for Multiscale 3D Imaging, Modelling and Manufacturing (M3D), Brisbane, Australia

CA.9.S2 - Session 5: Clinical Outcomes

13:15 - 14:10 Monday, 16th June, 2025
Chair: Eric Stindel and *Masaki Takao*

CA.9.S2-O1 Reduced Incidence Of Mid-Flexion Instability with Force-Controlled Gap-Balancing In Total Knee Arthroplasty.
Laurent Angibaud[1], Amaury Jung[2], Prudhvi Tej Chinimilli[1], Omar Naji[3], Hiroshi Watanabe[4], Pedro Torrijos[5], Mattia Filanti[6], James Huddleston[7]
[1]Exactech, Florida, USA. [2]Blue Ortho, Florida, USA. [3]Clinique Via Domitia, Occitanie, France. [4]Nippon Medical School, Bunkyō, Japan. [5]Hospital Universitario Puerta de Hierro, Majadahonda, Spain. [6]Istituto Ortopedico Rizzoli, Bologna, Italy. [7]Stanford Medical Center, California, USA

CA.9.S2-O2 Examining Ligament Laxity Goals Across Full Range of Motion in Total Knee Arthroplasty: A Focus on Tibia First Technique.
Laurent Angibaud[1], Prudhvi Tej Chinimilli[1], Amaury Jung[2], James Huddleston[3], Omar Naji[4]
[1]Exactech, Florida, USA. [2]Blue Ortho, Meylan, France. [3]Stanford Medical Center, California, USA. [4]Clinique Via Domitia

CA.9.S2-O3 Increased risk of flexion impingement and posterior instability following total hip arthroplasty.

Linden Bromwich[1], Christopher Plaskos[1], Jim Tej Pierrepont[1], Andrew Shimmin[2], Nathanael Heckmann[3], Jonathan Baré[4]

[1]Corin Group, Florida, USA. [2]Melbourne Orthopaedic Group, Melbourne, Australia. [3]Keck School of Medicine, California, USA. [4]Melbourne Orthopaedic Group, Melbourne, Spain

CA.9.S2-O4 Physical Activity Limitations Correlate with Pain Catastrophizing in Patients with End-Stage Knee Osteoarthritis: An Evaluation Using a Wearable Physical Activity Monitor

Tomofumi Kinoshita, Tatsuhiko Kutsuna, Takashi Tsuda, Yusuke Horita, Kazunori Hino, Masaki Takao

Department of Orthopaedic Surgery, Ehime University Graduate School of Medicine, Ehime, Japan

CA.9.S2-O5 Comparison of Clinical Outcomes Between the Slider Device and Standard Physiotherapy for Knee Osteoarthritis Patients Undergoing Knee Replacement Surgery: A Pilot Study.

Stephen Mc Donald[1], Jun Wei Lim[2], Karthik Shanmugan[2], Andrew Johnston[2], James Bidwell[2,3], Shameem Anthony Carl Martin Sampath[4]

[1]Department of Orthopaedics, Norfolk & Norwich University Hospital, Norwich, United Kingdom. [2]Department of Orthopaedics, Woodend Hospital, NHS Grampian, Aberdeen, United Kingdom. [3]. [4]AI Rehab, United Kingdom

CA.9.S3 - Session 6: Special Poster with Teaser

14:10 - 14:45 Monday, 16th June, 2025

Chair: Aziliz Guezou-Philippe and *Joshua W. Giles*

Po6_2.1 Effect of age, sex, height, ethnicity, and femoral bowing on the anatomical fitting of the LCP Distal Femur plate.

Beat Schmutz[1], Minh Tri Phan[2], Jeremy Pople[1], Bertha Ching Wai Lam[1], Eden Schoofs[1], Jacelle Warren[3], Jaimi Conlon[1], Hiroaki Minehara[4], Kevin Tetsworth[5], Michael Schuetz[1]

[1]Queensland University of Technology, Brisbane, Australia. [2]Medic Medical Centre. [3]Jamieson Trauma Institute, Queensland, Australia. [4]Fukushima Medical University, Fukushima, Japan. [5]Royal Brisbane and Women's Hospital, Brisbane, Australia

Po6_2.2 Garden classification of femoral neck fracture using deep-learning algorithm

Jin Yeob Park, Chul-Ho Kim, Ji Wan

Asan Medical Center, University of Ulsan, Seoul, Korea, Republic of Korea

Po6_2.3 Preoperative knee flexion muscle strength predicts postoperative daily activity immediately after total knee arthroplasty.
Tomofumi Kinoshita, Tatsuhiko Kutsuna, Kunihiko Watamori, Takashi Tsuda
Department of Orthopaedic Surgery, Ehime University Graduate School of Medicine, Ehime, Japan

Po6_2.4 Evaluating Intraoperative Dynamic Hip-Knee-Ankle Angle Under Controlled Load During Navigated Total Knee Arthroplasty.
Laurent Angibaud[1], Prudhvi Tej Chinimilli[2], Amaury Jung[3], James Huddleston[4]
[1]Exactech, USA. [2]Exactech. [3]Blue Ortho. [4]Stanford Medical Center

Po6_2.5 Open-Access 3D Bone Shape Databases in Orthopedics: An Unmet Need?
Malte Asseln[1], Seyed Hamidreza Alavi[2], Nico Verdonschot[2], Gabrielle Tuijthof[1]
[1]University of Twente, Enschede, Netherlands. [2]Department of Biomechanical Engineering, Biomedical Device Design and Production (BDDP) group, University of Twente, Enschede, Netherlands

Po6_2.6 Computer-simulated corrective osteotomy for malunion after distal radius fracture normalizes bone density distribution in the subchondral radius.
Tasuku Miyake, Satoshi Miyamura, Ryoya Shiode, Hiroki Kondo
Department of Orthopaedics, Osaka University Graduate School of Medicine, Osaka, Japan

Po6_2.7 Surgical outcomes of arthroscopic osteophyte debridement for elbow osteoarthritis using a navigation system.
Ryoya Shiode, Satoshi Miyamura, Hiroki Kondo
Department of Orthopaedics, Osaka University Graduate School of Medicine, Osaka, Japan

Po6_2.8 Automatic Segmentation of Forearm Bones Using Deep Learning Approaches.
Théo Aguilar Vidal[1], Robin Cremese[2], Remy Winter[3], Isa Costantini[1], Thibault Poujade[4], Jean-Baptiste Masson[2], Marc-Olivier Gauci[1]
[1]ICARE Team, Inserm, Université Côte d'Azur, Institut de Biologie Valrose, Nice, France. [2]Institut Pasteur, Paris, France. [3]ICARE Team, Inserm, Université Côte d'Azur, Newclip Technics, Haute Goulaine, France. [4]Newclip Technics, Haute-Goulaine, France

Po6_2.9 When Navigating TKA, Tibia 1st Workflow Improves Functional Results Relative to Femur 1st Workflow, at 2Y Follow-up.
François Boux de Casson[1], Gerard Giordano[2], Laurent Angibaud[3], Cyril `` Hamad[4]
[1]BlueOrtho. [2]Joseph Ducuing Hospital, Toulousse, France. [3]Exactech. [4]Blue Ortho

Po6_2.10 3D assessment of the hip joint of a patient with diffuse idiopathic skeletal hyperostosis (DISH) based on CT image.

Ryosuke Nishimura[1], Yusuke Murakami[2], Kohei Kono[1], Tatsuhiko Kutsuna[1]

[1]Department of Orthopaedic Surgery, Ehime University Graduate School of Medicine, Ehime, Japan. [2]Department of Orthopaedic Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan

EO. 2.S3 – CLINICAL
Challenges in total hip replacement

15:30 - 17:15 Monday, 16th June, 2025

Chair: Fabrizio Russo, Berna Richter

EO.2.S3-K11 Periprosthetic joint infection in Revision THR – Infection prevention & Mode of action by a new antimicrobial implant coating.

Thomas M Grupp[1,2], Janine Fechter[2], Philine Baur[3], Volker Alt[4], Daniel Kendoff[5], Dirk Herold[6], Stefan Maenz[2], Lutz Dreyer[2]

[1]Ludwig Maximilians University Munich, Department of Orthopaedic and Trauma Surgery, Musculoskeletal University Center Munich (MUM), Campus Grosshadern, Munich, Germany. [2]Aesculap AG Research & Development and Medical Scientific Affairs, Tuttlingen, Tuttlingen, Germany. [3]Aesculap AG Research & Development and Medical Scientific Affairs Tuttlingen, Tuttlingen, Germany. [4]Department for Trauma Surgery, University Hospital Regensburg, Regensburg, Germany. [5]Department of Orthopaedic and Trauma Surgery Helius ENDO-Klinik Berlin Buch, Berlin, Germany. [6]Dept. of Orthopaedic & Trauma Surgery Caritas Klinikum Bad Mergentheim, Bad Mergentheim, Germany

EO.2.S3-O1 Metal and essential oils-based antibacterial solutions: towards patient specific implantable devices.

Gabriela Graziani

Politecnico di Milano, Milan, Italy

EO.2.S3-O2 The Direct Anterior Approach in complex primary and revision total hip arthroplasty.

Stijn Bolink

Deventer Hospital, Deventer, Netherlands

EO.2.S3-O3 Bone alterations in patients undergoing total hip replacement

Laura Saldaña

Hospital Universitario La Paz-IdiPAZ, Madrid, Spain

EO.2.S3-O4 Are modern bearings changing the reasons for revision in total hip replacement?

Eduardo García-Rey
Hospital Universitario La Paz, Madrid, Spain

EO.2.S3-O5 Biomarkers in focus: addressing wear and aseptic loosening in patients with total hip replacement
Gema Valles
Hospital La Paz Institute for Health Research, IdiPAZ, Madrid, Spain

EO.2.S3-O6 Navigating the Conventionally Instrumented Total Knee Arthroplasty.
Shane P Russell[1,2,3], Sarah Keyes[1,3,2], Grant Grobler[1], James A Harty[1,2,4]
[1]Cork University Hospital, Cork, Ireland. [2]Bon Secours Hospital, Cork, Ireland. [3]Royal College of Surgeons in Ireland, Dublin, Ireland. [4]University College Cork, Cork, Ireland

EO.2.S3-O7 Extended trochanteric osteotomy (ETO) for revision total hip arthroplasty and reconstruction with a standard vs revision stem - A biomechanical analysis and clinical case series of 19 patients.
Jakob Hax[1], Ivan Zderic[2], Boyko Gueorguiev-Rüegg[2], Lukas Schwitter[1], Michael Leunig[1], Hans-Christoph Pape[3], Hannes A. Rüdiger[1]
[1]Schulthess Klinik, Zurich, Switzerland. [2]ARI, Davos, Switzerland. [3]University Hospital, Zurich, Switzerland

EO.3.S3 – BONE
Novel approaches for bone repair and regeneration: Cells or not cells?

15:30 - 16:55 Monday, 16th June, 2025
Chair: Arnaud Scherberich, Jerome Guicheux

EO.3.S3-K12 Scaffold-free technologies derived from adipose stem cells to cure critical size bone defects and common orthopedic bone indications.
Denis Dufrane[1], Hara Episkopou[2]
[1]Novadip, Mont-Saint-Guibert, Belgium. [2]Novadip Biosciences, Belgium

EO.3.S3-O1 Are cells really necessary? A bone regeneration case study.
Sébastien Pigeot[1], Alejandro Garcia-Garcia[2], Thibaut Klein[1], Anke Wixmerten[1], Sylvie Miot[1], Lena Gens[3], Arnaud Scherberich[1], Andrea Montali[4], Stephan Zeiter[3], Paul Bourgine[5], Ivan Martin[1]
[1]Department of Biomedicine, University Hospital Basel, University of Basel, Basel, Switzerland. [2]Laboratory for Cell, Tissue, and Organ engineering, Department of Clinical Sciences, Lund University, Lund, Sweden. [3]AO Preclinical Surgery, AO Foundation, Davos, Switzerland. [4]AO Development Incubator, AO Foundation, Davos, Switzerland. [5]Laboratory for Cell, Tissue, and Organ engineering, Department of Clinical Sciences, Lund University, Lund, Switzerland

EO.3.S3-O2 3D-Printed Ceramic Scaffolds Functionalized with Exosomes Derived from Mineralized Osteoblasts: A Cell-Free Preclinical Approach.
Julien Guerrero[1], Ekaterina Maevskaia[1], Pablo Pfister[2,3], Ana Pérez Dominguez[1], Chafik Ghayor[1], Indranil Bhattacharya[1], Arnaud Scherberich[2,3], Franz Ernst Weber[1,4]
[1]University of Zurich, Center of Dental Medicine, Oral Biotechnology & Bioengineering, Zürich, Switzerland. [2]Department of Plastic, Reconstructive, Aesthetic and Hand Surgery, University Hospital Basel, Basel, Switzerland. [3]Department of Biomedicine, University Hospital Basel, University of Basel, Basel, Switzerland. [4]CABMM, Center for Applied Biotechnology and Molecular Medicine, University of Zurich, Zürich, Switzerland

EO.3.S3-O3 Targeting IFN-γ+ T cells via superantigen SEC2 to prime periosteal stem cells for enhanced osteoporotic fracture healing.
Haixing WANG, Gang Li
Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

EO.3.S3-O4 The application of Platelet-Rich Fibrin in Orthognathic surgery
Lana Micko[1,2,3], Ilze Salma[1,2,3], Ingus Skadins[3,4], Girts Salms[1,2], Aleksejs Dons[1,2], Karina Egle[5,3], Oskars Radzins[1,3], Arita Dubnika[5,3], Matteo D'Este[3,6], Sophie Verrier[3,6], Maksims Zolovs[7,8]
[1]Institute of Stomatology, Riga Stradins University, Riga, Latvia. [2]Department of Oral and Maxillofacial Surgery, Riga Stradins University, Riga, Latvia. [3]Baltic Biomaterials Centre of Excellence, Headquarters at Riga Technical University, Riga, Latvia. [4]Department of Biology and Microbiology, Riga Stradins University, Riga, Latvia. [5]Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre of RTU, Institute of General Chemical Engineering, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Riga, Latvia. [6]AO Research Institute Davos, Davos, Switzerland. [7]Riga Stradins University, Statistics Unit, Riga, Latvia. [8]Daugavpils University, Institute of Life Sciences and Technology, Daugavpils, Latvia

EO.3.S3-O5 Mechanistic Insights into ATG7-BMSC@CS-Mediated Mitochondrial Autophagy and Its Role in Metabolic Reprogramming to Enhance Osteogenesis.
FENGJIN GUO, Qiumei Lan, Mengtian Fan
Chongqing Medical University, Chongqing, China

EO.3.S3-O6 Effects of recombinant human BMP-2 and immunomodulation targeting IL-1β on fracture healing in a femur segmental defect model in rats.
Maria Elisabeth Schröder, Lena Gens, Daniel Arens, Nico Giger, Laura Bernhard, Dominic Gehweiler, Dirk Nehrbass, Stephan Zeiter, Martin Stoddart, Esther Wehrle
AO Research Institute Davos, AO Foundation, Davos, Switzerland

EO.4.S3 - TENDON AND LIGAMENT

15:30 - 17:00 Monday, 16th June, 2025

Chair: Giovanna Della Porta, Laura Cremers

EO.4.S3.O8 Study on the performance and ligament-bone tissue repair of assembled magnesium alloy suture anchor.

Delin Ma

Zhengzhou university, Zhengzhou, China

EO.4.S3-O9 Controlled Generation of PCL/Bioactive Glass Microparticles for Bone Regeneration: Tuning Size and Roughness Through Fabrication Parameters.

Mantas Liudvinaitis, Dinas Tverijonas, Ieva Šimoliūnė, Milda Alksnė, Egidijus Šimoliūnas

Vilnius University, Vilnius, Lithuania

EO.4.S3-O1 Enhanced Achilles Tendon Healing with Novel Pre-Vascularized BMSC Sheets in a Rabbit Model.

Yexin Li[1], Weihong Zhu[1], Qi Tang[1], Yuchen He[1], Yanying Wu[2], Jiafei Li[2], Qian Liu[1]

[1]The Second Xiangya Hospital, Central South University, Changsha, China. [2]Xiangya School of Medicine, Central South University, Changsha, China

EO.4.S3-O2 Inflammation-Responsive Functional Core-Shell Micro-Hydrogels Promote Rotator Cuff Tendon-to-Bone Healing by Recruiting MSCs and Immuno-Modulating Macrophages in Rats.

Baojun Chen[1], Xin Zhao[2], Meiguang Xu[3], Jinlong Luo[2], Lang Bai[3], Qian Han[3], Yanzheng Gao[1], Baolin Guo[2], Zhanhai Yin[3]

[1]Department of Surgery of Spine and Spinal Cord, Henan Provincial People's Hospital, Zhengzhou University, Zhengzhou, China. [2]Frontier Institute of Science and Technology, and State Key Laboratory for Mechanical Behavior of Materials, and Key Laboratory of Shaanxi Province for Craniofacial Precision Medicine Research, College of Stomatology, Xi'an Jiaotong University, Xi'an, China. [3]Department of Orthopaedics, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China

EO.4.S3-O3 Anterior Tibial Subluxation of Lateral Compartment Is Associated with High-Grade Knee Laxity in Patients with Anterior Cruciate Ligament Deficiency.

Zipeng Ye, Jinzhong Zhao

Shanghai Sixth People's Hospital, Shanghai, China

EO.4.S3-O4 Posterior cruciate ligament retains its mechanical function in osteoarthritic human knees

Aapo Ristaniemi[1,2], Mikko AJ Finnilä[3], Heikki Kröger[2], Rami K Korhonen[1]

[1]University of Eastern Finland, Kuopio, Finland. [2]Kuopio University Hospital, Kuopio, Finland. [3]University of Oulu, Oulu, Finland

EO.4.S3-O5 Innovative electrospun scaffolds for tendon regeneration: a novel approach to prevent post-surgical fibrosis.
Francesca Romano[1,2], Francesco Lopresti[2], Chiara Di Marco[2], Vincenzo La Carrubba[2], Roberto Di Gesù[3]
[1]Ri.MED Foundation, Palermo, Italy. [2]Department of Engineering, University of Palermo, Palermo, Italy. [3]Fondazione Ri.MED, Palermo, Italy

EO.4.S3-O6 Frozen-storable mesenchymal stem cell scaffold for promoting rotator cuff tendon-bone interface healing: New hope for elderly patients with chronic rotator cuff injury.
Bingyan Li[1], Lang Bai[1], Shuai Wang[1], Zhanhai Yin[1], Xu Meiguang[2]
[1]The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China. [2]The First Affiliated Hospital of Xi'an Jiaotong University, China

EO.4.S3-O7 Achilles tendinopathy treatment via circadian rhythm regulation
Yibo Zhang, Qing Jiang, Xingquan Xu
Nanjing Drum Tower Hospital, Affiliated Hospital of Medical School, Nanjing University, Nanjing, China

EO.5.S3 – OSTEOARTHIRITIS: OSTASKILLS
Holistic approach to understanding and managing osteoarthritis

15:30 - 17:00 Monday, 16th June, 2025
Chair: Denitsa Docheva, Corne Baatenburg de Jong

EO.5.S3-K13 In vitro differentiation of cells with chondrogenic potential
Brian Johnstone
Oregon Health Science University, Department Of Orthopedics Rehabilitation, Portland, USA

EO.5.S3-O1 A nasal chondrocyte-based inflammation-resistant therapy approach for osteoarthritis.
Atharva Damle[1], Ksenia Sovdagarova[1], Boris Dasen[1], Andre Tiaden[1,2], Stavros Giaglis[1,2], Petros Ismailidis[2], Florian Imhoff[2], Diego Kyburz[1,2], Tim Welting[3], Ivan Martin[1,2], Andrea Mainardi[1], Andrea Barbero[1,2]
[1]University of Basel, Basel, Switzerland. [2]University Hospital Basel, Basel, Switzerland. [3]University of Maastricht, Maastricht, Netherlands

EO.5.S3-O2 Targeting Chondromodulin-I (Cnmd) for Novel Osteoarthritis Interventions: *In Vivo* and 3D Model Insights.

Viviana Reyes Alcaraz[1], Girish Pattappa[1], Sigrid Müller-Deubert[1], Carolina Serrano Larrea[2], Nguyen Xuan Thanh Le[2], Maximilian Rudert[1], Marcel Karperien[2], Denitsa Docheva[1]

[1]Department of Musculoskeletal Tissue Regeneration and Department of Orthopaedics, Orthopaedic Hospital König-Ludwig-Haus, University of Würzburg, Würzburg, Germany. [2]Department of Developmental BioEngineering, Faculty of Science and Technology and TechMed Centre, University of Twente, Enschede, Netherlands

EO.5.S3-O3 Peptide as an anti-inflammatory drug for the treatment of Osteoarthritis.

Abdullah khalid[1], Adhiambo M witlox[2], Guus GH van den Akker[1], Marjolein MJ caron[1], Tim JM welting[1,2]

[1]Laboratory for Experimental Orthopedics, Department of Orthopedic Surgery, Caphri School for Public Health and Primary Care, Maastricht University, Maastricht, Netherlands. [2]Laboratory for Experimental Orthopedics, Department of Orthopedic Surgery, Maastricht University Medical Center, Maastricht, Netherlands

EO.5.S3-O4 Developing a cartilage-on-chip platform for osteoarthritis.

Nguyen Xuan Thanh Le[1], Bram Zoetebier[1], Atharva Damle[2], Andrea Barbero[2], Ivan Martin[2], Elsa Lauwers[3], Carlo Alberto Paggi[3], Marcel Karperien[1]

[1]University of Twente, Enschede, Netherlands. [2]University of Basel, Basel, Switzerland. [3]chrn on-chip biotechnologies B.V., Maastricht, Netherlands

EO.5.S3-O5 Injectable hydrogels for VHH delivery to restore joint homeostasis.

Carolina Serrano Larrea, Lisanne Morshuis, Lin Zhong, Marjorie Zambonino, Thanh Le, Fleur Semmekrot, Bram Zoetebier, Marcel Karperien
University of Twente, Enschede, Netherlands

EO.5.S3-O6 Improving 3D Scaffold Design for a Cell-Based Cartilage Regenerative Model

Laura Mecchi[1,2], Marjolein M. J. Caron[2], Tim J. M. Welting[2,3], Martin J. Stoddart[1]

[1]Progenitor Cell Biology Group, Regenerative Orthopaedics Department, AO Research Institute Davos, Clavadelerstrasse 8, 7270 Davos, Switzerland. [2]Laboratory for Experimental Orthopedics, Department of Orthopedic Surgery, Caphri School for Public Health and Primary Care, Maastricht University, Universiteitssingel 50, 6229 ER Maastricht, Netherlands. [3]Laboratory for Experimental Orthopedics, Department of Orthopedic Surgery, Maastricht University Medical Center, P.O. Box 5800, 6202 AZ Maastricht, Netherlands

EO.5.S3-O7 Focal Knee Resurfacing Implant: A Promising Approach in the Management of Osteoarthritis.

Amin Abrishamkar[1], Alex K Roth[1,2], Erkan E Asik[2], Tim JM Welting[1], Peter J Emans[1,2,3]
[1]Department of Orthopedic Surgery, Research School CAPHRI, Maastricht University, Maastricht, Netherlands. [2]Avalanche Medical BV, Maastricht, Netherlands. [3]Department of Orthopedic Surgery, Joint Preservation Clinic, Maastricht University Medical Center, Maastricht, Netherlands

EO.5.S3-O8 Dynamic compression and shear activates TGFβ-1 and promotes the chondrogenesis of human bone marrow mesenchymal stromal cells (hBMSCs) in GelMA scaffolds.
Maria Carolina Grenho Leal Cordeiro[1,2], Andrea Barbero[3], Martin James Stoddart[1]
[1]AO Research Institute, Davos, Switzerland. [2]Faculty of Medicine, University of Basel, Basel, Switzerland. [3]Department of Biomedicine, University of Basel, University Hospital Basel, Basel, Switzerland

EO.6.S3 – CLINICAL
Translational Skeletal Trauma Surgery

15:30 - 16:55 Monday, 16th June, 2025
Chair: Peter Helmut Thaller, Wilhelm Friedl

EO.6.S3-K14 Consequences of Biomechanical and Clinical Studies for Proximal Femur Fractures Osteosynthesis.
Wilhelm Friedl
GKK Osteosynthese International, Aschaffenburg, Germany

EO.6.S3-O1 Biomechanical considerations for the treatment of (geriatric) pelvic ring fractures.
Rene Hartensuer
Klinikum Aschaffenburg-Alzenau, Aschaffenburg, Germany

EO.6.S3-O2 First Results of Intramedullary Compression/Distraction for Closed Consolidation and Lenghtening in Femoral Pseudarthrosis.
Peter Helmut Thaller
3D-Surgery and Clinical Tissue Regeneration Department of Orthopaedics and Trauma Surgery Musculoskeletal University Center Munich (MUM) LMU University Hospital, Munich, Germany. 3D-Surgery at Bethel Hospital Berlin, Berlin, Germany
EO.6.S3-O3 Nail and cable assisted bone transport – Novel approaches
Dennis Vogt[1], Marcus Stichling[1], Denis Siebert[2], Christian Willy[1]
[1]Military Hospital, Berlin, Germany. [2]K-Implant, Garbsen, Germany

EO.6.S3-O4 Minimal Invasive Fixation of Osteoporotic Fractures wit a Symphysis Plate (SYP).

Wilhelm Friedl
GKK Osteosynthese International, Aschaffenburg, Germany

EO.6.S3-O5 Nonunions of the proximal femur – biomechanical aspects
Roland Biber[1], Wilhelm Friedl[2]
[1]Department of Traumatology, Kliniken Dr. Erler GmbH, Nürnberg, Germany. [2]

EO.6.S3-O6 Outcomes and Challenges of Limb Lengthening Using Motorized Intramedullary Nails: A Retrospective Analysis of 129 consecutive lengthenings.
Joachim Horn, Stefan Huhnstock, Harald Steen, Anders Grønseth, Anne Berg Breen
Section of Children's Orthopaedics and Reconstructive Surgery, Division of Orthopaedics, Oslo University Hospital, Oslo, Norway

EO.8.S3 - TISSUE ENGINEERING
Novel approaches for musculoskeletal regeneration.

15:30 - 16:55 Monday, 16th June, 2025
Chair: Zsuzsa Jenei-Lanzl, Gundula Rösch

EO.8.S3-K15 From Idea to Authorized Medicinal Product: Navigating the Regulatory Landscape for Blood-Based Medicinal Products and Advanced Therapies.
Konstanze Aurich
University medicine Greifswald, Greifswald, Germany

EO.8.S3-O1 Wnt1 as a powerful tool to enhance bone regeneration.
Melanie Haffner-Luntzer[1], Deniz Ragipoglu[1], Mubashir Ahmad[1], Timur Morgan[2], Thorsten Schinke[2], Anita Ignatius[1]
[1]Institute of Orthopaedic Research and Biomechanics, University Medical Center Ulm, Ulm, Germany. [2]Institute of Osteology and Biomechanics, University Clinics Hamburg, Hamburg, Germany

EO.8.S3-O2 Impact of alternating electric fields on musculoskeletal tissue regeneration.
Anika Jonitz-Heincke[1], Annett Klinder[1], Vivica Freiin Grote[1], Janine Waletzko-Hellwig[1], Anna Sophia Kischka[1], Rainer Bader[1,2]
[1]Department of Orthopedics, Biomechanics and Implant Technology Research Laboratory, Rostock University Medical Center, Rostock, Germany. [2]Department of Life, Light, and Matter, Interdisciplinary Faculty, University of Rostock, Rostock, Germany

EO.8.S3-O3 Improving autologous chondrocyte implantation using lyophilized human platelet lysate.
Janosch Schoon[1], Kerstin Wendland[1,2], Celina Owczarek[1,2], Georgi I. Wassilew[1], Sebastian Gebhardt[1], Konstanze Aurich[2]

[1]Center for Orthopaedics, Trauma Surgery and Rehabilitation Medicine, University Medicine Greifswald, Greifswald, Germany. [2]Institute for Transfusion Medicine, University Medicine Greifswald, Greifswald, Germany

EO.8.S3-O4 Textile tissue engineering for the anterior cruciate ligament.
Yasir Majeed[1], Clemens Gögele[1], Christian Werner[1], Judith Hahner[2], Cindy Elschner[3], Gundula Schulze-Tanzil[1]
[1]Paracelsus Medical University, Nuremberg, Germany. [2]Universitätsklinikum Gustav Carus, Dresden, Germany. [3]IPF, Dresden, Germany

EO.8.S3-O5 The PD-1 signaling pathway orchestrates bone homeostasis.
Frank A. Schildberg[1], El-Mustapha Haddouti[1], Mengbo Zhu[1], Jayagopi Surendar[1], Alina Armbruster[1], Viktoriia Mospan[1], Janine Becker-Gotot[2], Lamia Singer[3], Christoph Bourauel[3], Dieter C. Wirtz[1]
[1]Department of Orthopedics and Trauma Surgery, University Hospital Bonn, Bonn, Germany. [2]Institute of Experimental Immunology, University Hospital Bonn, Bonn, Germany. [3]Oral Technology, University Hospital Bonn, Bonn, Germany

EO.8.S3-O6 Tunnel Design and Measurement in All-Epiphyseal Anterior Cruciate Ligament Reconstruction
Yuchen He, Zhenmu Xu, Weihong Zhu
The Second Xiangya Hospital of Central South University, Changsha, China

CA.9.S4 - Session 7: Intra-Operative Technologies

15:30 - 16:40 Monday, 16th June, 2025
Chair: Ferdinando Rodriguez Y Baena, Florian Gebhard

CA.9.S4-O1 Pre-Resection Robotic Soft Tissue Planning Better Restores Joint Line and Achieves Comparable Balance to Post-Tibial Resection Planning.
Alexander Orsi[1], Christopher Plaskos[1], Gwo-Chin Lee[2], Jeffrey Lawrence[3]
[1]Corin, Boston, USA. [2]HSS. [3]Gundersen Health System

CA.9.S4-O2 A Novel System for Pre-resection Soft Tissue Assessment in Total Knee Arthroplasty – Accuracy and Efficiency of First 734 Clinical Cases.
Alexander Orsi[1], Christopher Plaskos[2], Andrew Lehman[3], John Keggi[4], Michael Bradley[5], Jeffrey DeClaire[6], Simon Coffey[7], Stefan Kreuzer[8], Jeffrey Lawrence[3]
[1]Corin, Boston, USA. [2]Corin. [3]Gundersen Health System. [4]Orthopaedics New England. [5]Ortho Rhode Island. [6]Michigan Knee Institute. [7]Nepean Hospital, New South Wales, Australia. [8]INOV8 Orthopedic

CA.9.S4-O3 Predicting the Pull-out Strength of Robot-Assisted Pedicle Screws Using Bone Mineral Density of Preset 3D Trajector.
Yanming Fang
Beijing Jishuitan Hospital, Capital Medical University, Beijing, China

CA.9.S4-O4 Integration of Augmented Reality for Navigation of Periacetabular Osteotomy
Hisham Iqbal, Simon Harris, Justin Cobb, Kartik Logishetty
Imperial College London, London, United Kingdom

CA.9.S4-O5 Enhancing Standard Operation Procedures to design SDC Workstations for Cervical Decompression and Spinal Fusion.
Okan Yilmaz[1], Noah Wickel[1], Rastislav Pjontek[1], Klaus Radermacher[2], Armin Janß[1]
[1]Chair of Medical Engineering - RWTH Aachen University, Aachen, Germany. [2]RWTH Aachen University, Aachen, Germany

CA.9.S4-O6 Accuracy and Precision of Computer-Assisted Surgery Compared with Conventional Instrumentation for Total Ankle Arthroplasty.
Matthew Rueff[1], Zachary Tupper[1], Matt Hamilton[1], Scott Gulbransen[1], Cyril Hamad[2]
[1]Exactech. [2]Blue Ortho, United Kingdom

CA.9.S4-O7 Experience with Surface Navigation-Guided Minimally Invasive Pedicle Screw Insertion Without Bone-Anchored Trackers in Dynamic Environments.
Mingxing Fan[1], Yanming Fang[1], Rui He[2], Mingyu Fan[3]
[1]Beijing Jishuitan Hospital, Capital Medical University, Beijing, China. [2]Beijing Institute of Technology, Beijing, China. [3]University of Auckland, Auckland, New Zealand

PL-02 ***Human Stem Cell-based Articular Tissue Engineering: From Joint Regeneration to Joint-on-a-Chip.***

Rocky S Tuan
The Chinese University of Hong Kong, Hong Kong, China
08:30 - 09:00 Tuesday, 17th June, 2025
Chair: Geoff Richards

EO.2.S4 - STEM CELLS
A multifaceted approach to joint homeostasis: Small molecules, cells and scaffolds.
09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Wei-Shiung Lian, Holger Jahr

EO.2.S4-K16 TCA Cycle Intermediates Improve Bone and Joint Disorders.
Feng-Sheng Wang
Kaohsiung Chang Gung Memorial Hospital, Taiwan, Kaohsiung, Taiwan

EO.2.S4-O1 Advancing Joint Homeostasis with Aptamers.
Jaqueline Lourdes Rios
University Medical Center Utrecht, Utrecht, Netherlands

EO.2.S4-O2 Novel biphasic scaffolds for osteochondral unit (OCU) repair.
Holger Jahr
RWTH Aachen, Aachen, Germany. Uniklinik RWTH Aachen, Aachen, Germany

EO.2.S4-O3 Counteracting Osteoarthritis by Anti-inflammatory Macrophage.
Wei Shiung Lian
Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

EO.2.S4-O5 The role of early trauma response to post-traumatic OA development.
Johanna BOLANDER[1,2,3], Vartan Kazezian[1,2], Emely Rosenow[1,4], Stephan Oehme[5], Tobias Winkler[5,1,2]
[1]BIH Center for Regenerative Therapies - Charité – Universitätsmedizin Berlin, Berlin, Germany. [2]Julius Wolff Institute, Berlin, Germany. [3]imec, Leuven, Belgium. [4]Julius Wolff Institute, Berlin, Belgium. [5]Centrum für Muskuloskeletale Chirurgie, Berlin, Germany

EO.2.S4-O6 Transient exposure of chondrocytes to CCL2 in the context of a pro-inflammatory environment enhances chondrogenesis and their pro-repair response.

Ilias E Epanomeritakis[1], Hayat Muhammad[1], Alexandra Macmillan[1], Rawiya Al Hosni[1], Benjamin Gompels[1], Stephen McDonnell[1], Wasim Khan[1], Mark Birch[1], Andrew McCaskie[1,2]
[1]Division of Trauma and Orthopaedic Surgery, University of Cambridge, Cambridge, United Kingdom. [2]Cambridge Stem Cell Institute, University of Cambridge, Cambridge, United Kingdom

EO.3.S4 - BONE
Cellular and acellular constructs in bone repair and regeneration

09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Qin Xiao-Hua, Elizabeth Rosado Balmayor

EO.3.S4-K17 Bone grafting: where are we heading?
Giuseppe Perale
Industrie Biomediche Insubri SA, Mezzovico-Vira, Switzerland. University of Southern Switzerland - USI, Lugano, Switzerland. L. Boltzmann Institute for Traumatology, Vienna, Austria

EO.3.S4-O1 Polymer-Bioactive Glass Composite Scaffolds for Bone Regeneration: Incorporating P_2O_5-Free Bioactive Glasses with Osteogenic and Angiogenic Properties
Martyna Nikody[1,2], Sophia Dalfino[1,3,4], Pamela Habibovic[1], Gianluca Martino Tartaglia[4,5], Claudia Dolci[3], Lizette Morejón[6], Jose A. Delgado[6,7], Elizabeth Rosado Balmayor[2], Lorenzo Moroni[1]
[1]MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht University, Maastricht, Netherlands. [2]Experimental Orthopaedics and Trauma Surgery, Department of Orthpaedic, Trauma, and Reconstructive Surgery, RWTH Aachen University Hospital, Aachen, Germany. [3]Department of Biomedical Sciences for Health, Università degli Studi di Milano, Milan, Italy. [4]Department of Biomedical, Surgical and Dental Sciences, Università degli Studi di Milano, Milan, Italy. [5]Fondazione Cà Granda IRCCS Ospedale Maggiore Policlinico Milano, Milan, Italy. [6]Center of Biomaterials, University of Havana, Havana, Cuba. [7]Universitat Internacional de Catalunya, Barcelona, Spain

EO.3.S4-O2 Macromolecular crowding in the development of bone tissue engineered substitutes.
Zhuoran Ma[1], Tanya Levingstone[2], Nicholas Dunne[2], Dimitrios I. Zeugolis[1]
[1]Regenerative, Modular & Developmental Engineering Laboratory (REMODEL), Charles Institute of Dermatology, Conway Institute of Biomolecular & Biomedical Research and School of Mechanical & Materials Engineering, University College Dublin (UCD), Dublin, Ireland. [2]School of Mechanical & Manufacturing Engineering, Dublin City University (DCU), Dublin, Ireland

EO.3.S4-O3 Advancing Bone Regeneration: 3D-Printed Bioactive Ceramic Scaffolds Coated with Bioactive Molecules for the Repair of Critical-Sized Defects.

Lukasz Witek[1,2,3], Vasudev Vivekanand Nayak[4], Jacques H Hacquebord[2,5], Nick Tovar[1], Bruce N Cronstein[6], Paulo G. Coelho[4,7]

[1]Biomaterials and Regenerative Biology Division, NYU College of Dentistry, New York, USA. [2]Hansjörg Wyss Department of Plastic Surgery, NYU Grossman School of Medicine, New York, USA. [3]Department of Biomedical Engineering, NYU Tandon School of Engineering, Brooklyn, USA. [4]Department of Biochemistry and Molecular Biology, University of Miami Miller School of Medicine, Miami, USA. [5]Department of Orthopedic Surgery, NYU Grossman School of Medicine, New York, USA. [6]Department of Medicine, NYU Grossman School of Medicine, New York, USA. [7]Division of Plastic Surgery, DeWitt Daughtry Family Department of Surgery, University of Miami Miller School of Medicine, Miami, USA

EO.3.S4-O4 Lyophilization of adeno-associated virus/matrix composite enhances transgene expression within osseous defects leading to improved healing.

Erin B McGlinch, Joseph A Panos, Michael J Coenen, Rodolfo de la Vega, Michael A Barry, Christopher H Evans

Mayo Clinic, Rochester, USA

EO.3.S4-O5 Innervated Bone-on-a-chip System for Mimicking Bone Remodeling.

Zhilong Zhou[1], Zhong Alan Li[1,2,3]

[1]Department of Biomedical Engineering, The Chinese University of Hong Kong, Hong Kong, Hong Kong. [2]Center for Neuromusculoskeletal Restorative Medicine, Hong Kong, Hong Kong. [3]Peter Hung Pain Research Institute, The Chinese University of Hong Kong, Hong Kong, Hong Kong

EO.3.S4-O6 Injectable Mineralized Nanocomposite Hydrogels for Antibacterial and Reconstructive Treatment of Bone Infections.

Kristine Salma-Ancane[1,2], Anna Rubina[1,2], Artemijs Sceglovs[1,2], Anna Ramata-Stunda[3], Ingus Skadins[4], Liga Stipniece[1,2]

[1]Riga Technical University, Institute of Biomaterials and Bioengineering, Riga, Latvia. [2]Baltic Biomaterials Centre of Excellence, Headquarters at Riga Technical University, Riga, Latvia. [3]Department of Microbiology and Biotechnology, Faculty of Biology, University of Latvia, Riga, Latvia. [4]Department of Biology and Microbiology, Riga Stradins University, Riga, Latvia

EO.4.S4 - STEM CELLS
Translational Frontiers in Meniscus Research: Integrating Imaging, Biomechanics, Animal Models, and Computational Advances for Clinical Innovation

09:10 - 10:40 Tuesday, 17th June, 2025

Chair: Andreas Martin Seitz, Henning Madry

EO.4.S4-K18 Animal Models in Meniscus Research.

Henning Madry

Lehrstuhl für Experimentelle Orthopädie und Arthroseforschung, Zentrum für Experimentelle Orthopädie, Universitätsklinikum des Saarlandes, Universität des Saarlandes, Homburg, Germany

EO.4.S4-O1 High-Resolution Fourier Transform Infrared Spectroscopy Characterization of the Cell Microenvironment in Healthy and Degenerated Meniscus.

Petri Tanska[1], Hanna-Sofia Koivisto[1], Rasmus Hiltunen[1,2], Iida Hellberg[3], Simo Saarakkala[3], Mikko Finnilä[3], Martin Englund[4]

[1]University of Eastern Finland, Kuopio, Finland. [2]Wellbeing Services County of North Savo, Kuopio University Hospital, Kuopio, Finland. [3]University of Oulu, Oulu, Finland. [4]Lund University, Lund, Sweden

EO.4.S4-O2 Biomechanical aspects in meniscus research.

Andreas Martin Seitz

Institute of Orthopaedic Research and Biomechanics, Ulm University Medical Centre, Ulm, Germany

EO.4.S4-O3 Clinical aspects in meniscus research.

Romain Seil

Department of Orthopaedic Surgery, Centre Hospitalier Luxembourg – Clinique d'Eich, Luxembourg, Luxembourg

EO.4.S4-O4 Meniscus tears: a cause to or consequence of knee osteoarthritis?

Martin Englund

Department of Clinical Sciences Lund, Lund University, Lund, Sweden

EO.4.S4-O5 Biologic Augmentation of Meniscus Repair

Scott A. Rodeo[1], Henning Madry[2]

[1]Hospital for Special Surgery, New York, USA. [2]

EO.4.S4-O6 Decellularized Meniscus Scaffolds and Cartilage Progenitor Cells for Total Meniscal Repair.

Alexandra A Dumas[1,2], Paul M Gehret[1,2], Riccardo Gottardi[1,2]

[1]University of Pennsylvania, Philadelphia, USA. [2]Children's Hospital of Philadelphia, Philadelphia, USA

EO.5.S4 – CARTILAGE
OARSI joint symposium - Frontiers in Osteoarthritis Research

09:10 - 10:40 Tuesday, 17th June, 2025

Chair: Zhen Li, Chunyi Wen

EO.5.S4-K19 Mesenchymal Stem/Stromal Cells in Osteoarthritis: Navigating a Long and Challenging Path.

Jerome Guicheux

INSERM, Nantes Université, Oniris, CHU Nantes, Regenerative Medicine and Skeleton Research Centre (RMeS), UMR 1229, Nantes, France

EO.5.S4-O1 Role of acetylcholinesterase in cartilage homeostasis and osteoarthritis.

Chunyi Wen

The Hong Kong Polytechnic University, Hong Kong, Hong Kong

EO.5.S4-O2 The vicious circle of autonomic dysfunction, inflammation and pain in osteoarthritis.

Zsuzsa Jenei-Lanzl

Dr. Rolf M. Schwiete Research Unit for Osteoarthritis, Department of Trauma Surgery and Orthopedics, Goethe University Frankfurt, University Hospital, Frankfurt am Main, Germany

EO.5.S4-O3 A new osteogenic neutrophil subset maintains bone homeostasis

Zhongyang Lv, Wei Liu, Dongquan Shi

Nanjing University, Nanjing, China

EO.5.S4-O4 Traditional Chinese Medicine for osteochondral regeneration in osteoarthritis.

Xinluan Wang

Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

EO.5.S4-O5 Ssenescent immune cells drive age-related osteoarthritis via gca-plxinb2 axis.

Wenzhen He[1], Bin Zhou[2], Xingchen Chen[1], Ling Liu[1], Yunchen Sun[1], Chen He[1], Mei Huang[1], Yurui Jiao[1], Min Huang[1], Jie Wei[3,2], Chao Zeng[2,3], Guanghua Lei[2,3], Changjun Li[1,3,4]

[1]Department of Endocrinology, Endocrinology Research Center, Xiangya Hospital of Central South University, Changsha, China. [2]Department of Orthopaedics, Xiangya

Hospital, Central South University, Changsha, China. [3]Key Laboratory of Aging-related Bone and Joint Diseases Prevention and Treatment, Ministry of Education, Xiangya Hospital, Central South University, Changsha, China. [4]Laboratory Animal Center, Xiangya Hospital, Central South University, Changsha, China

E**O.5.S4-O6** Nicotinamide Riboside Counteracts Osteoarthritis through Preserving Mitochondrial Unfolding Response.
Yu Shan Chen, Wei Shiung Lian, Feng Sheng Wang
Kaohisung Chang Gung Memorial Hospital, Taiwan, Kaohisung, Taiwan

EO.6.S4 - TENDON & LIGAMENT
Advanced tendon regenerative strategies (TENET COST Action)

09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Dimitrios Zeugolis, Manuel Gomez-Florit

EO.6.S4-K20 Understanding Tendons and Tendinopathies.
Manuel Gomez-Florit
Health Research Institute of the Balearic Islands, Palma, Spain

EO.6.S4-O1 Cellular response to *in vivo* overload of the Achilles tendon in young and old rats.
Danae E Zamboulis[1], Connor C Gains[2], Mah Roona Fazal[2], Simon Grossemy[2], Nidal Khatib[2], Antonis Giannopoulos[3], Hazel R C Screen[2]
[1]Equine Unit, Companion Animal Clinic, School of Veterinary Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece. [2]School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom. [3]School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, United Kingdom

EO.6.S4-O2 The synergistic effect of human platelet lysate and macromolecular crowding regulate *in vitro* extracellular matrix deposition for the development of tendon tissue equivalents.
Andrea Rossoni, Dimitrios I Zeugolis
University College Dublin, Dublin, Ireland

EO.6.S4-O3 Exploring the Role of Syndecan-4 in Tendon Collagen Organization and Effects on Bio-mechanical Loading.
Daniel Kronenberg, Lennart Wiehenkamp, Richard Stange
University of Muenster, Münster, Germany

EO.6.S4-O4 Hyaluronic acid hydrogels for minimally invasive and controlled delivery of extracellular vesicles in tendon injuries.

Kristiyan Stiliyanov Atanasov[1,2,3], Sara Bagur Cardona[1,2,3], Silvia Chiera[1,2,3], Ramón Novoa Carballal[4], María Dolores Torres-Pérez[4], Antoni Gayà[5,2,1], Javier Calvo[5,2,1], Manuel Gómez-Florit[1,2,3]
[1]Health Research Institute of the Balearic Islands (IdISBa), Palma de Mallorca, Spain. [2]Group of Cell Therapy and Tissue Engineering (TERCIT), Research Institute on Health Sciences (IUNICS), University of the Balearic Islands (UIB), Palma de Mallorca, Spain. [3]Research Unit, Son Espases University Hospital (HUSE), Palma de Mallorca, Spain. [4]CINBIO, University of Vigo, Vigo, Spain. [5]Fundació Banc de Sang i Teixits de les Illes Balears (FBSTIB), Palma de Mallorca, Spain

EO.6.S4-O5 Nanocarriers for mrna and protein delivery: innovative tools and strategies in tendon repair.
Giovanna Della Porta
University of Salerno, Salerno, Italy
EO.6.S4-O6 Miniaturized Human Tendons: A Bioengineering Perspective on On-Chip Models.
Rui M.A. Domingues
3B's Research Group, I3Bs—Research Institute on Biomaterials, Biodegradables and Biomimetics, University of Minho, Headquarters of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine, AvePark – Parque de Ciência e Tecnologia, Zona Industrial da Gandra, 4805-017 Barco GMR, Portugal. ICVS/3B's – PT Government Associate Laboratory, Braga/Guimarães, Portugal

EO.7.S4 – INFECTION
ISFR: How does infection affect the Fracture Repair Process.

09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Hamish Simpson, Matt Silva

EO.7.S4-KN28 Clinical Aspects of Infection in Primary and Secondary Fracture Repair.
Hamish Simpson
Bone & Joint Health, Blizard Institute, Queen Mary University, London, United Kingdom. Academic Centre for Healthy Ageing, Whipps Cross Hospital, Queen Mary Uni., London, United Kingdom. University of Edinburgh, Edinburgh, United Kingdom

EO.7.S4-KN29 Pathology of fracture related infections.
Louise Kruse Jensen
University of Copenhagen, Copenhagen, Denmark

EO.7.S4-KN30 Interleukin-6 released by mast cells drives inflammation and compromised bone healing after severe trauma.

Verena Fischer[1], Dorothea Gebauer[1], Deniz Ragipoglu[1], Benjamin Thilo Krüger[1], Anne Dudeck[2], Melanie Haffner-Luntzer[1], Anita Ignatius[1]
[1]Institute of Orthopedic Research and Biomechanics, University Medical Center Ulm, Ulm, Germany. [2]Institute for Molecular and Clinical Immunology, Otto-von-Guericke University Magdeburg, Magdeburg, Germany

EO.7.S4-O1 The impact of mechanical instability on fracture related infection.
Claudia Siverino
AO Research Institute Davos, Switzerland

AR.8.S3 - Patient individualised 3D-printing in Orthopaedic Surgery

09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Janin Reifenrath, Markus Laubach

AR.8.S3-K5 3D Printing and Bioprinting in Orthopaedics: Opportunities and Limitations
Michael Gelinsky
Dresden University Hospital, Dresden, Germany

AR.8.S3-O1 Towards Transforming the Current Clinical Approach to Bone Tumors with Innovative Customized 3D-printed Bioresorbable Implants.
Jonathan P Gospos[1,2,3,4], Sugandha Bhatia[2,3,4,5], Elham Seifi[1,3,6], Ronja Finze[1,3,7], Buddhi Herath[1,3], Olivia Richardson[1,4], Flavia Medeiros Savi[1,3,4], Siamak Saifzadeh[8,6], Dietmar W Hutmacher[1,3,4,6], Jacqui A McGovern[2,3,4,5,6]
[1]School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [2]Translational Research Institute, Woolloongabba, Australia. [3]Centre for Biomedical Technologies, School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT, Brisbane, Australia. [4]Max Planck Queensland Centre (MPQC) for the Materials Sciences of Extracellular Matrices, Queensland University of Technology (QUT), Brisbane, Australia. [5]School of Biomedical Sciences, Faculty of Health, QUT, Brisbane, Australia. [6]ARC Training Centre for Cell and Tissue Engineering Technologies (CTET), QUT, Brisbane, Australia. [7]Department of Hand, Plastic and Reconstructive Surgery, BG Trauma Center Ludwigshafen, University of Heidelberg, Heidelberg, Germany. [8]Medical Engineering Research Facility (MERF), Faculty of Engineering, QUT, Chermside, Australia

AR.8.S3-O2 Enabling Hospitals to Print Patient Specific Models at the Point of Care.
Jakob Föhres
Materialise N.V., Leuven, Belgium

AR.8.S3-O3 State-of-the-art Patient-Customized Bone Graft Harvesting Strategies

Lucas P Weimer[1], Alexandra C Bruckner[1], Tina Frankenbach-Désor[1], Susanne Mayer-Wagner[1], Dietmar W Hutmacher[2,3], Flavia M Savi[2,3], Siamak Saifzadeh[3,4], Jacqui McGovern[2,3], Nathalie Bock[2,3], Stefan Milz[5], Boris M Holzapfel[1], Markus Laubach[1,3]
[1]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Center Munich (MUM), LMU University Hospital, Ludwig Maximilian University of Munich, Munich, Germany. [2]Max Planck Queensland Centre (MPQC) for the Materials Science of Extracellular Matrices, Queensland University of Technology (QUT), Brisbane, Australia. [3]Australian Research Council (ARC) Training Centre for Multiscale 3D Imaging, Modelling, and Manufacturing (M3D Innovation), Queensland University of Technology (QUT), Brisbane, Australia. [4]QUT Medical Engineering Research Facility (MERF), Faculty of Engineering, Chermside, Australia. [5]Department of Anatomy, Ludwig Maximilian University of Munich, Munich, Germany

AR.8.S3-O4 Current innovations in 3D-printed implants and instruments for knee and hip arthroplasty.
Marco Haertlé, Lars René Tücking, Alexander Derksen, Mara Hold, Justus Stamp, Henning Windhagen
Hannover Medical School, Hannover, Germany

AR.8.S3-O5 3D Bioprinting of Osteochondral Units with Human Nasal Chondrocytes Using a Granular Composite of Hyaluronic Acid, Collagen, and Hydroxyapatite.
Esma Bahar TANKUS[1], Gregor Miklosic[2], Neha Sharma[3,1], Matteo D'Este[2], Florian Markus Thieringer[1,3], Andrea Barbero[4]
[1]Medical Additive Manufacturing Research Group, Department of Biomedical Engineering, University of Basel, Basel, Switzerland. [2]AO Research Institute Davos, Davos, Switzerland. [3]Clinic of Oral and Cranio-Maxillofacial Surgery, University Hospital Basel, Basel, Switzerland. [4]Cartilage Engineering Group, Department of Biomedicine, University Hospital Basel, Basel, Switzerland

AR.8.S3-O6 3D-Printed Patient-Specific Instruments for Corrective Osteotomy in Pediatric Cubitus Varus Deformity.
Yun-Jung Yang, Hsuan-Kai Kao
Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan

CA.9.S5 - Session 12: 3D Surgical Planning

09:10 - 10:40 Tuesday, 17th June, 2025
Chair: Hoel Letissier, Aziliz Guezou-Philippe

CA.9.S5-O1 Preliminary Clinical Outcome of Virtual Surgical Planning to Assist Reverse Total Shoulder Arthroplasty.

Gabrielle Tuijthof[1], Lian Klein Teeselink[1], Rob van Doremalen[2], Bart-Jan Veen[2], Femke Schroeder[2]
[1]University of Twente, Enschede, Netherlands. [2]Medical Spectrum Twente, Enschede, Netherlands

CA.9.S5-O2 Statistical Shape Models for the planning of TKA surgery.
Anna Gounot[1], Marion Decrouez[1], Baptiste Dehaine[1], Guillaume Dardenne[2], Valérie Burdin[3]
[1]Ganymed Robotics, Paris, France. [2]INSERM LaTIM U1101, Brest, France. [3]IMT Atlantique, Brest, France

CA.9.S4-O3 Variation in preoperative 3D planning for total hip arthroplasty across hip surgeons.
Ryo Higuchi[1], Keisuke Uemura[2], Sotaro Kono[1], Hirokazu Mae[1], Kazuma Takashima[1], Hidetoshi Hamada[2]
[1]Osaka University Graduate School of Medicine, Osaka, Japan. [2]Department of Orthopaedic Medical Engineering, Osaka University Graduate School of Medicine, Osaka, Japan

CA.9.S5-O4 Computerised restoration of centre of rotation in primary total hip arthroplasty.
Johann Henckel[1], Sara De Angelis[2], Angelika Ramesh[2], Klaus Schlueter-Brust[3], Alister Hart[2], Anna Di Laura[2]
[1]Royal National Orthopaedic Hospital, Stanmore, United Kingdom. [2]University College London, London, United Kingdom. [3] St. Franziskus-Hospital GmbH, Köln, Germany

CA.9.S5-O5 A Pre-Operative Planning Tool for Patient Specific Guide Stability Assessment: An Experimental Validation.
Joshua W. Giles[1], Adriel Ellis[2], Erik Bedard[2], Megan Parmar[2], Rebecca Reeves[2]
[1]University of Victoria, Victoria, Canada. [2]Orthopaedic Technologies and Biomechanics Lab, University of Victoria Orthopaedic Technologies and Biomechanics Lab, University of Victoria, Victoria, Canada

CA.9.S5-O6 Identifying Mini-Plate Configurations with High Predicted Bone Union Propensity for Mandibular Reconstruction Surgery.
Merlin W. Bettin[1], Hamidreza Aftabi[2], John E Lloyd[2], Eitan Prisman[3], Sidney Fels[2], Antony Hodgson[1]
[1]Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada. [2]Department of Electrical and Computer Engineering, University of British Columbia, Vancouver, Canada. [3]Department of Surgery, University of British Columbia, Vancouver, Canada

CA.9.S5-O7 Systematic Rule-Based Regional Radiologic Classification of Traumatic Pelvic Ring Fractures: An Observer Variability Study.

Roey Ben Yosef[1], Leo Joskowicz[2], Yoram Weil[3], Rami Mosheiff[3], Meir Liebergall[3], Alona Katzir[3]

[1]Hebrew University of Jerusalem, Jerusalem, Israel. [2]School of Computer Science and Engineering, The Hebrew University of Jerusalem, Jerusalem, Israel. [3]Dept of Orthopedics, Hadassah University Medical Center, Jerusalem, Israel

CA.9.S5-O8 Can we Predict Robotic-Assisted Surgical Plans in Total Knee Arthroplasty? A Machine Learning Story

Alexander Orsi[1], Christopher Plaskos[2], Jim Pierrepont[1]

[1]Corin, Boston, USA. [2]Corin

CA.9.S5-O9 A structured framework for standardized 3D leg alignment analysis: an international Delphi consensus study.

Quinten W.T. Veerman[1,2], Gabrielle J.M. Tuijthof[2], Nico Verdonschot[2,3], Reinoud W. Brouwer[4], Peter Verdonk[5,6], Annemieke van Haver[7], Hugo C. van der Veen[8], Peter A.J. Pijpker[8], Judith olde Heuvel[1], Roy A.G. Hoogeslag[1]

[1]Centre for Orthopaedic Surgery and Sports Medicine OCON, Hengelo, Netherlands. [2]University of Twente, Enschede, Netherlands. [3]Radboud University Medical Center, Nijmegen, Netherlands. [4]Martini Hospital Groningen, Groningen, Netherlands. [5]ORTHOCA Orthopaedic center, AZ Monica Hospital; Antwerp University Hospital, Antwerpen, Belgium. [6]Antwerp University Hospital, Antwerpen, Belgium. [7]Monica Orthopaedic Research Institute, Antwerpen, Belgium. [8]University Medical Center Groningen, Groningen, Netherlands

EO.2.S5 - STEM CELLS
Joint preservation from basic science, cell therapy, and techniques to delay collapse.

11:15 - 12:40 Tuesday, 17th June, 2025

Chair: Philippe Hernigou, Sophie Verrier

EO.2.S5-K21 Cell therapy in osteonecrosis: How can we target and improve the number of cells for better clinical results?

Philippe Hernigou

University of Paris East, Paris, France

EO.2.S5-K22 Future Treatments for Osteonecrosis: From Bedside to Bench.

Stuart B. Goodman

Orthopaedic Research Laboratories, Stanford University, Stanford, CA, USA

EO.2.S5-O1 Revival by adipose, from bone prefabrication to treatment of osteonecrosis.
Arnaud Scherberich
Department of Biomedicine, University of Basel, Basel, Switzerland

EO.2.S5-O2 3D Printed Bioactive Implant for Enhanced Bone Regeneration.
Yunzhi Peter Yang
Stanford University, Palo Alto, USA

EO.2.S5-O3 Autologous cells for bone (neo)-vascularization.
Sophie Verrier
AO Research Institute Davos, Davos, Switzerland

EO.3.S5 - BIOMECHANICS/CLINICAL
Innovative surgical treatment of complex fractures: from biomechanical research to clinical practice

11:15 - 12:40 Tuesday, 17th June, 2025
Chair: Dian Enchev, Yavor Pukalski

EO.3.S5-K23 Augmentation with frozen fibular graft in problematic distal femoral fractures and nonunions.
Dian Enchev[1], Orlin Malouchev[2], Nikola Grivov[1], Mihail Rashkov[3], Borislav Tasev[1]
[1]First Orthopaedic and Trauma Clinic, University Multiprofile Hospital for Active Treatment and Emergency Medicine 'N. I. Pirogov', Sofia, Bulgaria. [2]Klinikum Ingolstadt, Ingolstadt, Germany. [3]Second Orthopaedic and Trauma Clinic, University Multiprofile Hospital for Active Treatment and Emergency Medicine 'N. I. Pirogov', Sofia, Bulgaria

EO.3.S5-O1 Intramedullary allograft augmentation of plated unstable proximal humerus fractures - biomechanical and clinical findings.
Lyubomir Rusimov[1,2], Asen Baltov[1], Mihail Rashkov[1], Dian Enchev[1], Boyko Gueorguiev[2], Ivan Zderic[2], Daniel Ciric[2], Geoff Richards[2], Jan Barcik[2], Vladimir Rusimov[3], Krasimira Prodanova[4], Mariya Hadzhinikolova[1]
[1]UMHATEM "N. I. Pirogov", Sofia, Bulgaria. [2]AO Research Institute, Davos, Switzerland. [3]MBAL "Vita", Sofia, Bulgaria. [4]Technical University, Sofia, Bulgaria

EO.3.S5-O2 Role of TEN precontouring in pediatric diaphyseal forearm fracture fixation - from research to clinical practice.
Yavor B Pukalski[1,2], Boyko Gueorguiev-Rüegg[2], Dian Enchev[1], Florian Schmidutz[3], Asen Baltov[1], Mihail Rashkov[1], Geoff Richards[2], Ivan Zderic[2], Parvan Yanev[1], Christoph Sprecher[2]
[1]UMHATEM "N. I. Pirogov", Sofia, Bulgaria. [2]ARI, Davos, Switzerland. [3]Berufsgenossenschaftliche Unfallklinik, Tubingen, Germany

EO.3.S5-O3 Biomechanical and clinical benefits of PMMA augmentation of posttraumatic void by plating of unstable proximal humeral fractures.

Daniel Zhelev Zhelev[1,2,3], Stoyan Zhelyazkov Hristov[1,2], Ivan Zderic[3], Asen Baltov[4], Geoff Richards3, Stoyan Ivanov[5], Karl Stoffel[6], Boyko Gueorguiev[3]

[1]University Hospital for Active Treatment, Burgas, Bulgaria. [2]Prof. Dr. Assen Zlatarov University, Burgas, Bulgaria. [3]AO Research Institute, Davos, Switzerland. [4]University Multiprofile Hospital for Active Treatment and Emergency Medicine 'N. I. Pirogov', Sofia, Bulgaria. [5]Medical University Varna, Varna, Bulgaria. [6]University Hospital Basel, Basel, Switzerland

EO.3.S5-O4 Percutaneous fixation of intraarticular joint-depression calcaneal fractures with different screw configurations – biomechanical and clinical significance.

Stoyan Ivanov[1], Aleksandar Stefanov[2], Ivan Zderic[3], Boyko Gueorguiev[3]

[1]Medical University of Varna, Varna, Bulgaria. [2]University Multiprofile Hospital for Active Treatment and Emergency Medicine' N. I. Pirogov', Sofia, Bulgaria. [3]AO Research Institute Davos, Davos, Switzerland

EO.3.S5-O5 Ligamentous Lisfranc: From biomechanical study to clinical results.

Preslav Penev[1], Kristian Ivanov[1], Boyko Gueorguiev[2], Kajetan Klos[3]

[1]Department of Orthopaedics and Traumatology, Medical University Varna, Varna, Bulgaria. [2]AO Research Institute Davos, Davos, Switzerland. [3]Meliva Gelenkzentrum Rhein-Main, Hochheim, Germany

EO.3.S5-O6 Externalized locked plating with monitoring of fracture healing progression using an implant load sensor in combination with ground reaction force measurements - a clinical case series.

Biser Makelov[1], Manuela Ernst[2], Boyko Gueorguiev[2], R. Geoff Richards[2]

[1]University Multiprofile Hospital for Active Treatment, Trakia University, Stara Zagora, Bulgaria. [2]AO Research Institute Davos, Davos, Switzerland

EO.3.S5-O7 Structural and Molecular Differences in the Epiligament of the ACL and MCL: Insights into Their Divergent Healing Capacities.

Lyubomir Gaydarski[1], Boycho Landzhov[1], Boyko Gueorguiev[2], Georgi P. Georgiev[3]

[1]Department of Anatomy, Histology, and Embryology, Medical University of Sofia, Sofia, Bulgaria. [2]AO Research Institute Davos, Davos, Swaziland. [3]Department of Orthopaedics and Traumatology, University Hospital Queen Giovanna-ISUL, Medical University Sofia, Sofia, Bulgaria

EO.4.S5 – SPINE
Spine of the Future: Advancing therapeutic discovery through innovative models.

11:15 - 12:40 Tuesday, 17th June, 2025

Chair: Jerome Guicheux, Matteo D'Este

EO.4.S5-K24 Living lab discs: transforming intervertebral disc research with ex vivo culture models.

Graciosa Quelhas Teixeira

Institute of Orthopaedic Research and Biomechanics, Ulm University Hospital, Ulm, Germany

EO.4.S5-O1 Antibiotic-loaded hyaluronic acid-tyramine hydrogel for annulus fibrosus repair in microdiscectomy with infected herniated discs.

Danilo Menghini[1,2,3,4,5], Oliver Distler[4], Mazda Farshad[1], Sibylle Grad[2,3], Matteo D'Este[3], Thomas Fintan Moriarty[3], Jess Gerrit Snedeker[1,2], Stefan Dudli[4,5]

[1]Department of Orthopedics, Balgrist University Hospital, University of Zürich, Zürich, Switzerland. [2]Institute for Biomechanics, EHT Zürich, Zürich, Switzerland. [3]AO Research Institute Davos, Davos Platz, Switzerland. [4]Center of Experimental Rheumatology, Department of Rheumatology, University Hospital Zürich, University of Zürich, Zürich, Switzerland. [5]Department of Physical Medicine and Rheumatology, Balgrist University Hospital, Balgrist Campus, University of Zürich, Zürich, Switzerland

EO.4.S5-O2 Mesenchymal Stromal Cell Spheroid-Loaded Microscaffolds for Intervertebral Disc Repair: Evaluation in a Comprehensive Ex Vivo Degeneration Model

Marcia Muerner[1,2], Junxuan Ma[1], Rathina Vel Balasubramanian[3,4], Chencheng Feng[1], Julia Fernández-Pére[3,4], Aleksandr Ovsianikov[3,4], Sibylle Grad[1,2]

[1]AO Research Institute Davos, Davos, Switzerland. [2]Federal Institute of Technology Zurich, Zurich, Switzerland. [3]Technische Universität Wien, Vienna, Austria. [4]Austrian Cluster for Tissue Regeneration, Vienna, Austria

EO.4.S5-O3 Streptavidin-Modified Hydrogels Enable Staged Drug Delivery for Annulus Fibrosus Repair.

Emily E Sharp[1], Lorielle G Laforest[1], Yuqi Zhang[1], Karen L Xu[1], Jason A Burdick[2], Sarah E Gullbrand[1], Robert L Mauck[1]

[1]University of Pennsylvania, Philadelphia, USA. [2]University of Colorado, Boulder, USA

EO.4.S5-O4 Selenium-SelK-GPX4 axis protects nucleus pulposus cells against mechanical overloading-induced ferroptosis and attenuates senescence of intervertebral disc.

Yuan Gao, Yuhua Li

Qilu Hospital of Shandong University, Jinan, China

EO.4.S5-O5 Contribution of norepinephrine and the ageing sympathetic nervous system to spine degeneration.
Matteo Signor, Carsten Graumann, Gundula Roesch, Panagiotis Diaremes, Giulio Gatto, Frank Zaucke, Zsuzsa Jenei-Lanzl
Dr. Rolf M. Schwiete Research Unit for Osteoarthritis, Department of Trauma Surgery and Orthopedics, University Hospital Frankfurt, Goethe University, Frankfurt am Main, Germany, Frankfurt am Main, Germany

EO.5.S5 – INFECTION
Fracture related Infection - a clinical perspective

11:15 - 12:40 Tuesday, 17th June, 2025
Chair: Rik Osinga, Mario Morgenstern

EO.5.S5-K25 Are all fracture-related infections the same?
Mario Morgenstern
Centre for Musculoskeletal Infections Department of Orthopaedic and Trauma Surgery, Basel, Switzerland

EO.5.S5-KN26 Soft tissue reconstruction.
Rik Osinga
Centre of Musculoskeletal Infections, Basel, Switzerland

EO.5.S5-KN27 Fracture-related infection and the complexity of bone defect reconstruction.
WJ Metsemakers[1,2], Mario Morgenstern[3]
[1]University Hospitals Leuven, Leuven, Belgium. [2]2. Department of Development and Regeneration, Leuven, Switzerland. [3]Centre for Musculoskeletal Infections Department of Orthopaedic and Trauma Surgery, Basel, Switzerland

EO.5.S5-O1 One-Stage Revision for Chronic Periprosthetic Joint Infection Following Total Hip Arthroplasty Using 3D-Printed Porous Tantalum Prosthesis Loaded with Vancomycin.
Dewei Zhao[1], Jiawei Ying[1], Liangliang Cheng[2]
[1]Affiliated Zhongshan Hospital Of Dalian University, Dalian, China. [2]Affiliated Zhongshan Hospital of Dalian University, dalian, China

EO.5.S5-O2 The 'silent' fracture related infection - Can F-18 (FDG) fluoro deoxy glucose - positron emission tomography-computed tomography (PET CT) scan aid in diagnosis?
Jagdish Menon, Mariappan K, Gopishankar Balaji, Dhanpathi Halanaik
JIPMER, Pondicherry, India

EO.6.S5 – CLINICAL
Harmonised Approach to Early Feasibility Studies for Medical Devices in the European Union

11:15 - 12:40 Tuesday, 17th June, 2025

Chair: Alexandra Poulsson, Marta Kerstan-Huber

EO.6.S5-O1 Improvement through Innovation - How much evidence do you need to adopt?

Thomas M Randau

Cellitinnen-Severinsklösterchen Krankenhaus der Augustinerinnen, Köln, Germany

EO.6.S5-O2 Clinical evidence generation for high-risk medical devices under MDR

Ana Matos Machado

Tuv Sud, Porto, Portugal

EO.6.S5-O3 The patient perspective: Involvement of patients in translational research and clinical investigations.

Marta Bragagnolo[1], Yasemin Zeisl[2], Claudia Louati[2], Estefania Callejas de Luca[2]

[1]Global Heart Hub, Galway, Ireland. [2]European Patients' Forum, Brussels, Belgium

EO.6.S5-O4 Harmonised Approach to Early Feasibility Studies for Medical Devices in the European Union.

Alexandra H. C. Poulsson[1], Marta Kerstan-Huber[2]

[1]Norwegian Institute of Public Health, Oslo, Norway. [2]Synthes GmbH, Johnson & Johnson MedTech, Zuchwil, Switzerland

EO.6.S5-O5 Clinical evidence generation for high-risk orthopaedic medical devices under MDR.

Susan Partridge

BSI, Milton Keynes, United Kingdom

EO.6.S5-O6 Importance of Early Feasibility Studies from an investors point of view.

Roland Herzog

AO Foundation, Davos, Switzerland

EO.6.S5-O7 Early Clinical Investigations for Digital Health Technologies

Sebastian Kuhn

Philipps-Universität Marburg & Universitätsklinikum Gießen und Marburg GmbH (UKGM), Marburg, Germany

AR.8.S4 - Transformative orthopaedic research: a spectrum of innovations

11:15 - 12:40 Tuesday, 17th June, 2025

Chair: Gerjo van Osch, Alessandro Cianciosi

AR.8.S4-K6 Biofabrication Approaches for the Generation of Small Diameter Vascular Grafts.

Tomasz T Jüngst

University of Würzburg, Würzburg, Germany

AR.8.S4-K7 Biofabrication of complex tissues for bone regeneration via bioprinting

Maria Chatzinikolaidou

University of Crete, Heraklion, Greece

AR.8.S4-O1 Regional transcriptional and proteomic characterisation of human meniscus informs parameters for generation of 3D bioprinted meniscus analogues.

Grace McDermott[1], Fraser Shields[1], Bilal Barkatali[2], Marco Domingos[1], Stephen M Richardson[1]

[1]University of Manchester, Manchester, United Kingdom. [2]The Knee Clinic, Manchester, United Kingdom

AR.8.S4-O2 Custom 3D-Printed Intramedullary Nails: A Novel Preclinical Model for Addressing Critical-Sized Bone Defects.

Julie Manon[1], Alexandre Englebert[1], Robin Evrard[1], Julia Vettese[1], Thomas Schubert[2], Olivier Cornu[2]

[1]UCLouvain, Brussels, Belgium. [2]Cliniques Universitaires Saint-Luc, Brussels, Belgium

AR.8.S4-O3 4-D bioprinting of vascularised and innervated tissue engineered bone for repairing large segmental bone defects.

Wilson LI[1,2,3,4], Chengtie WU[5,6]

[1]Queen Elizabeth Hospital, Hong Kong, Hong Kong. [2]JST Hospital National Orthopaedic Science Centre, Beijing, China. [3]The Chinese University of Hong Kong, Hong Kong, China. [4]The University of Hong Kong, Hong Kong, China. [5]University of Chinese Academy of Sciences, Beijing, China. [6]Shanghai Institute of Ceramics,Chinese Academy of Sciences, Shanghai, China

CA.9.S6 - Session 13: Patient-Specific Treatment & Personalized Health

11:15 - 12:25 Tuesday, 17th June, 2025

Chair: Eric Stindel and *Joshua W Giles*

CA.9.S6-KN2 Driven by Innovation - Developments in CAS.

Rainer Birkenbach

Brainlab, Bavaria, Germany

CA.9.S6-O1 Utility of muscle cross-sectional area in screening whole-body skeletal muscle mass loss.

Sotaro Kono[1], Keisuke Uemura[1], Mazen Soufi[2], Ryo Higuchi[1], Hirokazu Mae[1], Kazuma Takashima[1]

[1]Osaka University Graduate School of Medicine, Japan. [2]Nara Institute of Science and Technology, Japan

CA.9.S6-O2 Computational Modelling Shows a Clinically Significant Difference Between the Internal and External Proximal Femoral Canal Shape.

Johann Henckel[1], Angelika Ramesh[2], Anna Di Laura[1], Sara De Angelis[2], Alister Hart[2]

[1]Royal National Orthopaedic Hospital, London, United Kingdom. [2]University College London, London, United Kingdom

CA.9.S6-O3 Targeting Functional Deficits: Associations Between Distal Femur Morphology and Passive and Dynamic Frontal Plane Knee Kinematics in Arthroplasty Patients for Personalized Robotic Surgery.

Nadim Ammoury[1], Stephanie Civiero[1], Lloyd Roffe[1], Ispeeta Ahmed[2], Michael Dunbar[1], Jennifer Leighton[3], David Wilson[1], Glen Richardson[3], Janie Astephen Wilson[2]

[1]Dalhousie University, Nova Scotia Health Authorities, Nova Scotia, Canada. [2]Dalhousie University, Nova Scotia, Canada. [3]Nova Scotia Health Authorities, Nova Scotia, Canada

CA.9.S6-O4 Impact of the Individual Femoral Degree of Freedom on the Restoration of the Trochlea – A Sensitivity Analysis.

Laurent Angibaud[1], Prudhvi Tej Chinimilli[1], Leonard Duporte[2], Faustine Nogaret[2], Scott Gulbransen[1], Gerard Giordano[3], Louis Dagneaux[2]

[1]Exactech, Florida, USA. [2]Montpellier University Hospital, Montpellier, France. [3]Joseph Ducuing Hospital, Toulouse, France

CA.9.S6-O5 Predicting CT-based Coronal Plane Knee Phenotype Parameters using Imageless Navigation and Machine Learning.

Alexander Orsi[1], Christopher Plaskos[1], Brett Fritsch[2]

[1]Corin, Boston, USA. [2]Sydney Orthopaedic Research Institute, Sydney, Australia

CA.9.S6-O6 Evaluating the impact of robotic assisted personalized alignment in TKA on coronal plane alignment and associated functional outcomes.

Mark Maher, Sujith Sidharthan, Dinesh Nathwani

Imperial College Healthcare NHS Trust, London, United Kingdom

CA.9.S7 - Session 14: Artificial Intelligence in Orthopaedics

13:30 - 15:00 Tuesday, 17th June, 2025

Chair: *Jasper Gerbers*

CA.9.S7-O1 Application of Unsupervised Machine Learning to Classify Dynamic Knee Alignment in Total Knee Arthroplasty Using a Computer Assisted Orthopaedic Surgery System.

Laurent Angibaud[1], Prudhvi Tej Chinimilli[1], Amaury Jung[2], James Huddleston[3]

[1]Exactech, Florida, USA. [2]Blue Ortho. [3]Stanford Medical Center, California, USA

CA.9.S7-O2 Automatic Classification of Traumatic Pelvic Ring Fractures Based On a Rule-Based Regional Radiologic Classification Method.

Roey Ben Yosef[1], Alona Katzir[2], Yoram Weil[3], Rami Mosheiff[2], Meir Liebergall[2], Leo Joskowicz[1]

[1]School of Computer Science and Engineering, The Hebrew University of Jerusalem, Jerusalem, Israel. [2]Dept of Orthopedics, Hadassah University Medical Center, Jerusalem, Israel. [3]Dept of Orthopedics, Hadassah University Medical Center,, Jerusalem, Israel

CA.9.S7-O3 Multi-Anatomy Simulations with Graph Neural Network

Xintian Yuan[1,2], Yunke Ao[1,3,2], Boqi Chen[3,2], Fabio Carrillo[4], Philipp Fürnstahl[1]

[1]ROCS Balgrist University Hospital, Zurich, Switzerland. [2]ETH Zurich, Zurich, Switzerland. [3]ETH AI Center, Zurich, Switzerland. [4]ROCS OR-X Balgrist University Hospital, Zurich, Switzerland

CA.9.S7-O4 From Unlabeled Data to Clinical Applications: Foundation Models in Medical Imaging.

Joshua Scheuplein[1], Maximilian Rohleder[1], Björn Kreher[1], Andreas Maier[2]

[1]Siemens Healthineers AG, Forchheim, Germany. [2]Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

CA.9.S7-O5 Use of Regression and Machine Learning to Predict Spinopelvic Mobility 1 Year after Total Hip Arthroplasty

Linden Bromwich[1], Christopher Plaskos[2], Jim Pierrepont[1], Michael O'Sullivan[3], Andrew Shimmin[4], Jonathan Baré[4], Stephen McMahon[5]

[1]Corin, New South Wales, Australia. [2]Corin. [3]North Sydney Orthopaedic Research Group, Syndey, Australia. [4]Melbourne Orthopaedic Group, Melbourne, Australia. [5]Malabar Orthopaedic Clinic,, Melbourne, Australia

CA.9.S7-O6 Expert Validation of CT-Based Machine Learning Model for Segmentation and Quantification of Deltoid Muscles for Shoulder Arthroplasty.

Hamidreza Rajabzadeh-Oghaz[1], Josie Elwell[1], François Boux de Casson[2], Sandrine Polakovic[2], Ashish Singh[1], Rakesh Raushen[3]

[1]Exactech. [2]BlueOrtho. [3]

CA.9.S7-O7 Anatomical Shoulder Construction Conformity Evaluation, Based on Deep Learning Uncertainty Estimation.
Clément Daviller, Sonya Ndomkeu Tchato, François Boux de Casson, Lhoussein Axel Mabrouk, Fabrice Bertrand
Blue-Ortho an Exactech, France

CA.9.S7-O8 Machine learning-based automatic implant size prediction for total knee arthroplasty using bone dimensions.
Sandeep Katragadda, Kevin de Souza
Stryker, United Kingdom

CA.9.S7-O9 Quantifying Segmentation Uncertainty to Evaluate the Quality of ML Generated Deltoid Masks in Shoulder Arthroplasty Patients.
Hamidreza Rajabzadeh-Oghaz, Ashish Singh, Likitha y Shett, Josie Elwell
Exactech

CA.9.S8 - Session 15: Education & Training

15:30 - 17:00 Tuesday, 17th June, 2025
Chair: Jan Buschbaum, Paul Jutte

CA.9.S8-O1 Early Learning Curve in Robotic-Assisted Total Knee Arthroplasty.
David Putzer[1], Michael Liebensteiner[2], Martin Thaler[3], Michael Nogler[1]
[1]Medical University Innsbruck, Experimental Orthopaedics, Innsbruck, Austria. [2]Orthopädie f. Hüfte, Knie & Fuß im Zentrum, Innsbruck, Austria. [3]Helios Klinikum, Arthroplasty Center Munich West, Munich, Germany

CA.9.S8-O2 Enhancing Orthopedic Surgical Training With Interactive Photorealistic 3D Visualization.
Roni Lekar[1], Tatiana Gerth[1], Sergey Prokudin[2], Matthias Seibold[3], Reto Bürgin[1], Benjamin Vella[4], Armando Hoch[3], Siyu Tang[2], Philipp Fürnstahl[3], Helmut Grabner[1]
[1]Zurich University of Applied Sciences, Zurich, Switzerland. [2]ETH Zurich, Zurich, Switzerland. [3]Balgrist University Hospital, Zurich, Switzerland. [4]University of Zurich, Zurich, Switzerland

CA.9.S8-O3 Effect of Simulator Fidelity on Trainee Satisfaction and Skill Acquisition in Arthroscopic Surgery Training for novices: A Randomized Controlled Trial.
Tatsuhiko Kutsuna, Tomofumi Kinoshita, Kunihiko Watamori, Takashi Tsuda, Shintaro Yamaoka, Masaki Takao
Department of Orthopaedic Surgery, Ehime University Graduate School of Medicine, Ehime, Japan

CA.9.S8-O4 Evolving simulation-based education in trauma care: a user-perspective on implementation requirements.

Andreas Arnegger[1], Frank Niemeyer[1], Thomas Mendel[2]

[1]OSORA medical GmbH, Ulm, Germany. [2]BG Clinic Bergmannstrost Halle, Halle, Germany

CA.9.S8-O5 AO's novel digital enhanced hands-on surgical training (dehst) technology improves the skills level of novices in distal intramedullary nail interlocking.

Jan Buschbaum[1], Tatjana Pastor[2], Daniel Ciric[1], Carla Hetreau[1], Boyko Gueorguiev[1], Torsten Pastor[3,4]

[1]AO Research Institute Davos, Davos, Switzerland. [2]Department of Traumatology and Orthopaedics, Bürgerspital Solothurn, Solothurn, Switzerland. [3]Lucerne Cantonal Hospital, Lucerne, Switzerland. [4]Medical Faculty, University of Zurich, Zurich, Switzerland

CA.9.S8-O6 Impact of Virtual Reality-Based Preoperative Planning on the Comprehension of Orthopedic Surgery Residents in Trauma Surgeries.

Haruki Fujikawa[1], Takushi Nakatani[2], Junichiro Morita[1], Ryunosuke Watanabe[1], Tomofumi Nishino[1], Yuichi Yoshii[1], Hajime Mishima[1]

[1]Department of orthopedic surgery, University of Tsukuba, Ibaraki, Japan. [2]Department of orthopedic surgery, Showa General Hospital, Tokyo, Japan

CA.9.S8-O7 Learning curves of robot-assisted pedicle screw fixations based on the cumulative sum test.

Qi Zhang[1,2], Ming-Xing Fan[1,2]

[1]Beijing Jishuitan Hospital, Beijing, China. [2]Capital Medical University, Peking, China

CA.9.S8-O8 8 Years of Shoulder Navigation, an Intra-Operative Performance Study

François Boux de Casson[1], Gabriella Ode[2], Ari R. Youderian[3], Bruno B. Gobbato[4], Alexandre Caubère[5], Amaury Jung[6], Clément Daviller[6]

[1]BlueOrtho. [2]HSS Sports Medicine Institute, Hospital for Special Surgery, New York, USA. [3]South County Orthopedic Specialists, Laguna Woods, California, USA. [4]Idomed University Jaragua, Department of Anatomy, Jaragua do Su, Brazil. [5]Hôpital National d'Instruction des Armées Sainte-Anne, Toulon, France. [6]Blue Ortho

PL-03 Implant associated infection - still a challenging problem

Britt Wildemann
Jena University Hospital, Jena, Germany
08:30 - 09:00 Wednesday, 18th June, 2025
Chair: Boyko Gueorguiev

EO.2.S6 - GUEST NATION: Meet the Editors

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Martin Stoddart, Ling Qin

EO.2.S6-K30.0 A Platform for Publishing Translational Research Work in JOT.
Ling QIN
The Chinese University of Hong Kong, Hong Kong SAR, China

EO.2.S6-KN31 Publishing in Biomaterials and Biosystems (Elsevier).
Dimitrios Zeugolis
UCD, Dublin, Ireland

EO.2.S6-KN32 Introduction of the journal Regenerative Biomaterials.
Jiandong Ding[1], Wanlu Zhao[2]
[1]Fudan University, Shanghai, China. [2]Sichuan University, Chengdu, China

EO.2.S6-KN33 Regulation of Cellular and Molecular Adaptation and Application in Medicine – Publish in Mechanobiology in Medicine (MBM) – Contents and Style.
Yixian Qin[1], Jie Zhao[2]
[1]Stony Brook University, Stony Brook, USA. [2]SHanghai JiaoTong University, Shanghai, China

EO.3.S6 – EDUCATION
Developing an Education Pipeline into Orthopaedics

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Gabriela Graziani, Jennifer Weiser

EO.3.S6-K34 Developing an Education Pipeline into Orthopaedics.
Jennifer R Weiser
The Cooper Union for the Advancement of Science and Art, New York City, USA

EO.3.S6-O1 Enhancing Postdoctoral Research with Mindful Teaching and Mentoring.
Christopher J Panebianco
University of Pennsylvania, Philadelphia, USA

EO.3.S6-O2 Using Exoskeletons to Inspire Undergraduate Research
Mili Shah
The Cooper Union for the Advancement of Science and Art, New York, USA

EO.3.S6-O3 The Cutting EDGE of Surgical Education: Training Orthopaedic Residents and Fellows.
Mitchell C. Weiser
Montefiore Einstein, Bronx, USA

EO.3.S6-O4 Cultivating an Entrepreneurial Mindset in Graduate-Level Tissue Engineering Education: Integrative Jigsaw Activities for Orthopaedic Applications.
Andrea J Vernengo
Rowan University, Glassboro, USA

EO.3.S6-O5 Outreach and Education: Communicating Science Through Art to the Public.
Gabriela Graziani
Politecnico di Milano, Milan, Italy

EO.3.S6-O6 Training with AO Digital Enhanced Hands-on Surgical Training (DEHST) improves the proficiency level of novices in distal intramedullary nail interlocking.
Jan Buschbaum[1], Tatjana Pastor[1,2], Daniel Ciric[1], Carla Hetreau[1], Boyko Gueorguiev[1], Torsten Pastor[1,3,4]
[1]AO Research Institute Davos, Davos, Switzerland. [2]Department of Traumatology and Orthopaedics, Bürgerspital Solothurn, Solothurn, Switzerland. [3]Department of Orthopaedic and Trauma Surgery, Lucerne Cantonal Hospital, Lucerne, Switzerland. [4]Medical Faculty, University of Zurich (UZH), Zurich, Switzerland

EO.4.S6 - PRE-CLINICAL
Bone defects: from bench to bedside

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Hans Pape, Peter V. Giannoudis

EO.4.S6-K35 Tailoring Cell-Material Interactions for Improving Bone Regeneration
Paolo Cinelli
University Hospital Zurich, Zurich, Switzerland

EO.4.S6-O1 Grafting in patients with critical size segmental bone defects.
Hans-Christoph Pape
Department of Trauma University Hospital Zurich, Zurich, Switzerland

EO.4.S6-O2 Bone defects: from bench to bedsite: Indications for topical addition of growth factors.

Peter V. Giannoudis
Academic Department of Trauma & Orthopaedic Surgery, School of Medicine, University of Leeds, Leeds, United Kingdom

EO.4.S6-O3 Osteochondral autograft from the proximal tibiofibular joint for reconstruction of acute tibial plateau fractures with severe chondral defects

Abhinav Nalluri[1], Adam Schlauch[2], Pierre Tamer[2], Alejandro Cortes[2], Brian Farrell[1]
[1]Kaiser Oakland Medical Center, Oakland, USA. [2]San Francisco Orthopaedic Residency Program - St. Mary's, San Francisco, USA

EO.4.S6-O4 Restoration of Proximal Femur: AGN1 as a Void Filler.

Sheip S. Panev, Christian B. Frank
Kantonsspital Baselland Bruderholz, Bruderholz, Switzerland

EO.4.S6-O5 Development and preclinical validation of a synthetic graft for hip acetabular labrum reconstruction.

Enrico Tassinari[1], Mauro Petretta[2], Giorgia Borciani[1], Luca Cristofolini[3], Eleonora Olivotto[1]
[1]IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy. [2]RegenHu, Villaz-St-Pierre, Switzerland. [3]Alma Mater Studiorum-University of Bologna, Bologna, Italy

EO.4.S6-O6 Multiscale in silico models of fracture healing: providing an integrative framework to understand the influences of defect size, sex-differences and inflammation

Laura Lafuente-Gracia[1,2], Mojtaba Barzegari[3], Aurélie Carlier[4], Liesbet Geris[1,2,5]
[1]Biomechanics section, Department of Mechanical engineering, KU Leuven, Leuven, Belgium. [2]Prometheus: Division of Skeletal Tissue Engineering, KU Leuven, Leuven, Belgium. [3]Electrochemical Materials and Systems, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, Eindhoven, Netherlands. [4]Department cBITE, MERLN Institute, Maastricht University, Maastricht, Netherlands. [5]Biomechanics research unit, GIGA in silico medicine, University of Liège, Liège, Belgium

EO.5.S6 – BONE
Cell-Tissue Crosstalk in Bone Regeneration.

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Richard Stange, Annemarie Lang

EO.5.S6-K36 Fractured bone cross talks with the immune system and other organs via miRNAs.

Martijn van Griensven
Dept. cBITE, MERLN, Maastricht University, Maastricht, Netherlands

EO.5.S6-O1 Mental health and bone regeneration.
Melanie Haffner-Luntzer
University Medical Center Ulm, Ulm, Germany

EO.5.S6-O2 Impact of Angiogenesis on Bone Regeneration.
Richard Stange
Department of Regenerative Musculoskeletal Medicine, University Hospital Münster, Münster, Germany

EO.5.S6-O3 Neuronal Control of Bone Regeneration.
Johannes Keller
Department of Trauma and Orthopedic Surgery, Hamburg, Germany

EO.5.S6-O4 The Interplay Between Erythropoiesis and Bone Fracture Repair.
Annemarie Lang[1], Joel D. Boerckel[2]
[1]University of Michigan, Ann Arbor, USA. [2]University of Pennsylvania, Philadelphia, USA

EO.5.S6-O5 Spatial transcriptomics approaches to study mechanobiology and tissue crosstalk during fracture healing.
Esther Wehrle
AO Research Institute Davos, Davos Platz, Switzerland

EO.5.S6-O6 Unraveling the lymph node–bone axis: How immune crosstalk shapes fracture healing.
Ann-Kathrin Meß, Christian H Bucher, Georg N Duda, Katharina Schmidt-Bleek
Julius Wolff Institute - BIH at Charité, Berlin, Germany

EO.6.S6 – OSTEOARTHRITIS
The NetwOArk - Building an open European Network on OsteoArthritis research

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Sylvia Nürnberger, Valentina Basoli

EO.6.S6-K37 The NetwOArk – Midterm of an exciting initiative in Osteoarthritis
Sylvia Nurnberger[1,2], NetwOArk WG1, WG2, WG3, WG4[3]
[1]Department for Orthopedics and Trauma Surgery, Vienna, Austria. [2]NetwOArk, CA21110, Belgium. [3]COST, Brussles, Belgium

EO.6.S6-O1 The Patient Council – the first year of uniting European patient organizations
Corné Baatenburg de Jong
ReumaNederland, Amsterdam, Netherlands

EO.6.S6-O2 Engaging Research, Industry and Patients – Summary of the First NetwOArk Symposium: Integrated Care Management in Osteoarthritis

Ali Mobasheri

University of Oulu, Oulu, Finland. State Research Institute Centre for Innovative Medicine, Vilnius, Lithuania. Sun Yat-sen University, Guangzhou, China. Université de Liège, Liège, Belgium. 5. NetwOArk COST Action 21110, Brussels, Belgium

EO.6.S6-O3 Towards Stratification in Osteoarthritis: Combining clinical phenotypes with molecular endotypes

Girish Pattappa[1], Niclas G Karlsson[2], Bibiane Steinecker-Frohnwieser[3], Ali Mobasheri[4,5], Eiva Bernotiene[6], Frank Zaucke[7], Gundula Roesch[7], Ilona Uzieliene[6], Ingrid Meulenbelt[8], Jaqueline Lourdes Rios[9], Maria Kazakova[10], Marie-Astrid Boutet[11], Mona Dvir-Ginzberg[12], Valerija Groma[13], Zsuzsa Jenei-Lanzl[7], Yves Henrotin[14], Zhen Li[15], Gabriel Gijon-Nogueron[16], Peter Balint2[17], Anastas Batalov[18], Predrag Ostojic[19], Nico Sollmann[20], Marienke van Middelkoop[21], Rintje Agricola[21], Josefine E Naili[22], Darko Milovanovic[23], Stanislava Popova[24], Rositsa Karalilova[25], Sylvia Nürnberger[26], Cecilia Aulin[27]

[1]Orthopaedic Hospital König Ludwig Haus, Julius-Maximilians-University Würzburg, Wurzburg, Germany. [2]Oslo Metropolitan University, Oslo, Norway. [3]Ludwig Boltzmann Institute for Arthritis and Rehabilitation, Groebming, Austria. [4]Research Unit of Health Sciences and Technology, Faculty of Medicine, University of Oulu, Oulu, Finland. [5]State Research Institute Centre for Innovative Medicine, Vilnius, Lithuania. [6]State Research Institute Innovative Medicine Centre, Vilnius, Lithuania. [7]Goethe University Frankfurt, Frankfurt, Germany. [8]Leiden University Medical Center, Leiden, Netherlands. [9]University Medical Center Utrecht, Utrecht, Netherlands. [10]Medical University-Plovdiv, Plovdiv, Bulgaria. [11]Nantes Université, Oniris, INSERM, Nantes, France. [12]Hebrew University of Jerusalem, Jerusalem, Israel. [13]Riga Stradins University, Riga, Latvia. [14]University of Liège, CHU-Sart-Tilman, Liège, Belgium. [15]17. AO Research Institute Davos, Davos, Switzerland. [16]University of Malaga, Malaga, Spain. [17]Semmelweis University, Budapest, Hungary. [18]University Hospital 'Kaspela', Plovdiv, Bulgaria. [19]School of Medicine, Belgrade, Serbia. [20]University Hospital Ulm, Ulm, Germany. [21]Erasmus MC Medical University Center, Rotterdam, Netherlands. [22]Department of Women and children's health, Karolinska Institutet, Stockholm, Sweden. [23]Clinical Center Serbia, Belgrade, Serbia. [24]Medical University of Plovdiv, Plovdiv, Bulgaria. [25]Medical University of Plovdiv, Clinic of Rheumatology, University General Hospital "Kaspela", Plovdiv, Bulgaria. [26]Medical University of Vienna, Vienna, Austria. [27]Department of Medicine, Rheumatology, Karolinska Institutet, Stockholm, Sweden

EO.6.S6-O4 Short-Term Scientific Missions (STSM) in COST Actions: Advancing Collaboration in NetwOArk (CA21110)

Valentina Basoli

Medical Additive Manufacturing Research Group (Swiss MAM), Department of Biomedical Engineering, University Basel, Basel, Switzerland

EO.6.S6-O5 mRNA-Loaded Self-Healing Injectable Hydrogel for Osteoarthritis Treatment: Handheld 3D Bioprinter-Enabled Pilot Study
Ayça Bal-Öztürk[1,2,3], Gülşah Torkay[1], Meltem Avci-Adali[4]
[1]Stem Cell and Tissue Engineering Application and Research Center (ISUKOK), Istinye University, Istanbul, Turkey. [2]Department of Stem Cell and Tissue Engineering, Institute of Health Sciences, Istinye University, Istanbul, Turkey. [3]Department of Analytical Chemistry, Faculty of Pharmacy, Istinye University, Istanbul, Turkey. [4]Department of Thoracic and Cardiovascular Surgery, University Hospital Tuebingen Tuebingen, Tubingen, Germany

EO.6.S6-O6 RNA-sequencing of chondrocytes isolated from the calcified cartilage layer of osteoarthritic osteochondral tissue
Andrea Schwab[1,2], Judith Veldman[1], Nicole Kops[1], Xander den Dekker[1], Kayleigh Hiscock[1], Wilfred van IJcken[1], Merve Sinram[3], Brigitta Stolze[3], Heiko Richter[3], Jessica Bertrand[2], Eric Farrell[1], Gerjo J.V.M. van Osch[1]
[1]Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands. [2]University Orthopaedic Clinic, Otto-von-Guericke-University Magdeburg, Medical Faculty, Magdeburg, Germany. [3]LLS ROWIAK LaserLabSolutions GmbH, Hannover, Germany

AR.8.S5 - The good and the bad progenitor cells: periosteum, bone, and cancer

09:10 - 10:40 Wednesday, 18th June, 2025
Chair: Chris Evans, Tiziano Serra

AR.8.S5-K8 Personalized Bone Regeneration: Bioactive Substitutes and Synthetic Periosteum
Elisabeth Engel
Institute for Bioengineering of Catalonia, Barcelona, Spain

AR.8.S5-K9 Bioprinting of complex skeletal implants
Carlos Mota
Maastricht University, Maastricht, Netherlands
AR.8.S5-O1 4D Bioprinted Cell-Laden Hydrogels with Gradient Crosslinking Density for Bone Tissue Engineering
Shangsi Chen[1,2], Boguang Yang[1], Liangbin Zhou[1,2], Rocky S. Tuan[1,2], Zhong Alan Li[1,2,3]
[1]Department of Biomedical Engineering, The Chinese University of Hong Kong, Hong Kong, China. [2]Center for Neuromusculoskeletal Restorative Medicine, Hong Kong, China.

[3]Peter Hung Pain Research Institute, The Chinese University of Hong Kong, Hong Kong, China

AR.8.S5-O2 Biomedical bone biofabrication approach for modelling bone cancer pathologies *in vitro*
Francisco Javier Verdugo, Jorge Roberto Toledo, Carlos Medina, Carolina Delgado
Universidad de Concepción, Concepción, Chile

AR.8.S5-O3 A multifunctional 3D-printed scaffold with therapeutic and regenerative potential for bone cancer therapy and tissue regeneration
Ashkan Bigham[1,2], Anna Mariano[1], Xiao Yang[3], Xingdong Zhang[3], Maria Grazia Raucci[1], Luigi Ambrosio[1]
[1]Institute of Polymers, Composites and Biomaterials, National Research Council of Italy (IPCB-CNR), Naples, Italy. [2]Department of Chemical, Materials and Production Engineering, University of Naples Federico II, Piazzale V. Tecchio 80, 80125, Naples, Italy. [3]National Engineering Research Center for Biomaterials, Sichuan University, Chengdu, China

CA.9.S9 - Session 19: Intraoperative 3D Imaging

09:10 - 10:45 Wednesday, 18th June, 2025
Chair: Antony J. Hodgson, Raffael Cintean

CA.9.S9 -KN3 The OP Innovation Center: Advancing Education for Surgical Technicians
Andrea Mizelli-Ojdanic
Clinical Engineering, Department Techni, Wien, Austria

CA.9.S9-O1 FAROS: Improving robotic spine surgery through multi-modal, non-visual sensing
Balgrist University Hospital, Zurich, Switzerland

CA.9.S9-O2 Semantic and Spatial Acoustic Sensing for Scene and Context Understanding in Orthopedic Interventions
Matthias Seibold
Balgrist University Hospital, Zurich, Switzerland

CA.9.S9-O3 Computer-Assisted Fluoroscopic Navigation Is Cost Effective Compared to Robotic-Assisted and Manual Surgery in Total Hip Arthroplasty
Jean-Baptiste Trouiller[1], Jenna Bernstein[2], Mina Kabiri[1], William Hamilton[3]
[1]Johnson & Johnson MedTech, Paris, France. [2]Connecticut Orthopaedics, Connecticut, USA. [3]Anderson Orthopedic Clinic, Virginia, USA

CA.9.S9-O4 X-Ray Based Approach to Assess the Femoral Torsion Intraoperatively
Björn Kreher[1], Benedict Swartman[2], Maxim Fikuart[2]
[1]Siemens Healthineers AG, Germany. [2]BG Klinik Ludwigshafen, Germany

CA.9.S9-O5 Comparison of intraoperative imaging between a fully motorized and a non-motorized mobile 3d c-arm on the lower extremity in trauma surgery
Luca Rübel, Benno Bullert, Paul Grützner, Sven Vetter
BG Klink Ludwigshafen, Ludwigshafen am Rhein, Germany

CA.9.S9-O6 Metal Artifact Avoidance: Improved CBCT Image Quality through Tilted C-Arm 3D Scans
Maximilian Rohleder[1], Joshua Scheuplein[1], Andreas Maier[2], Bjoern Kreher[1]
[1]Siemens Healhtineers AG. [2]Pattern Recognition Lab, Friedrich-Alexander-University, Germany

CA.9.S9-O7 Reliability of Optically Tracked 2D Ultrasound System is Comparable to Existing 3D Ultrasound Systems
Kexin Katie Chen[1], María José Bontá Suárez[1], Jakub Piwowarczyk[2], Emily Schaeffer[3], Kishore Mulpuri[3], Antony Hodgson[2]
[1]School of Biomedical Engineering, University of British Columbia, Canada. [2]Department of Mechanical Engineering, University of British Columbia, Canada. [3]Orthopaedic Surgery, British Columbia Children's Hospital, Vancouver, Canada

EO.2.S7 – BONE
Diabetic bone - new approaches to the understanding of the role of neuropathy on bone joint integrity and repair

11:15 - 12:40 Wednesday, 18th June, 2025
Chair: Peter Smitham, Sophie Verrier

EO.2.S7-K38 The Impact of Diabetic Peripheral Neuropathy on Bone and Joint Disease in Patients - Modern Treatment Options
Ines LH Reichert
King's College Hospital, London, United Kingdom

EO.2.S7-O1 Computational structural modelling to assess the effect of diabetes on bone microarchitecture and mechanical properties
Andrew T M Phillips
Imperial College London, London, United Kingdom

EO.2.S7-O2 Harnessing Digital Twins to Unravel Bone Fragility, Remodeling, and Mechanoregulation in Diabetes

Caitlyn Collins
ETH Zurich, Institute for Biomechanics, Zurich, Switzerland. Virginia Tech, Department of Biomedical Engineering and Mechanics, Blacksburg, Virginia, USA

EO.2.S7-O3 The role of peripheral nerves in bone remodelling and pain in diabetes
Chantal Chenu
Royal Veterinary College, LONDON, United Kingdom

EO.2.S7-O4 Insight into the interdependency of obesity/diabetes, bone healing capacity and immune response
Katharina Schmidt-Bleek, Georg N. Duda
Julius Wolff Institut, BIH at Charité - Univeresitätsmedizin Berlin, Berlin, Germany

EO.2.S7-O5 Biomechanical characterisation of diabetic bone and future directions with decellularised bone
Anthony G Herbert[1], Saudah Hafeji[1], Jennifer H Edwards[1], Vithanage N Wijayathunga[2]
[1]University of Leeds, Leeds, United Kingdom. [2]Institute of Medical and Biological Engineering, Leeds, United Kingdom

EO.3.S7 – CARTILAGE
Regenerative mechanobiology: bending the rules of musculoskeletal tissue engineering

11:15 - 12:40 Wednesday, 18th June, 2025
Chair: Riccardo Gottardi, Roberto Di Gesù

EO.3.S7-K39 Regenerative Engineering and rehabilitation in musculoskeletal injury and aging
Karina Nakayama
Oregon Health & Science University, Portland, USA

EO.3.S7-O1 Maternal exercise rescues fetal akinesia-impaired bone and joint development
Christopher J Panebianco[1], Yuming Huang[2], Nidal Khatib[3,2], Devin C Gottlieb[1], Nathaniel Dynment[1], Joel D Boerckel[1], Niamh C Nowlan[3]
[1]University of Pennsylvania, Philadelphia, USA. [2]Imperial College London, London, United Kingdom. [3]University College Dublin, Dublin, Ireland

EO.3.S7-O2 MicroRNAs as Mechanobiological Regulators and Biomarkers for Tendon Regeneration
Carlos Julio Peniche Silva[1], Elizabeth Rosado Balmayor[2], Martijn van Griensven[1]

[1]MERLN Institute for Technology-inspired Regenerative Medicine, Maastricht University, Maastricht, Netherlands. [2]Experimental Orthopaedics and Trauma Surgery, Department of Orthopaedic, Trauma, and Reconstructive Surgery, RWTH Aachen University Hospital, Aachen, Germany

EO.3.S7-O3 Regulating MSC fate under complex mechanical load
Martin J Stoddart
AO Research Institute Davos, Davos Platz, Switzerland

EO.3.S7-O4 tUnabLe smarT biomateRiAl for CARTilage REGENERAtion (ultracart regenera)
Roberto Di Gesù[1], Gaetano Burriesci[1,2], Francesco Lopresti[2], Francesca Romano[1], Sofia Di Leonardo[1], Vincenzo La Carrubba[2]
[1]Ri.MED foundation, Palermo, Italy. [2]University of Palermo, Palermo, Italy

EO.3.S7-O5 Synovial fluid alterations contribute to tribological imbalances in osteoarthritic cartilage
Luisa de Roy, Konstantin Ambros, Graciosa Quelhas Teixeira, Anita Ignatius, Andreas Martin Seitz
Institute of Orthopaedic Research and Biomechanics, Centre of Trauma Research Ulm, Ulm University Medical Center, Ulm, Germany

EO.3.S7-O6 Fat secreted complement factor d (adipsin) mediates knee pain post injury
Priscilla M Tjandra, Bethany A Andoko, Jooyoung A Kim, Darren Dumlao, Hope D Welhaven, Kelsey H Collins
University of California, San Francisco, San Francisco, USA

EO.4.S7 – OTHER
Computer-Assisted Planning and Navigation for Lower Limb Osteotomy

11:15 - 12:45 Wednesday, 18th June, 2025
Chair: John Rasmussen, Shima Gholinezhad

EO.4.S7-K40 From Planning to Navigation: A Decade of Progress in Computer-Assisted Lower Limb Deformity Correction
Philipp Fürnstahl
University Hospital Balgrist, Zurich, Switzerland. University of Zurich, Zurich, Switzerland

EO.4.S7-O1 3-D Models of Bones and Motions for Surgery and Digital Twins
John Rasmussen[1], Shima Gholinezhad[2,1], Søren Kold[2], Ole Rahbek[2]
[1]Aalborg University, Aalborg, Denmark. [2]Aalborg University Hospital, Aalborg, Denmark

EO.4.S7-O2 Why is There a Need to Enhance 3D Preoperative Planning?
Søren Kold, Shima Gholinezhad
Aalborg University Hospital, Aalborg, Denmark

EO.4.S7-O3 The Role of Personalized Pressure Modeling in Knee Osteotomy Planning
Aline Van Oevelen[1,2], Kate Duquesne[1,2], Arne Burssens[1], Amélie Chevalier[2], Gunther Steenackers[2], Emmanuel Audenaert[1,3,2]
[1]Ghent University, Ghent, Belgium. [2]University of Antwerp, Antwerp, Belgium. [3]Cambridge University, Cambridge, United Kingdom

EO.4.S7-O4 An novel Multi-axis Robot based Minimally Invasive Spherical Osteotomy System (MISOS) improves the accuracy and reproducibility of resulting surface
Qian Tang, Ruotao Liu, Zhenzhong Zhu
Shanghai Sixth People's Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China

EO.4.S7-O5 Patient-Specific 3D-Printed Guides for Central Physeal Bar Resection: Enhancing Precision and Outcomes in Pediatric Lower Extremity Surgery
Joachim Horn, Stefan Huhnstock
Section of Children's Orthopaedics and Reconstructive Surgery, Division of Orthopaedics, Oslo University Hospital, Oslo, Norway

EO.4.S7-O6 Surgical Navigation System for Periacetabular Osteotomy (PAO) in Hip Dysplasia
Zhenzhong Zhu[1], Qian Tang[1], Ruo-Tao Liu[1], Guoyan Zheng[2], Changqing Zhang[1]
[1]Shanghai Sixth People's Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China. [2]Institute of Medical Robotics, School of Biomedical Engineering, Shanghai, China

EO.4.S7-O7 Implementation of a 3D framework for clinical leg alignment analysis and correction osteotomy planning
Quinten Veerman[1,2], Gabriëlle J.M. Tuijthof[2], Nico Verdonschot[2,3], Judith olde Heuvel[1], Roy A.G. Hoogeslag[1]
[1]Centre for Orthopaedic Surgery and Sports Medicine OCON, Hengelo, Netherlands. [2]Department of Biomechanical Engineering, Faculty of Engineering Technology, University of Twente, Enschede, Netherlands. [3]Orthopaedic Research Laboratory, Radboud Institute for Health Sciences, Radboud University Medical Center, Nijmegen, Netherlands

EO.5.S7 – CLINICAL
Current challenges in the treatment of shoulder injuries

11:15 - 12:45 Wednesday, 18th June, 2025

Chair: Ivan Zderic, Boyko Gueorguiev

EO.5.S7-O1 Bony Increased Offset Reverse Shoulder Arthroplasty (BIO-RSA) Vs Metal Augments: A Systematic Review

Christos Georgios Dragonas[1], Saima Waseem[2], Anthony Kinnair[1], Dimitra Leivadiotou[3], Carlos Curtis Lopez[4]

[1]The Royal London Hospital, Barts Health Trust, London, United Kingdom. [2]Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [3]The Princess Alexandra Hospital NHS Trust, Harlow, United Kingdom. [4]The Royal London Hospital, London, United Kingdom

EO.5.S7-O2 Understanding Functional Internal Rotation Variability after Reverse Total Shoulder Arthroplasty through Muscle Activation Analysis: A pilot investigation

Line Ven[1], John Zunker[1,2], Lennart Scheys[1,3], Filip Verhaegen[1,3]

[1]Institute for Orthopaedic Research and Training (IORT), Faculty of Medicine, KU Leuven, Leuven, Belgium. [2]Department of Anesthesiology, University of Michigan, Ann Arbor, Michigan, USA. [3]Division of Orthopaedics, University Hospitals Leuven, Leuven, Belgium

EO.5.S7-O3 Bone Marrow Stimulation versus Decortication for Footprint Preparation in Arthroscopic Rotator Cuff Repair: A Randomized Clinical Trial

Zipeng Ye, Jinzhong Zhao

Shanghai Sixth People's Hospital, Shanghai, China

EO.5.S7-O4 Effects of Biceps Rerouting on In Vivo Glenohumeral Kinematics in the Treatment of Large-to-Massive Rotator Cuff Tears

Chenliang Wu, Jinzhong Zhao

Shanghai Sixth People's Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China

EO.5.S7-05 Helical plating of proximal humeral shaft fractures – anatomical and biomechanical considerations

Tatjana Pastor[1], Ivan Zderic[2], Frank J.P. Beeres[3], Dominic Gehweiler[2], Matthias Knobe[4], R. Geoff Richards[2], Boyko Gueorguiev[2], Torsten Pastor[3]

[1]Bürgerspital Solothurn, Solothurn, Switzerland. [2]AO Research Institute Davos, Davos, Switzerland. [3]Lucerne Cantonal Hospital, Lucerne, Switzerland. [4]St. Marien-Krankenhaus Ahaus-Vreden - Klinikum Westmünsterland, Ahaus, Germany

EO.5.S7-07 Augmented four-screw versus non-augmented six-screw PHILOS configuration for plating of osteoporotic proximal humerus fractures – a biomechanical study

Ivan Zderic[1], Fabian Pretz[1,2,3], Frank J.P. Beeres[2], Björn Christian Link[2], Yannic Lecoultre[2,3], Reto Babst[2,3], Boyko Gueorguiev[1], Peter Varga[1], Bryan J.M. van de Wall[2], Torsten Pastor[2]
[1]AO Research Institute Davos, Davos, Switzerland. [2]Cantonal Hospital Lucerne, Lucerne, Switzerland. [3]University of Lucerne, Lucerne, Switzerland

EO.5.S7-O8 Effect Of Screw Configuration On Outcomes In Proximal Humeral Fractures: A Comparative Analysis

Cumhur Deniz Davulcu[1], Muhammed Yusuf Afacan[1,2]
[1]Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey. [2]Istanbul University-Cerrahpasa, Institute of Graduate Studies, Department of Anatomy, Istanbul, Turkey

EO.5.S7-O9 Shoulder instability – current operative techniques

Preslav Penev[1], Kristian Ivanov[1], Boyko Gueorguiev[2]
[1]Medical University Varna, Varna, Bulgaria. [2]AO Research Institute Davos, Davos, Switzerland

EO.6.S7 - TENDON & LIGAMENT
TERMIS-EU & E-ORS: Critical Discoveries of the last 20 years

11:15 - 12:40 Wednesday, 18th June, 2025
Chair: Catherine Le Visage, Elizabeth Rosado Balmayor

EO.6.S7-K41 20 Years of Breakthroughs: Advancing Tissue Engineering and Regenerative Medicine with TERMIS

Elizabeth R Balmayor
RWTH Aachen University, Aachen, Germany

EO.6.S7-KN42 Back to the Future: Lessons from the Past Shaping the Future of the European Orthopedic Research

Denitsa Docheva
University of Würzburg, Würzburg, Germany

EO.6.S7-O1 MicroRNAs as Versatile Tools in Musculoskeletal Tissue Engineering

Carlos Julio Peniche Silva[1], Elizabeth Rosado Balmayor[2], Martijn van Griensven[1]
[1]MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht University, Maastricht, Netherlands. [2]Experimental Orthopaedics and Trauma Surgery, RWTH Aachen University, Aachen, Germany

EO.6.S7-O2 Controlling the cellular fate and enhancing scaffold design for cartilage and meniscus therapies – towards clinical translation
Girish Pattappa[1], Johannes Zellner[2], Denitsa Docheva[3]
[1]1Department of Musculoskeletal Tissue Regeneration, Würzburg, Germany. [2]Sporthopaedicum Regensburg, Regensburg, Germany. [3]Laboratory for Experimental Trauma Surgery, Regensburg, Germany

EO.6.S7-O3 The current landscape of complex biofabricated MSK tumor microenvironments models for therapeutic screening: Where do we go from here?
Derek H Rosenzweig
McGill University, Montreal, Canada

AR.8.S6 - From orthopaedics research breakthroughs to their translation

11:15 - 12:40 Wednesday, 18th June, 2025
Chair: Michael Gelinsky, Jacek Wychowaniec

AR.8.S6-K10 Contactless Biofabrication Approaches for Tissue Modeling and Regeneration
Tiziano Serra
AO Research Institute Davos, Davos, Switzerland

AR.8.S6-K11 Microengineering of bone
Niloofar Tahmasebi Birgani
MERLN Institute, Maastricht, Netherlands

AR.8.S6-O1 Quantitative assessment of physical changes in facial soft tissue caused by personalised 3D-printed PEEK implants
Oskars Radziņš[1,2], Ģirts Šalms[1]
[1]Riga Stradins University Institute of Stomatology, Riga, Latvia. [2]Baltic Biomaterials Centre of Excellence, Riga, Latvia

AR.8.S6-O2 Ensuring Reproducibility in Gel-MA-based Bioinks for Cartilage Regeneration
Didem Aksu[1], Hannah Agten[2], Aysu Arslan[1], Bjorn Vergauwen[3], Veerle Bloemen[2], Jasper Van Hoorick[1]
[1]BIO INX, Ghent, Belgium. [2]KULeuven, Leuven, Belgium. [3]Rousselot Biomedical, Ghent, Belgium

AR.8.S6-O3 4-D Bioprinted Multiphasic Multicellular Scaffold for Personalised Osteochondral Tissue Engineering
Wilson LI[1,2,3,4], Chengtie WU[5,6]

[1]Queen Elizabeth Hospital, Hong Kong, Hong Kong. [2]Beijing JST Hospital National Orthopaedic Science Centre, Beijing, China. [3]The Chinese University of Hong Kong, Hong Kong, China. [4]The University of Hong Kong, Hong Kong, China. [5]University of Chinese Academy of Sciences, Beijing, China. [6]Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

CA.9.S10 - Session 20: Applied Biomechanics for CAOS

11:15 - 12:25 Wednesday, 18th June, 2025

Chair: Malte Asseln, Ryosuke Iio

CA.9.S10-O1 Towards a Y-shaped pelvic osteotomy to address loss of lumbar lordosis

Gabrielle Tuijthof[1], Emmy Ezendam[1], Chien Nguyen[2], Edsko Hekman[1], Moyo Kruyt[2]

[1]University of Twente, Enschede, Netherlands. [2]University Medical Centre Utrecht, Netherlands

CA.9.S10-O2 Biomechanical assessment of gluteus maximus and tensor fasciae latae transfer in abductor mechanism deficiency after total hip arthroplasty: A cadaveric study

Kohei Kono, Ryosuke Nishimura, Satoru Otowa, Tatsuhiko Kutsuna, Naohiko Mashima, Masaki Takao

Ehime University Graduate School of Medicine, Ehime, Japan

CA.9.S10-O3 Enhanced Generation of Synthetic Arthropathic Glenohumeral Anatomy: A Combined Two-Body Statistical Shape Model Approach

Joshua W Giles[1], Justin Blackman[2]

[1]University of Victoria, Victoria, Canada. [2]Island Medical Program, University of British Columbia, British Columbia, Canada

CA.9.S10-O4 Evaluation of automatic HJC definition

Luisa Berger[1], Kunihiko Tokunaga[2], Klaus Radermacher[1]

[1]RWTH Aachen University, Aachen, Germany. [2]Niigata Hip Joint Center, Kameda Daiichi Hospital, Japan

CA.9.S10-O5 Resection accuracy affects stemless shoulder implant stability

Ghislain Maquer[1], Ingmar Fleps[1], Charlie Parduhn[1], Alex Miranda[1], Christine Mueri[1], Chloé Landry[1], Thomas Duquin[2], John Sperling[3], Taku Hatta[4], Jeff Bischoff[1]

[1]Zimmer Biomet, Zürich, Switzerland. [2]UBMD Orthopaedics & Sports Medicine, Buffalo, USA. [3]Department of Orthopedic Surgery, Mayo Clinic, MN, USA. [4]Joint Surgery, Sports Clinic Ishinomaki, Ishinomaki, Japan

CA.9.S10-O6 Analysis of Surgical Parameters in High Tibial Osteotomy: Effects on Resultant Tibiofemoral Force Position

Theresa Kandels[1], Julius Watrinet[2], Julian Fürmetz[3], Klaus Radermacher[1]
[1]RWTH Aachen, Aachen, Germany. [2]Department of Sports Orthopaedics, Technical University of Munich, Munich, Germany. [3]Department of Trauma Surgery, BG Unfallklinik Murnau, Germany

CA.9.S10-O7 Effect of Preconditioning the Medial and Lateral Collateral Ligaments with 120 N in TKA
Alexander Orsi[1], Christopher Plaskos[1], Jeffrey Lawrence[2]
[1]Corin, USA. [2]Gundersen Health System

EO.2.S8 – BONE
Mechanobiology in orthopaedics and musculoskeletal regeneration – in vivo, in silico, in vitro

13:45 - 15:15 Wednesday, 18th June, 2025
Chair: Esther Wehrle, Peter Schwarzenberg

EO.2.S8-K43 Mechanics Still Matters: An Engineering Perspective on Fracture Healing
Hannah L Dailey
Lehigh University, Bethlehem, PA, USA

EO.2.S8-O1 Piezo1 in Hypertrophic Chondrocytes Regulates Bone Homeostasis and Fracture Healing
Miriam E.A. Tschaffon-Müller[1], Astrid Schoppa[1], Laura J. Brylka[2], Franziska Eckl[1], Melanie Haffner-Luntzer[1], Timur A. Yorgan[2], Sandra Dieterich[1], Christoph Kölbl[1], Thorsten Schinke[2], Anita Ignatius[1]
[1]Institute of Orthopaedic Research and Biomechanics, University Medical Center Ulm, Ulm, Germany. [2]Department of Osteology and Biomechanics, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

EO.2.S8-O2 In vitro models to study endochondral ossification
Eric Farrell, Amaia Garmendia Urdaletta, Encheng Ji, Andrea Lolli
Erasmus MC, Rotterdam, Ireland

EO.2.S8-O3 Validating Prognostic Healing Simulations in an Ovine Model
Peter Schwarzenberg, Alicia Feist, Jerome Schlatter, Peter Varga
AO Research Institute Davos, Davos, Switzerland

EO.2.S8-O4 Studying the effect of mechanical stimulation in endochondral in vitro models.
Sophie Verrier
AO Research Institute Davos, Davos, Switzerland

EO.2.S8-O5 Spatial µProBe: a multimodal imaging approach for spatially-resolved gene mechanoregulation analysis during bone fracture healing
Francisco M Correia Marques[1], Amit Singh[1], Neashan Mathavan[1], Dilara Yilmaz[1], Denise Günther[1], Gisela A Kuhn[1], Esther Wehrle[1,2], Ralph Müller[1]
[1]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland. [2]AO Research Institute Davos, Davos Platz, Davos, Switzerland

EO.2.S8-O6 Hepatokine AGP2 mediates physical exercise-induced bone augmentation through liver-bone axis.
Zhenglin Zhu[1,2], Hong Chen[2], Di Chen[1]
[1]Chinese Academy of Sciences, Shenzhen Institute of Advanced Technology, Shenzhen, China. [2]The First Affiliated Hospital of Chongqing Medical University, Chongqing, China

EO.3.S8 – BIOMECHANICS
New Computational Methods in Orthopaedic Surgery: Simulation and 3D Printed Patient-Specific Implants

13:45 - 15:15 Wednesday, 18th June, 2025
Chair: Sloan Kulper, Kerstin Schneider

EO.3.S8-K44 Particle-based simulation of porous compressible solids for *in silico* testing of 3D printed and patient-specific orthopaedic implants
Sloan Kulper[1,2], Erica Ueda[1,2], Christian X Fang[2,1], Ali Kiapour[3], Janice Oentaryo[1,2], Katie Whiffin[1], Kerstin Schneider[4], Dana J Coombs[5], Michael Bushelow[6]
[1]Lifespans, Ltd., Wong Chuk Hang, Hong Kong. [2]The University of Hong Kong, Pok Fu Lam, Hong Kong. [3]Massachusetts General Hospital, Boston, USA. [4]Orthopaedic Surgeon, Zurich, Switzerland. [5]Johnson & Johnson MedTech, West Chester, USA. [6]Depuy Synthes, West Chester, USA

EO.3.S8-O1 Targeted Bone Augmentation Strategies: Imaging and Computational Models
Vincent A Stadelmann
Schulthess Klinik, Zürich, Switzerland

EO.3.S8-O2 In silico analysis of proximal humerus fracture fixations towards improved treatments
Peter Varga, Boyko Gueorguiev, Dominic Mischler
AO Research Institute Davos, Davos, Switzerland

EO.3.S8-O3 S-REX - Spinal Removable Expandable Implant: preclinical implant design optimisation using particle based bone models
Philip Procter[1,2], Intan Oldakowska[3], Matt Oldakowski[3], Lincoln Black[4]

[1]Uppsala University, Uppsala, Sweden. [2]CPP SAS, Divonne les Bains, France. [3]Curtin University, Perth, Australia. [4]Virtimachi Pty Ltd, Sydney, Australia

EO.3.S8-O4 The Use of Biomechanical Workflows in the Development of Orthopaedic Devices

Ryan J DeWall
Depuy Synthes, Zuchwil, Switzerland

EO.3.S8-O5 Presenting a new mesh-free approach to CT-based bone simulation with case study of 3D printed tibial tray insertion

Sloan Kulper[1,2], Jennifer Stoddart[3,4], Erica Ueda[1,2], Katie Whiffin[1], Maxwell Munford[3,4], Jonathan Jeffers[3,4], Christian Xinshuo Fang[2,1]
[1]Lifespans Ltd., Wong Chuk Hang, Hong Kong. [2]The University of Hong Kong, Pokfulam, Hong Kong. [3]OSSTEC Ltd., London, United Kingdom. [4]Imperial College London, London, United Kingdom

EO.3.S8-O6 Design and Verification of an Innovative Ceramic Lumbar Interbody Fusion Cage Using Digital Twins

Davide Ninarello, Giorgia Brambilla, Camilla Crivellaro, Luigi La Barbera
Laboratory of Biological Structure Mechanics, Department of Chemistry, Materials and Chemical Engineering "G.Natta", Politecnico di Milano, Milan, Italy

EO.4.S8 – SPINE
Advancing Spine Surgery: Biomechanics and Innovations in Minimally Invasive Techniques

13:45 - 15:15 Wednesday, 18th June, 2025
Chair: Jana Felicitas Schader, Mazda Farshad

EO.4.S8-K45 Irrigation During Lumbar Spinal Endoscopy – Important Considerations

Mazda Farshad[1], Jana Felicitas Schader[1,2,3], Alexandra Stauffer[1], Carl Moritz Zipser[4], Najmeh Kheram[4,5], José Miguel Spirig[1], Marie-Rosa Fasser[2], Jonas Widmer[2], Vincent Hagel[1]
[1]University Spine Center Zurich, Balgrist University Hospital, University of Zurich, Zurich, Switzerland. [2]Spine Biomechanics, Department of Orthopaedics, Balgrist University Hospital, Zurich, Switzerland. [3]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland. [4]Spinal Cord Injury Center and Department of Neurology and Neurophysiology, Balgrist University Hospital, Zurich, Switzerland. [5]The Interface Group, Institute of Physiology, University of Zurich, Zurich, Switzerland

EO.4.S8-O1 Failure forces of different interspinous vertebropexy techniques

Anna Schuler[1], Jonas Widmer[2,3], Anna-Katharina Calek[4,1], Agnese Beretta-Piccoli[3], Oliver Wigger[1], Reto Graf[3], Luca Kiener[3], Ramon Rohner[1], Marie-Rosa Fasser[1], Mazda Farshad[4]
[1]Spine Biomechanics, Balgrist University Hospital, Zurich, Switzerland. [2]Balgrist University Hospital, Zurich, Switzerland. [3]Moving Spine AG, Zurich, Switzerland. [4]Department of Orthopedics, Balgrist University Hospital, Zurich, Switzerland

EO.4.S8-O2 Anterior Longitudinal Ligament reconstruction restores biomechanical stability after surgical anterior approach to the cervical spine

Jana Felicitas Schader[1,2,3,4], Mauro Suter[3], Marie-Rosa Fasser[3], Anna Schuler[2,3], José Miguel Spirig[1], Mazda Farshad[1], Jess G. Snedeker[2,4], Jonas Widmer[3]
[1]University Spine Center Zurich, Balgrist University Hospital, University of Zurich, Zurich, Switzerland. [2]Department of Orthopaedics, Balgrist University Hospital, University of Zurich, Zurich, Switzerland. [3]Spine Biomechanics, Department of Orthopaedics, Balgrist University Hospital, Zurich, Switzerland. [4]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland

EO.4.S8-O3 An experimental model to measure irrigation induced cerebrospinal fluid alterations during interlaminar spine endoscopy

Jana Schader[1,2,3], Alexandra Stauffer[1], Carl Zipser[4], Najmeh Kheram[4,5], José Spirig[1], Jonas Widmer[3], VIncent Hagel[1], Mazda Farshad[1]
[1]University Spine Center Zurich, Department of Orthopaedics, Balgrist University Hospital, Zurich, Switzerland. [2]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland. [3]Spine Biomechanics, Department of Orthopaedics, Balgrist University Hospital, Zurich, Switzerland. [4]Department of Neurology and Neurophysiology, Balgrist University Hospital, Zurich, Switzerland. [5]The Interface Group, Institute of Physiology, University of Zurich, Zurich, Switzerland

EO.4.S8-O4 Biomechanical Analysis of Posterior Osteoligamentous Complex Contribution to Lumbar Spine Stability in Full Flexion

Moritz Jokeit[1,2], Frédéric Cornaz[3,1], Jana Felicitas Schader[3,1,2], Cooper L. Harshbarger[2], Anna-Katharina Calek[3], Sascha Jecklin[4], Jess G. Snedeker[3,1], Mazda Farshad[3], Jonas Widmer[1]
[1]Spine Biomechanics, Department of Orthopaedics, Balgrist University Hospital Zurich, University of Zurich, Zurich, Switzerland. [2]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland. [3]Department of Orthopaedics, Balgrist University Hospital Zurich, University of Zurich, Zurich, Switzerland. [4]Research in Orthopaedic Computer Science, Balgrist University Hospital, University of Zurich, Zurich, Switzerland

EO.4.S8-O5 Feasibility and Accuracy of Robotic-Assisted Navigation for Thoracic Pedicle Screw Placement Using CT-like 3D-MRI

Franziska C.S. Altorfer

Balgrist Universityhospital, Zurich, Switzerland

EO.4.S8-O6 Load-Sharing Analysis in Spinal Fusion Using Sensor-Equipped Rods and Cages

Mohsen Khodaee[1,2], Philipp Sager[1], Tobias Götschi[1], Mauro Suter[1], Brian Allen[1], Taekwang Jang[2], Mazda Farshad[1], Jonas Widmer[1]

[1]Spine Biomechanics, Department of Orthopedic Surgery, Balgrist University Hospital, University of Zurich, Zürich, Switzerland. [2]Department of Information Technology and Electrical Engineering, ETH Zurich, Zürich, Switzerland

EO.5.S8 - GUEST NATION - OSTEOARTHRITIS: Chinese ORS: Advances in orthopaedic techniques and enabling technologies

13:45 - 15:15 Wednesday, 18th June, 2025

Chair: Huan Meng, Gang Li

EO.5.S8-K46 Novel mechanism and treatment for osteoarthritis

Di Chen[1], Jiake Xu[2,1]

[1]Shenzhen University of Advanced Technology, Shenzhen, China. [2]Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Shenzhen, China

EO.5.S8-O1 Procr^{+} chondroprogenitors sense mechanical stimuli to govern articular cartilage maintenance and regeneration

Rui Yue[1,2], Qiaoling Zhu[2]

[1]State Key Laboratory of Cardiovascular Diseases and Medical Innovation Center, Shanghai East Hospital, Shanghai, China. [2]Frontier Science Center for Stem Cell Research, Shanghai Key Laboratory of Signaling and Disease Research, School of Life Sciences and Technology, Tongji University, Shanghai, China

EO.5.S8-O2 Macrophage membrane coated nanoparticles delivering antagomir of miR-155-5p mitigated titanium particle-induced osteolysis by modulating periprosthetic microenvironment via Gas6/Axl signaling

Yue Ding, Taihe Liu

Department of Orthopeadic Surgery, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Guangzhou, China

EO.5.S8-O3 Improved minimally invasive reconstruction of fractured osteoporotic vertebrae based on novel biodegradable and osseointegrative bone cement: Small and large animal studies

Lei Yang

Hebei University of Technology, Tianjin, China

EO.5.S8-O4 Development of Intervertebral Disc Organoids through Directed Differentiation of Mesenchymal Stem Cells and Hierarchical Bioprinting

Di Wu, Dingchao Zhu, Xingyu Zhou, Gaocai Li, Lei Tan, Yunsong Shi, Bingjin Wang, Cao Yang

Department of Orthopaedics, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

EO.5.S8-O5 Biomechanics of the Bone-Ligament Interface - the importance of the indirect origins and insertions on ACL

Huizhi Wang[1,2], Qinyi Shi[1], Kaixin He[1], Qingqing Yang[1], Cheng-Kung Cheng[1]

[1]School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China. [2]Suzhou Institute for Advanced Research, University of Science and Technology of China, Suzhou, China

EO.5.S8-O6 Novel angiogenic and angiocrine factors in bone microenvironment: therapeutic potential for bone repair

Jiake Xu

Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China. Shenzhen University of Advanced Technology, Shenzhen, China

EO.6.S8 – BIOMATERIALS
Advancing personalised healthcare: Innovations in 3D printing and bioprinting for regenerative and surgical solutions

13:45 - 15:15 Wednesday, 18th June, 2025

Chair: Petek Korkusuz, Andrei-Alexandru Popa

EO.6.S8-K47 Future Perspectives in Tissue Regeneration and Personalized Treatment Using 3D Printing and Bioprinting Technologies

Elisa A. Liehn

National Heart Center Singapore, Singapore, Singapore

EO.6.S8-O1 Lattice Structured Titanium Bone Implants via 3D Printing

Fatma Nur Depboylu[1,2], Evren Yasa[3], Ozgur Poyraz[3], Petek Korkusuz[4], Feza Korkusuz[5], Andrei-Alexandru Popa[1]

[1]Institute of Mechanical and Electrical Engineering (DME) and Mechatronics (Center of Industrial Mechanics), Southern Denmark University, Sonderborg, Denmark. [2]Department of Bioengineering, Institute of Science and Technology, Hacettepe University, Ankara, Turkey. [3]Advanced Manufacturing Research Centre (AMRC) North West, University of Sheffield, Blackburn, United Kingdom. [4]Faculty of Medicine, Department of Histology and Embryology, Hacettepe University, Ankara, Turkey.

[5]Department of Sports Medicine, Faculty of Medicine, Hacettepe University, Ankara, Turkey

EO.6.S8-O2 Developing bioengineered 3D printed composite scaffolds with osteogenic potential

Andreea Trifan
Center for Innovation and e-Health, University of Medicine and Pharmacy „Carol Davila", Bucharest, Romania

EO.6.S8-O3 3D Printing in medicine: From digital models to personalized implants

Daniel Cristea
Center for Innovation and e-Health, University of Medicine and Pharmacy „Carol Davila",
Center for Innovation and e-Health, University of Medicine and Pharmacy „Carol Davila", Romania

EO.6.S8-O4 3D Modelling and manufacturing in scoliosis surgery: A case study of 500 in-house developed personalized guides

Eduard Liciu
Center for Innovation and e-Health, University of Medicine and Pharmacy „Carol Davila", Bucharest, Romania

EO.6.S8-O5 Nuclear factor of activated T cells 5 (NFAT5) enhances the chondrogenesis of synovial mesenchymal stem cells

Wenli Gong
Division of Sports Medicine and Adult Reconstructive Surgery, Department of Orthopedic Surgery, Nanjing Drum Tower Hospital Clinical College of Nanjing University of Chinese Medicine, Nanjing, China

EO.6.S8-O6 Effectiveness of combined formulations of HYADD®4 and alendronate or rapamycin in an in vivo model of osteoarthritis on ovariectomized rats.

Anna Scanu[1], Roberto Luisetto[2], Mauro Pavan[3], Cristian Guarise[3], Chiara Giraudo[4], Francesca Galuppini[5], Vanni Lazzarin[5], Gianmaria Pennelli[5], Devis Galesso[3], Stefano Masiero[1]
[1]Physical Medicine and Rehabilitation Unit, Dept. of Neuroscience-DNS, University of Padova, Padova, Italy. [2]Dept. of Surgery, Oncology and Gastroenterology-DISCOG, University of Padova, Padova, Italy. [3]Fidia Farmaceutici S.p.A., Abano Terme, Italy. [4]Dept. of Cardiac, Thoracic, Vascular Sciences and Public Health-DSCTV, University of Padova, Padova, Italy. [5]Pathology Unit, Department of Medicine-DIMED, University of Padova, Padova, Italy

EO.8.S8 - GUEST NATION – BIOMATERIALS
Biomaterials & Tissue engineering

13:45 - 15:15 Wednesday, 18th June, 2025
Chair: Ling Qin, Matteo D'Este

EO.8.S8-K48 Silicon based life and regeneration
Haobo Pan
Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

EO.8.S8-O1 Enhancing Osseointegration of Bone and Implants through Photocurrent-Driven Immunoregulation and Calcium Influx Activation in Macrophages
Yizhou Zhu, Kelvin Yeung
The University of Hong Kong, Hong Kong SAR, China

EO.8.S8-O2 Decellularized extracellular matrix particles-based hydrogel for cartilage regeneration
Jiangyao Xu[1], Mauro Alini[1], Sibylle Grad[1], Jeroen Geurts[2], Zhen Li[1]
[1]AO Research Institute Davos, Davos, Switzerland. [2]Lausanne University Hospital, Lausanne, Switzerland

EO.8.S8-O3 Development of High Strength Biodegradable Metals for Bone Repair
Yufeng Zheng
Peking University, Beijing, China

EO.8.S8-O5 Magnesium Alloy Anchor and Zinc Alloy Suture in Ligament/Tendon-Bone Reconstruction: Degradation Behavior and Repair Effects
Shaokang Guan
Zhengzhou university, Zhengzhou, China

EO.8.S8-O6 Mechanically Matched Injectable Photocrosslinkable Hydrogel Loaded with Exosomes Repair Annulus Fibrosus-Nucleus Pulposus Complex Defect
Yiming Dou[1], Yuhe Yang[2], Yang Liu[1], Xin Zhao[2], Qiang Yang[1]
[1]Tianjin Hospital, Tianjin University, China, Tianjin, China. [2]Department of Biomedical Engineering, The Hong Kong Polytechnic University, China, Hongkong, China

EO.2.S9 – BIOMATERIALS
Materials to instruct cells and regenerate tissues

15:45 - 17:15 Wednesday, 18th June, 2025

Chair: Heinz Redl, Niamh Fahy

EO.2.S9-K49 Decellularized meniscus (MEND) as a biomaterial that supports stem cell invasion and chondrogenesis

Hannah M Bonelli[1,2], Kyra W Smith[1,2], Sophie Klessel[1,2], Dana Ragbirsingh[2], Paul M Gehret[1,2], Riccardo Gottardi[1,2]

[1]University of Pennsylvania, Philadelphia, USA. [2]Children's Hospital of Philadelphia, Philadelphia, USA

EO.2.S9-O1 Fabrication of radiopaque bioactive glass coatings with enhanced antibacterial activity by APS thermal spray

Germán A Clavijo-Mejía[1], Martin Michálek[1], Qaisar Nawaz[2], Laurene Youssef[3], Fatih Kurtuldu[1], Dušan Galusek[1,4], Aldo R Boccaccini[2]

[1]FunGlass, Alexander Dubček University of Trenčín, Trenčín, Slovakia. [2]Institute of Biomaterials, Department of Material Science and Engineering, University of Erlangen-Nuremberg, Erlangen, Germany. [3]Institute of Research for Ceramics–IRCER, UMR 7315, CNRS, Centre Européen de la Céramique (CEC), Université de Limoges, Limoges, France. [4]Joint Glass Centre of the IIC SAS, TnUAD, FChPT STU, Trenčín, Slovakia

EO.2.S9-O2 *In vitro* assessment of a phosphoserine-modified calcium phosphate bioadhesive for use in bone repair and regeneration

John Redmond[1,2], Srishti Agarwal[1,2], Satish Jaiswal[1,2], Antzela Tzagiollari[3], Gerard Insley[4], Tanya Levingstone[1,2,5,6,7,8,9,10], Nicholas Dunne[1,2,5,6,7,8,9,10,11,12]

[1]School of Mechanical and Manufacturing Engineering, Dublin City University, Dublin, Ireland. [2]Centre for Medical Engineering Research, Dublin City University, Dublin, Ireland. [3]Biomimetic Innovations Ltd (affiliate of PBC Biomed), Limerick, Ireland. [4]PBC Biomed, Accelerating Medical Innovation, Limerick, Ireland. [5]Advanced Manufacturing Research Centre (I-Form), School of Mechanical and Manufacturing Engineering, Dublin City University, Dublin, Ireland. [6]Biodesign Europe, Dublin City University, Dublin, Ireland. [7]Tissue Engineering Research Group, Department of Anatomy and Regenerative Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland. [8]Advanced Processing Technology Research Centre, Dublin City University, Dublin, Ireland. [9]Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin, Ireland. [10]Department of Mechanical and Manufacturing Engineering, School of Engineering, Trinity College Dublin, Dublin, Ireland. [11]Advanced Materials and Bioengineering Research Centre (AMBER), Trinity College Dublin, Dublin, Ireland. [12]School of Pharmacy, Queen's University Belfast, Belfast, United Kingdom

EO.2.S9-O3 FT-IR spectroscopy as an innovative tool for chondrogenic protein quantification in osteoarthritis.

Giovanni D'Atri[1,2], Gabriela Graziani[2], Elena Gabusi[1], Cristina Manferdini[1], Enrico Lenzi[1], Gina Lisignoli[1]

[1]IRCCS Istituto Ortopedico Rizzoli, Laboratorio di Immunoreumatologia e Rigenerazione Tissutale, Bologna, Italy. [2]Politecnico di Milano, Dipartimento di Chimica, Materiali e Ingegneria Chimica "Giulia Natta", Milano, Italy

EO.2.S9-O4 Immunoregulatory properties of self-assembling peptides and hyaluronan soft biomaterials

Jacek K. Wychowaniec[1], Ezgi Irem Bektas[1], Marcia Mürner[1,2], Jiranuwat Sapudom[3], Martin Šrejber[4], Marielle Airoldi[1], Andrea J. Vernengo[1,5], Paul Sean Tipay[6], Michal Otyepka[4,7], Jeremy Teo[3], David Eglin[8], Matteo D'Este[1]

[1]AO Research Institute Davos, Davos, Switzerland. [2]ETH Zürich, Zürich, Switzerland. [3]Laboratory for Immuno Bioengineering Research and Applications, Division of Engineering, New York University Abu Dhabi, Abu Dhabi, UAE. [4]Regional Centre of Advanced Technologies and Materials, Czech Advanced Technology and Research Institute (CATRIN), Palacký University Olomouc, Olomouc, Czech Republic. [5]Henry M. Rowan College of Engineering, Department of Chemical Engineering and Biomedical Engineering, Rowan University, Glassboro, USA. [6]Independent Scholar, Abu Dhabi, UAE. [7]IT4Innovations, VSB-Technical University of Ostrava, Ostrava-Poruba, Czech Republic. [8]Mines Saint-Étienne, Univ Jean Monnet, INSERM, U1059 Sainbiose, Saint-Étienne, France

EO.2.S9-O5 Development and Evaluation of a Biomimetic Artificial TMJ Disc Using Anisotropic Polyvinyl Alcohol and Highly Crosslinked Decellularized Matrix

Nan Jiang, Zhan Su, Songsong Zhu

West China Hospital of Stomatology, Chengdu, China

EO.2.S9-O6 Apatite-Based Coating of Percutaneous Osseointegrated Implants for Improving Epidermal Integration at the Skin-Device Interface

Samantha Steyl[1,2], Jill Shea[1,2], James Peter Beck[1,2], Kent Bachus[1,2], Jay Agarwal[1,2], Sujee Jeyapalina[1,2]

[1]Veteran Affairs Medical Center, Salt Lake City, USA. [2]University of Utah, Salt Lake City, USA

EO.3.S9 – CLINICAL
Conducting International Clinical Research: Key Considerations

15:45 - 17:15 Wednesday, 18th June, 2025
Chair: Theodore Miclau, Alexander Joeris

EO.3.S9-K52 Conducting International Clinical Research: Key Considerations
Theodore Miclau[1], Ramona Ritzmann[2], Yaner Zhu[2], Alexander Joeris[2], Katrin Simioni[2], Janneke Loomans[2]
[1]University of California, San Francisco, CA, USA. [2]AO Foundation, Davos, Switzerland

EO.3.S9-O1 Outcome Measures: selecting the right ones
Tracy Zhu
AO Innovation Translation Center, AO Foundation, Davos, Switzerland

EO.3.S9-O2 Economic Analyses: why include them?
Alexander Joeris
AO Innovation Translation Center, AO Foundation, Davos, Switzerland

EO.3.S9-O3 Data Collection: Recent Advances
Katrin Simioni
AO Foundation, Davos, Switzerland

EO.3.S9-O4 International Studies: Considerations and Potential Pitfalls
Ramona Ritzmann
AO Foundation, Davos, Switzerland

EO.3.S9-O5 Implementing Findings: Critical Aspects of Knowledge Translation
Janneke Irene Loomans, Olesja Hazenbiller
AO Foundation, Davos Platy, Switzerland

EO.3.S9-06 Considering regional and local context in implementing research outcomes
Olesja Irene Hazenbiller, Janneke Irene Loomans
AO Foundation, Davos Platz, Switzerland

EO.4.S9 – BONE
New insights into bone homeostasis and regeneration

15:45 - 17:15 Wednesday, 18th June, 2025
Chair: Elena Della Bella, Geraldine Guex

EO.4.S9-O1 Neutrophil-secreted lactoferrin blunts oxidative stress sensitivity of subchondral bone to accelerate osteoarthritis progression

Xiaoyu Jin[1], Dongquan Shi[2]
[1]Nanjing Drum Tower Hospital Clinical College of Nanjing University of Chinese Medicine, Nanjing, China. [2]Division of Sports Medicine and Adult Reconstructive Surgery, Department of Orthopedic Surgery, Nanjing Drum Tower Hospital, Affiliated Hospital of Medical School, Nanjing University, Nanjing, China

EO.4.S9-O2 Role of NAMPT in Regulating the Senescence of Bone Marrow Mesenchymal Stem Cells and Senile Osteoporosis
Bo Tian, Jinyu Bai, Yichao Ni, Jinmin Lv, Xiaozhong Zhou
The Second Affiliated Hospital of Soochow University, Suzhou, China

EO.4.S9-O3 Establishment of a Bone Regeneration Model for the Second Stage of the Masquelet Technique Using Mice
Yota Kaneko[1], Hiroaki Minehara[2,3], Tatsuru Sonobe[1], Takahiro Seki[1], Takuya Kameda[1], Miho Sekiguchi[1], Takashi Matsushita[2,3], Yoshihiro Matsumoto[1]
[1]Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine, Fukushima, Japan. [2]Department of Traumatology, Fukushima Medical University School of Medicine, Fukushima, Japan. [3]Trauma and Reconstruction Center, Shin-yurigaoka General Hospital, Kanagawa, Japan

EO.4.S9-O4 Accelerating osseointegration with bioelectronic implants: a double-blind paired-limb ovine study
Thomas A. G. Hall[1], Sasza Chyntara Nabilla[1], Bruno M. Gil Rosa[1], Gordon Blunn[2], Frederic Cegla[1], Richard J. van Arkel[1]
[1]Imperial College London, London, United Kingdom. [2]University of Portsmouth, Portsmouth, United Kingdom

EO.4.S9-O5 Integrated multi-omics and machine learning approaches reveal the characteristics of macrophages in postmenopausal osteoporosis and identify Smad7 as a key regulator
Qianning Li, Weishen Chen
Department of Joint Surgery, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

EO.4.S9-O6 Surface functionalization of Mn-doped bioactive glasses by gallic acid for bone tissue regeneration
Zakaria Tabia[1], Allal Barroug[1,2], Hassan Noukrati[1]
[1]Institute of Biological Sciences (ISSB), Faculty of Medical Sciences (FMS), Mohammed VI Polytechnic University (UM6P), Benguerir, Morocco. [2]Cadi Ayyad University (UCA), Faculty of Sciences Semlalia, SCIMATOP-PIB, Marrakech, Morocco

EO.4.S9-O7 Dual role of bioresorbable magnesium implants on bone remodeling and liver metabolism

Begüm Okutan[1], Hansjörg Habisch[1], DC Florian Wieland[2], Kamila Iskhakova[2], Tobias Madl[1], Annelie Martina Weinberg[1], Nicole Gabriele Sommer[1]

[1]Medical University of Graz, Graz, Austria. [2]Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon, Geesthacht, Germany

EO.4.S9-O8 Can gut microbiome be responsible for bone homeostasis? A pilot study on patients with fragility fractures and end stage degenerative arthritis.

Giorgia Borciani[1], Gabriele Conti[2], Rossana Genco[1], Francesca Perut[1], Sofia Avnet[2], Mariantonietta Scazzarriello[3], Alberto Di Martino[1,2], Cesare Faldini[1,2], Silvia Turroni[2], Nicola Baldini[1,2]

[1]Istituto Ortopedico Rizzoli, Bologna, Italy. [2]University of Bologna, Bologna, Italy. [3]University of Milan, Milan, Italy

EO.4.S9-O9 Clinical, biomechanical, histopathological and imaging characterization of an ovine large femoral bone defect to investigate new treatment strategies

Claudia Zindl[1], Ivan Zderic[1], Anas Datoussaid[1], Dirk Nehrbass[1], Malvina G Orkoula[2], Elias C Panagiotopoulos[2], Zeiter Stephan[1]

[1]AO Research Institute, Davos, Switzerland. [2]University of Patras, Patras, Greece

EO.5.S9 – BIOMECHANICS
Optimising construct stability in locking compression plate fixations

15:45 - 17:15 Wednesday, 18th June, 2025

Chair: Joyce Koh, Tet Sen Howe, Tunku Kamarul Zaman

EO.5.S9-K51 Dynamization of locking plate systems to optimize interfragmentary motion for fracture healing

Joyce SB Koh, Pivatidevi Pareatumbee, Merng Koon Wong, Andy KS Yew, Tet Sen Howe, Akshay Padki

Singhealth DukeNUS Musculoskeletal Academic Clinical Program, Singapore, Singapore

EO.5.S9-O1 Biomechanical studies for the dynamization of locking plate systems using a simple overdrilling technique

Joyce SB Koh, Andy KS Yew, Pivatidevi Pareatumbee, Merng Koon KS Wong, Tet Sen Howe

Singhealth DukeNUS Musculoskeletal Academic Clinical Program, Singapore, Singapore

EO.5.S9-O2 An animal model to evaluate the effect of eccentric cortex overdrilling in the dynamization of locking plate system

Pivatidevi SB Pareatumbee[1], Andy KS Yew[1], Joyce SB Koh[1], Merng Koon Wong[2], Tet Sen Howe[2]

[1]Singhealth DukeNUS Musculoskeletal Academic Clinical program, Singapore, Singapore. [2]Singhealth DukeNUS Musculoskeletal Academic Clinical Program, Singapore, Singapore

EO.5.S9-O3 Primary stability of nailing versus low profile dual plating of mid-clavicular fractures – a biomechanical study

Ivan Zderic[1], Fabian Pretz[1,2,3], Björn C Link[2], Reto Babst[3], Boyko Gueorguiev[1], Peter Varga[1], Frank J.P. Beeres[2], Torsten Pastor[2], Bryan van de Wall[2]
[1]AO Research Institute Davos, Davos, Switzerland. [2]Cantonal Hospital Lucerne, Lucerne, Switzerland. [3]University of Lucerne, Lucerne, Switzerland

EO.5.S9-O4 Predicting plate failure using specimen-specific finite element models combined with implantable sensors

Dominic Mischler[1,2], Manuela Ernst[1], Peter Varga[1]
[1]AO Research Institute Davos, Davos, Switzerland. [2]Graduate School for Cellular and Biomedical Sciences (GCB), University of Bern, Bern, Switzerland

EO.5.S9-O5 Biphasic Plate – New Fixation Principle

Boyko Gueorguiev[1], Ladina Hofmann[2], Markus Windolf[3], Devakar Epari[4], Christoph Sommer[5], R. Geoff Richards[1]
[1]AO Research Institute Davos, Davos, Switzerland. [2]AO Innovation Translation Center, Davos, Switzerland. [3]Bios Medical AG, Davos, Switzerland. [4]Queensland University of Technology, Brisbane, Australia. [5]Cantonal Hospital Graubünden, Chur, Switzerland

EO.6.S9 - CLINICAL TRANSLATION
Advancing Orthopaedics to meet today's clinical demands

15:45 - 17:15 Wednesday, 18th June, 2025
Chair: Johan van der Stok, Martin Stoddart

EO.6.S9-O1 Development and Preliminary Clinical Evaluation of a Novel Medial High Tibial Osteotomy Wedge Fixation System for Knee Osteoarthritis

Liangliang Cheng, Dewei Zhao
Affiliated Zhongshan Hospital of Dalian University, Dalian, China

EO.6.S9-O2 *Galleria mellonella* larvae: a promising animal model to study biofilm maturation in orthopaedics infections

Raphaëlle Youf, Ruth Schewior, Gopala K Mannala, You Zhao, Volker Alt, Martijn Riool
University Hospital Regensburg, Regensburg, Germany

EO.6.S9-O3 Diagnostic efficacy of metagenomic next-generation sequencing (mNGS) for spinal infection

Wentao Lin, Zhiyun Wang, Chunchao Huang, Faqin Xie, Tao Chen
Shunde Hospital, Southern Medical University (The First People's Hospital of Shunde Foshan), Foshan, China

EO.6.S9-O4 Revolutionizing Fracture Risk Prediction: Machine Learning and Genetic Insights to Address Disparities
Qing Wu
The Ohio State University College of Medicine, Columbus, USA

EO.6.S9-O5 Bone structural and vascular changes in colorectal cancer related cachexia
Zeynep Bal[1,2], Fitriana Nur Rahmawati[2], Nobuyuki Takakura[1,2]
[1]Osaka University WPI Immunology Frontier Research Center, Osaka, Japan. [2]Osaka University Research Institute for Microbial Diseases, Osaka, Japan

EO.6.S9-O6 Does traumatic brain injury enhance the healing of bone fracture? A "bedside to bench to bedside" investigation.
Zheyu Jin, Jiankun Xu, Ling Qin
The Chinese University of Hongkong, Shatin, Hong Kong

EO.6.S9-O7 Targeting SLC11A2 Palmitoylation for Treatment of Iron Overload and Osteoporosis
Siyue Tao[1,2], Jian Chen[1]
[1]Department of Orthopaedic Surgery, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, China. [2]Department of Orthopaedic Surgery, Shanghai Jiao Tong University Affiliated Sixth People's Hospital, Shanghai, China

EO.6.S9-O8 Elucidating the role of PIEZO2 mechanosensory neurons in bone pathology during malignancy
Shang Ma
UT Southwestern Medical Center, Dallas, USA

EO.8.S9 – SPINE
Translational Spine Research; What have we Accomplished and Where should we Go

15:45 - 17:15 Wednesday, 18th June, 2025
Chair: Sibylle Grad, Lisbet Haglund

EO.8.S9-K53 Organotypic models to study the discogenic pain associated cell-to-cell crosstalk
Junxuan Ma, Janick Eglauf, Mauro Alini, Sibylle Grad, Tiziano Serra
AO Research Institute, Davos, Switzerland

EO.8.S9-KN54 Annulus Fibrosus Repair Strategies and the Role of Immune Cells in Intervertebral Disc Healing

James Iatridis, Timothy Jacobsen
Icahn School of Medicine at Mount Sinai, New York, USA

EO.8.S9-O1 The where and why of local interventions in intervertebral disc degeneration-associated back pain

Laura B Creemers
Maastricht University, Maastricht, Netherlands

PL-04 Bioprinting Technology for Advanced Tissue Therapeutics

Jinah Jang
Pohang University of Science and Technology, Pohang, Korea, Republic of
08:30 - 09:00 Thursday, 19th June, 2025
Chair: Matteo D'Este

EO.2.S10 – CLINICAL
Orthopaedic Applications of Lower Limb Weightbearing CT imaging

09:10 - 10:40 Thursday, 19th June, 2025
Chair: Claudio Belvedere, Arne Burssens

EO.2.S10-K55 Current and Future Aspects of Weightbearing CT based Shape modelling
Barbara Postolka[1,2], Bryce A. Killen[1], Arne Burssens[3], Jos Vander Sloten[1], Ilse Jonkers[1]
[1]KU Leuven, Leuven, Belgium. [2]University of Basel, Basel, Switzerland. [3]Ghent University Hospital, Ghent, Belgium

EO.2.S10-O1 Impact of weight-bearing on foot shape: A Geometric and Morphometric Analysis
Jing Li, Emmanuel Audenaert, Arne Burssens, Matthias Peiffer, Roel Huysentryt, Ide Van den Borre, Anne-Sophie Vancanneyt, Aline Van Oevelen, Kate Duquesne
Ghent University Hospital, GENT, Belgium

EO.2.S10-O2 Weightbearing CT and lower limb personalised orthopaedic treatments
Claudio Belvedere, Alberto Leardini
Laboratory of Movement Analysis, IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy

EO.2.S10-O3 Application of Weightbearing CT in Progressive Collapsing Foot Deformity
Nicola Krähenbühl
University Hospital Basel, Basel, Switzerland

EO.2.S10-O4 Automating 3D Orthopedic Measurements Using Weight-Bearing CT Imaging
Ide Van den Borre[1], Matthias Peiffer[2], Roel Huysentruyt[1], Manu Huyghe[2], Jean Vervelghe[2], Aleksandra Pizurica[1], Emmanuel Audenaert[2], Arne Burssens[1]
[1]Ghent University, Ghent, Belgium. [2]Ghent University Hospital, Ghent, Belgium

EO.2.S10-O5 Weightbearing CT Applications in the Ankle syndesmosis
Matthias Peiffer
University Hospital Ghent, Ghent, Belgium. Foot and Ankle Research and Innovation Laboratory / Harvard Medical School, Boston, USA

EO.3.S10 - TISSUE ENGINEERING
Bone Tissue Engineering – From Bench to Bedside

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Markus Laubach, Dietmar W Hutmacher

EO.3.S10-K56 Mechanobiological guidance of bone defect healing across temporal and spatial scales

Ansgar Petersen

Berlin Institute of Health, Berlin, Germany

EO.3.S10-O1 Computer-aided scaffold design optimization towards enhanced bone regeneration

Sara Checa

Hamburg University of Technology, Hamburg, Germany

EO.3.S10-O2 The engineering side of bone defect treatment - A software tool for surgeons to design patient specific scaffolds

Buddhi Herath[1,2], Markus Laubach[3,1], Sinduja Suresh[1,4], Beat Schmutz[1,2], J. Paige Little[1,4], Prasad K.D.V. Yarlagadda[1,5], Dietmar W. Hutmacher[1,6], Marie-Luise Wille[1,6]

[1]ARC Training Centre for Multiscale 3D Imaging, Modelling, and Manufacturing, Queensland University of Technology, Brisbane, Australia. [2]Jamieson Trauma Institute, Metro North Hospital and Health Service, Brisbane, Australia. [3]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Center Munich (MUM), LMU University Hospital, Munich, Germany. [4]Biomechanics and Spine Research Group at the Center for Children's Health Research, Queensland University of Technology, Brisbane, Australia. [5]School of Engineering, University of Southern Queensland, Springfield Central, Australia. [6]Max Planck Queensland Centre for the Materials Science of Extracellular Matrices, Queensland University of Technology, Brisbane, Australia

EO.3.S10-O3 Precisely Engineered in Nanoscale Hydroxyapatite and Zinc Oxide for Enhancing 3D-Printed Scaffolds and Membranes for Bone Regenertion Applications

Witold Łojkowski[1], Urszula Szałaj[1], Julia Higuchi[1], Wojciech Majewski[1], Olena E Sych[1,2], Agnieszka Opalinska[1], Jacek Wojnarowicz[1], Jacek Krus[1], Johanna Buschmann[3]

[1]Institute of High Pressure Physics, Polish Academy of Science, Warsaw, Poland. [2].M. Frantsevich Institute for Problems of Materials Sciences, Kiev, Ukraine. [3]Universitätsspital Zürich, Zurich, Switzerland

EO.3.S10-O4 Bone regeneration using pathogenetic cues

Martijn van Griensven

Dept. cBITE, MERLN, Maastricht University, Maastricht, Netherlands

EO.3.S10-O5 Surgeons' decision making in the use of tissue engineering strategies

Lucas P Weimer[1], Giles M Cheers[1], Stephen Whyte[2,3,4,5], Ho Fai Chan[2,3,5], Frank Hildebrand[6], Ulrich Kneser[7], Uwe Dulleck[2,3,4,5,8], Susanne Mayer-Wagner[1], Dietmar W Hutmacher[3,4,9,10,11], Boris M Holzapfel[1], Markus Laubach[1,9]

[1]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Center Munich (MUM), LMU University Hospital, Ludwig Maximilian University of Munich, Munich, Germany. [2]School of Economics and Finance, Queensland University of Technology (QUT), Brisbane, Australia. [3]Centre for Behavioural Economics, Society & Technology (BEST), Queensland University of Technology (QUT), Brisbane, Australia. [4]ARC Training Centre for Cell and Tissue Engineering Technologies, Queensland University of Technology (QUT), Brisbane, Australia. [5]ARC Training Centre for Behavioural Insights for Technology Adoption, Queensland University of Technology (QUT), Brisbane, Australia. [6]Department of Orthopaedics, Trauma and Reconstructive Surgery, RWTH Aachen University Hospital, Aachen, Germany. [7]Department of Hand, Plastic, and Reconstructive Surgery, BG Trauma Center Ludwigshafen, Heidelberg University, Ludwigshafen, Germany. [8]Faculty of Business Government and Law, University of Canberra, Canberra, Australia. [9]Australian Research Council (ARC) Training Centre for Multiscale 3D Imaging, Modelling, and Manufacturing (M3D Innovation), Queensland University of Technology (QUT), Brisbane, Australia. [10]ARC Training Centre in Additive Biomanufacturing, Queensland University of Technology (QUT), Brisbane, Australia. [11]Max Planck Queensland Centre (MPQC) for the Materials Science of Extracellular Matrices, Queensland University of Technology (QUT), Brisbane, Australia

EO.4.S10 – CARTILAGE
Modelling OA - What's New?

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Tim Hopkins, Karina Wright

EO.4.S10-K57 Using cell and human models to identify mechanical drivers of osteoarthritis

Deborah J Mason

Cardiff University, Cardiff, United Kingdom. British Orthopaedic Research Society, Cardiff, United Kingdom

EO.4.S10-O1 *In vitro* and *ex vivo* osteoarthritis models and therapies

Kaihu Li, Eda Ciftci, Sibylle Grad, Zhen Li

AO Research Institute Davos, Davos, Switzerland

EO.4.S10-O2 Osteoarthritis: new treatment, stratification and machine learning

Andrew W McCaskie

University of Cambridge, Cambridge, United Kingdom. Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

EO.4.S10-O3 Human Joint-On-A-Chip: Model Development and Application to Study Patient-Specific Crosstalk

Timothy Hopkins[1], Clare L Thompson[1], Dariel AJ Terrazas[1], Karina T Wright[2,3], Hazel RC Screen[1], Martin M Knight[1]

[1]Queen Mary University of London, London, United Kingdom. [2]Keele University, Newcastle-under-Lyme, United Kingdom. [3]Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, United Kingdom

EO.4.S10-O4 Fluid Structure Interaction Modelling of Loading within Cancellous Bone

Richie HS Gill

University of Bath, Bath, United Kingdom

EO.4.S10-O5 A bidirectional relationship between chronic stress and osteoarthritis

Gundula Rösch[1], Anna E Rapp[1], Pei-Ling Tsai[2], Shahed Taheri[3], Helena Kohler[1], Ravikumar Mayakrishnan[4], Hadrian Platzer[4], Babak Moradi[4], Arndt F Schilling[3], Frank Zaucke[1], David A Slattery[2], Zsuzsa Jenei-Lanzl[1]

[1]Dr Rolf M. Schwiete Research Unit for Osteoarthritis, Department of Trauma Surgery and Orthopedics, Goethe University Frankfurt, University Hospital, Frankfurt, Germany. [2]Department of Psychiatry, Psychosomatic Medicine and Psychotherapy, Goethe University Frankfurt, University Hospital, Frankfurt, Germany. [3]Department of Trauma Surgery, Orthopedic Surgery and Plastic Surgery, University Medical Center Göttingen, Göttingen, Germany. [4]Department of Orthopedics and Trauma Surgery, University Hospital Kiel, Kiel, Germany

EO.4.S10-O6 Multiscale Modelling of the Knee Articular Cartilage to Study Cell-Tissue Communication Dynamics

Andreu Pascuet-Fontanet[1], Katie Gallagher[2], Stephanie E Schneider2[2], Maria Segarra-Queralt[1], Corey P Neu[2], Jérôme B Noailly[1]

[1]BCN MedTech, Universitat Pompeu Fabra, Barcelona, Spain. [2]Soft Tissue Bioengineering Laboratory, University of Colorado Boulder, Boulder, USA

EO.5.S10 - BIOMECHANICS: 3rd EORS Shape Mini symposium

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Audenaert Emmanuel, Kate Duquesne

EO.5.S10-K58 From Skeleton to Stress: A Scalable Approach for Personalized Joint Loading Analysis

Aline Van Oevelen[1,2], Kate Duquesne[1,2], matthias peiffer[1], Jan Van Houcke[1], Emmanuel Audenaert[1,2,3]
[1]Ghent University, Ghent, Belgium. [2]University of Antwerp, Antwerp, Belgium. [3]Cambridge University Hopsitals NHS Foundation Trust, Cambridge, United Kingdom

EO.5.S10-O1 Full body statistical shape modelling: current state-of-the-art and challenges
Kate Duquesne[1,2,3], Jan Sijbers[1], Wim Van Paepegem[4], Emmanuel Audenaert[2,3,5,6]
[1]imec-VisionLab, Antwerp, Belgium. [2]Department of Orthopedic Surgery and Traumatology, Ghent, Belgium. [3]Department of Human Structure and Repair, Ghent, Belgium. [4]Department Materials, Textiles and Chemical Engineering, Ghent, Belgium. [5]Department of Trauma and Orthopedics, Addenbrooke's Hospital, Cambridge, United Kingdom. [6]f Department of Electromechanics, Antwerp, Belgium

EO.5.S10-O2 Genetic Insights in Orthopedics: SNPs Shaping Hip Geometry
Marlies Verleyen
Ghent University, Ghent, Belgium

EO.5.S10-O3 A Fully Automated Framework for Developing Shape-Specific Musculoskeletal Models
Armin Omidvar Ghaziani
Antwerp University, Antwerp, Belgium. Ghent University, Ghent, Belgium

EO.5.S10-O4 Population differences in femoral bones using statistical shape models
Shivani Sawant[1], Emmanuel Audenaert[2], Bhushan Borotikar[1]
[1]Symbiosis International University, Pune, India. [2]Ghent University, Ghent, Belgium

EO.5.S10-O5 Using shape models to analyse knee shape changes and surgical outcomes in arthroplasty patients
Raja Ebsim[1], Dominic Cullen[1,2], Peter Thompson[1], David Johnson[3,4,1], Claudia Lindner[1]
[1]The University of Manchester, Manchester, United Kingdom. [2]Northern Care Alliance NHS Foundation Trust, Salford, United Kingdom. [3]Stockport NHS Foundation Trust, Stockport, United Kingdom. [4]University of Salford, Salford, United Kingdom

EO.5.S10-O6 Shape Variability of the Medullary Canal of the Human Proximal Femur
Stefan Bracher[1], Benjamin Haas[2], Elhadi Sariali[3], Philippe Zysset[1]
[1]University of Bern, ARTORG Center for Biomedical Engineering Research, Bern, Switzerland. [2]Symbios Orthopédie SA, Yverdon-les-Bains, Switzerland. [3]Hôpital Pitié Salpêtrière, Paris, France

EO.6.S10 – OTHER
Computational Orthopedics: Deep learning applications

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Borotikar Bhushan, Aline Van Oevelen

EO.6.S10-K59 Accuracies, uncertainties, and pitfalls in using deep learning frameworks in orthopaedics and mitigation strategies.

Bhushan Borotikar
Symbiosis International University, Pune, India

EO.6.S10-O1 From small errors to big impacts: How segmentation influences biomechanical simulation precision.

Sara Kowsar
Ghent University, Ghent, Belgium

EO.6.S10-O2 Deep Learning-Driven Automation of Orthopaedic Lower-Limb Measurements

Roel Huysentruyt, Aleksandra Pizurica, Emmanuel Audenaert
Ghent University, Ghent, Belgium

EO.6.S10-O3 Automatic prediction of knee OA progression through cartilage T2 mapping

Surabhi Thatte, Amol Gautam, Bhushan Borotikar
Symbiosis International University, Pune, India

EO.6.S10-O4 Deep learning-based MRI to X-Ray synthesis of knee joint for automatic OA classification

Suneeta Chaudhary, Surabhi Thatte, Bhushan Borotikar
Symbiosis International University, Pune, India

EO.6.S10-O5 Enhancing Safety in Intraoperative Orthopedic Surgical Planning through Uncertainty Quantification

Yunke Ao[1,2,3], Hooman Esfandiari[1], Fabio Carrillo[1], Philipp Fürnstahl[1]
[1]Balgrist University Hospital, Zurich, Switzerland. [2]ETH Zurich, Zurich, Switzerland. [3]ETH AI Center, Zurich, Switzerland

EO.6.S10-O6 Development and Validation of a Deep-Learning Model to Predict Total Hip Replacement on Radiographs: The Total Hip Replacement Prediction (THREP) Model

Yi Xu, Cunyi Fan
Shanghai Sixth People's Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China

EO.8.S10 – SPINE
Explorative models of the Intervertebral disc across lab cultures, animals, humans and computers

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Fatemeh Safari, Jérôme Noailly

EO.8.S10-K60 Intricacies of Intervertebral disc metabolism: Lessons from animal models

Makarand V Risbud

Thomas Jefferson University, Philadelphia, USA

EO.8.S10-O1 Modic change bone marrow neutrophils are activated and activated neutrophils degrade cartilage endplates

Irina Heggli[1,2,3], Tamara Mengis[2,3], Nick Herger[2,3], Mazda Farshad[3], Mohamed Habib[4], Oliver Distler[2], Aaron J Fields[4], Stefan Dudli[2,3]

[1]Icahn School of Medicine at Mount Sinai, New York, USA. [2]Center of Experimental Rheumatology, University of Zurich, Zurich, Switzerland. [3]Balgrist University Hospital, University of Zurich, Zurich, Switzerland. [4]Department of Orthopaedic Surgery, University of California San Francisco, San Francisco, USA

EO.8.S10-O2 Developing Patient-Specific Therapy for the Intervertebral Disc – When to Regenerate and when to Fuse?

Benjamin Gantenbein

University of Bern, Bern, Switzerland

EO.8.S10-O3 Simulating Intracellular Signaling Pathways in Intervertebral Disc Homeostasis and Degeneration

Sofia Tseranidou[1], Zerihun Workineh[1], Maria Segarra-Queralt[1], Paola Bermudez-Lekerika[2,3], Exarchos Kanelis[4], Benjamin Gantenbein[2,5], Leonidas G. Alexopoulos[4,6], Christine L. Le Maitre[7], Janet Piñero[8], Jérôme Noailly[1]

[1]Department of Engineering, Universitat Pompeu Fabra, Barcelona, Spain. [2]Tissue Engineering for Orthopaedics and Mechanobiology, Bone & Joint Program, Department for BioMedical Research (DBMR), University of Bern, Bern, Switzerland. [3]Graduate School for Cellular and Biomedical Sciences (GCB), University of Bern, Bern, Switzerland. [4]Protavio Ltd, Demokritos Science Park, Athens, Greece. [5]Inselspital, Department of Orthopedic Surgery & Traumatology, University of Bern, Bern, Switzerland. [6]Biomedical Systems Laboratory, School of Mechanical Engineering, National Technical University of Athens, Athens, Greece. [7]Division of Clinical Medicine, School of Medicine and Population Health, University of Sheffield, Sheffield, United Kingdom. [8]Hospital del Mar Medical Research Institute, Barcelona, Spain

EO.8.S10-O4 Pixel2Mechanics: Automated finite element biomechanical simulations of high-resolution intervertebral discs from anisotropic MRIs

Estefano Muñoz-Moya[1], Sai Natarajan[1,2], Zerihun Workineh[1], Morteza Rasouligandomani[1], Carlos Ruiz Wills[1], Francis Kiptengwer-Chemorion[1,3], Ludovic Humbert[2,4], Miguel A. González Ballester[1], Gemma Piella[1], Jérôme Noailly[1]

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EO.8.S10-O5 High-resolution spatial transcriptomic mapping of the developing human intervertebral disc

Christabel T Dube, Syed Murtuza-Baker, Judith A Hoyland, Stephen M Richardson

The University of Manchester, Manchester, United Kingdom

EO.8.S10-O6 Development of Human Disc-on-a-Chip for Intervertebral Disc Using Microfluidic and Hydrogel Systems

Izzat Zulkiflee[1], Andrew Daly[1], Abhay Pandit[1], Isma Liza Mohd Isa[1,2]

[1]University of Galway, Galway, Ireland. [2]University Kebangsaan Malaysia, Kuala Lumpur, Malaysia

EO.9.S10 – BIOMATERIALS
Delayed-type hypersensitivity to implant materials: clinical findings, in vitro testing & alternatives in orthopaedic joint replacements today & future perspective

09:10 - 10:40 Thursday, 19th June, 2025

Chair: Ana Laura Puente Reyna, Thomas Grupp

EO.9.S10-K61 Metal implant allergy: Trends and perspectives

Peter A Thomas, Eva M Oppel, Burkhard Summer

Clinic of Dermatology and Allergology, Ludwig-Maximilians-University of Munich, Munich, Germany

EO.9.S10-O1 Delayed-type hypersensitivity to implant materials - alternatives in knee arthroplasty

Thomas M Grupp[1,2], Ana Laura Puente Reyna[2], Julius Dohm[1,2], Peter Thomas[3], Jörg Lützner[4], Alexander Giurea[5], Stefan Landgraeber[6], Sunil Reddy[7], Berna Richter[2]

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[6]Department of Orthopedic Surgery, Saarland University Medical Center, Homburg, Germany. [7]The Joint Replacement Clinic, Adelaide, SA, Adelaide, Australia

EO.9.S10-O2 Reduction of metal ion release in dual mobility & in cemented total hip arthroplasty

Ana Laura Puente Reyna[1], Mevluet Sungu[1], Andreas Pfaff[1], Christian Bader[1], Bernd Fink[2], William M. Mihalko[3], Nicolas Reina[4], Thomas M. Grupp[1,5]
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EO.9.S10-O3 In vitro testing in metal implant allergy - what is possible?

Burkhard Summer, Eva Oppel, Peter Thomas
Ludwig-Maximilians-University, Munich, Germany

EO.9.S10-O4 Allergic reaction to antibiotic-loaded PMMA bone cement & constituents in knee arthroplasty

Burkhard Summer, Eva Oppel, Peter Thomas
Ludwig-Maximilians-University, Munich, Germany

EO.9.S10-O5 Polymer-based Total knee arthroplasty with a PEEK (poly-ether-ether-ketone)-UHMWPE articulation - biomechanical & biotribological aspects

Berna Richter[1], Jens Schwiesau[1], Adam Briscoe[2], Ian Revie[2], Ludger Gerdesmeyer[3], William M Mihalko[4], Ana Laura Puente Reyna[1], Thomas M Grupp[1,5]
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EO.9.S10-O6 In vitro evaluation of Mg-based metallic biomaterials

Heike Helmholz[1], Anke Borkam-Schuster[1], Bavya Mavila Chathoth[1], Redon Resuli[1], Berit Zeller-Plumhoff[1,2], Regine Willumeit-Römer[1]
[1]Helmholtz Zentrum hereon, Geesthacht, Germany. [2]University Rostock, Rostock, Germany

EO.2.S11 – OSTEOARTHRITIS
Theragnostic in Musculoskeletal Conditions

11:15 - 12:40 Thursday, 19th June, 2025

Chair: Mustafa Çelebier, Petek Korkusuz

EO.2.S11-K62 Circulating miRNA Fracture Related Biomarkers - miR-335-5p regulates endochondral differentiation in human bone marrow mesenchymal stromal cells via regulation of TGF-β signalling components

Martin J Stoddart

AO Research Institute Davos, Davos Platz, Switzerland

EO.2.S11-O1 Synovial Joint Fluid Chromatography Outcomes in Osteoarthritis: Do Affinity Sorbents Improve the Outcome of Multi-Omics Studies?

Serhat Aladağ[1], İlayda Demirdiş[2], Burcu Gökçal Kapucu[3], Emine Koç[4], Ozan Kaplan[4], Batuhan Erhan Aktaş[5], Mustafa Çelebier[4], Ali Tuncel[3], Feza Korkusuz[5]

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EO.2.S11-O2 From Metabolomics to Theragnostic: Advancing Personalized Care in Musculoskeletal Disorders

Mustafa Çelebier

Hacettepe University, Faculty of Pharmacy, Department of Analytical Chemistry, Ankara, Turkey

EO.2.S11-O3 Niche Based Personalized Cell Therapeutics in Bone and Cartilage Regeneration

Petek Korkusuz

Hacettepe University Faculty of Medicine Dept of Histology& Embryology, Ankara, Turkey. Hacettepe University Dept of Stem Cell Sciences, Ankara, Turkey. Hacettepe University Dept of Oral Biology, Ankara, Turkey. Hacettepe University Dept of Biomedical Engineering, Ankara, Turkey. Hacettepe University Dept of Nanomedicine & Nanotechnology, Ankara, Turkey. METU MEMS Center, Ankara, Turkey

EO.2.S11-O4 Exploring the Cutting Edge of Platelet Rich Plasma Omics

Özge Boyacıoğlu*[1,2], Ozan Kaplan*[3], Bilge Başak Fidan[1], Emine Koç[4,3], Petek Korkusuz[5,6], Feza Korkusuz[7], Mustafa Çelebier[3]

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EO.2.S11-O5 Are Metabolomic Profiles of Degenerated and Non-Degenerated Rotator Cuff Tears Identical?
FURKAN BÜLBÜL[1], Emine Koç[2], bilge başak fidan[2], Ozan Kaplan[2], Hasan Rüzgar[3], Mustafa Özer[3], Mustafa Çelebier[2], Feza Korkusuz[2]
[1]Beysehir State Hospital, Konya, Turkey. [2]hacettepe university, ankara, Turkey. [3]Necmettin Erbakan University, Konya, Turkey

EO.2.S11-O6 Exploring the Cutting Edge of Platelet Rich Plasma Omics
Özge Boyacıoğlu*[1,2], Ozan Kaplan*[3], Bilge Başak Fidan[1], Emine Koç[3,4], Petek Korkusuz[5,6], Feza Korkusuz[7], Mustafa Çelebier[3]
[1]Hacettepe University, Graduate School of Science and Engineering, Department of Bioengineering, Ankara, Turkey. [2]Atılım University, Faculty of Medicine, Department of Medical Biochemistry, Ankara, Turkey. [3]Hacettepe University, Faculty of Pharmacy, Department of Analytical Chemistry, Ankara, Turkey. [4]Inonu University, Institute of Health Sciences, Department of Medical Biochemistry, Malatya, Turkey. [5]Hacettepe University, Faculty of Medicine, Department of Histology and Embryology, Ankara, Turkey. [6]METU MEMS Center, Ankara, Turkey. [7]Hacettepe University, Faculty of Medicine, Department of Sports Medicine, Ankara, Turkey

EO.4.S11 – BONE
Blood vessels and bone regeneration: It takes two to tango

11:15 - 12:40 Thursday, 19th June, 2025
Chair: Nunzia Di Maggio, Andrea Banfi

EO.4.S11-K63 Engineered signaling microenvironments for vascularized bone regeneration.
Andrea Banfi
Basel University Hospital, Basel, Switzerland

EO.4.S11-O1 VEGF chemically modified mRNA-loaded matrix for vascularized bone engineering
Alessandra Vescovi[1], Micaela Roque[2], Claudia Del Toro Runzer[3], Martin Stoddart[4], Martijn van Griensven[3], Elizabeth Rosado Balmayor[5], Joëlle Amédée[2], Nunzia Di Maggio[1], Andrea Banfi[1]

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EO.4.S11-O2 Chemically Modified mRNA: Delivery, Cellular Internalization, and Role in Bone Regeneration
Elizabeth R Balmayor
RWTH Aachen University, Aachen, Germany

EO.4.S11-O3 Transcript therapy to regenerate vascularized bone
Martijn van Griensven
Dept. cBITE, MERLN, Maastricht University, Maastricht, Netherlands

EO.4.S11-O4 Biofabrication of microphysiological 3D vascularized bone models for the study of human physiology and disease
Simone Bersini
Ente Ospedaliero Cantonale, Bellinzona, Switzerland. Università della Svizzera italiana, Lugano, Switzerland

EO.4.S11-O5 Primary human cell-based in vitro bone models
Anne Bernhardt, Katharina Wirsig
TU Dresden, Centre for Translational Bone Joint and Soft Tissue Research, Dresden, Germany

EO.4.S11-O6 Elucidating the changes in vascular structures in a novel small animal trauma model for osteonecrosis of the femoral head
Zeynep Bal[1,2], Nobuyuki Takakura[2,1]
[1]Osaka University WPI Immunology Frontier Research Center, Osaka, Japan. [2]Osaka University Research Institute for Microbial Diseases, Osaka, Japan

EO.5.S11 - CELL MODELS
Three-dimensional in vitro organotypic musculoskeletal models

11:15 - 12:40 Thursday, 19th June, 2025
Chair: Dimitrios Zeugolis, Giulia Giuffredi

EO.5.S11-K64 Engineering Complex Bone Tumour Models: Unravelling Tumour Microenvironment for Drug Discovery
Fiona E Freeman

School of Mechanical and Materials Engineering, Engineering and Materials Science Centre, University College Dublin, Dublin, Ireland. UCD Centre for Biomedical Engineering, University College Dublin, Dublin, Ireland. Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Dublin, Ireland. Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin, Ireland

EO.5.S11-O1 Pre-conditioning with TGF-β1 does not improve chondrogenic differentiation of human MSCs in a clinically relevant model under mechanical load
Maja Schlittler[1], Elena Della Bella[1], Guoliang Chen[1,2], Lauma Ievina[3,4], Franziska L. Breulmann[1], Martin J. Stoddart[1]
[1]AO Research Institute Davos, Davos Platz, Switzerland. [2]The Seventh Affiliated Hospital, Sun Yat-sen University, Shenzhen, China. [3]Institute of Biomaterials and Bioengineering, Riga Technical University, Riga, Latvia. [4]Baltic Biomaterials Centre of Excellence, Riga, Latvia

EO.5.S11-O2 Hypoxic Conditioning in 3D Matrix Environments Potentiates Mesenchymal Stem Cell Regenerative Signatures
Alagu Subramanian, Rawiya Al Hosni, Hayat Muhammad, Mark Birch, Andrew McCaskie
Division of Trauma and Orthopaedic Surgery, Department of Surgery, University of Cambridge, Cambridge, United Kingdom

EO.5.S11-O3 A customizable autologous tissue engineering strategy for bone (re)construction
Adrien Moya[1], Pablo Pfister[1], Sebastian Jung[2], Robert Paillaud[1], Ivan Martin[1], Michael de Wild[3], Arnaud Scherberich[1]
[1]Departement of Biomedicine, University of Basel, Basel, Switzerland. [2]Fachhochschule Nordwestschweiz, Institute for Medical Engineering and Medical Informatics, Muttenz, Switzerland. [3]Fachhochschule Nordwestschweiz, Institute for Medical Engineering and Medical Informatics, Basel, Switzerland

EO.5.S11-O4 Development of an *ex vivo* Osteoarthritic Knee Model
Grace McDermott[1], Derek Jackson[2], Mark Wilkinson[1], Christine Le Maitre[1]
[1]University of Sheffield, Sheffield, United Kingdom. [2]Pacira Biosciences Inc, Lexington, USA

EO.5.S11-O5 Making waves: Ultrasound-Stimulated Organoids to model Frozen Shoulder
Nicole Dvorak[1], Jessica Ackerman[1], Davide de Grandi[2], Dario Carugo[1], Christopher D Buckley[1], Stephanie G Dakin[1]

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EO.5.S11-O6 Engineering a 3D-human Bone-Cartilage Interface
Jessica Cottrell, Mary Adams
Seton Hall, South Orange, USA

EO.6.S11 - GUEST NATION - TISSUE ENGINEERING
Emerging Regenerative Technologies in Musculoskeletal Research

11:15 - 12:40 Thursday, 19th June, 2025
Chair: Sien Lin, Gang Li

EO.6.S11-K65 Novel Applications of Distraction Histogenesis
Gang Li
Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

EO.6.S11-O2 Stimulating Bone Marrow Adipocytes Lipolysis for Enhanced Fracture Healing
Bobin Mi[1,2], Fawwaz Osama Fawwaz Al-Smadi[1,2], Kangkang Zha[1,2], Weixin Hu[1,2], Shengming Zhang[1,2], Yanzhi Zhao[1,2], Guohui Liu[1,2]
[1]Department of Orthopeadics, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. [2]Hubei Province Key Laboratory of Oral and Maxillofacial Development and Regeneration, Wuhan, China

EO.6.S11-O3 Mechanoresponsive Periosteal Stem Cells in Distraction Osteogenesis
Sien Lin[1,2], Rongjie Wu[1], Zhixian Zong[1], Gang Li[3]
[1]The Chinese University of Hong Kong, Hong Kong, Hong Kong. [2]Affiliated Hospital of Guangdong Medical University, Zhanjiang, China. [3]Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

EO.6.S11-O4 Transcriptome-driven design of a hydrogel niche for enhanced stem cell-mediated tendon regeneration
Wanqi Zhang[1,2], Ying Rao[1,2], Shing Hei Wong[1], Yuanhao Zhang[1,2], Dai Fei Elmer Ker[3], Qin Cao[1], Rocky S. Tuan[1,2,4], Dan Michelle Wang[1,2,4]
[1]School of Biomedical Sciences, Faculty of Medicine,The Chinese University of Hong Kong, New Territories, Hong Kong. [2]Institute for Tissue Engineering and Regenerative Medicine; The Chinese University of Hong Kong, New Territories, Hong Kong. [3]Department of Biomedical Engineering, The Hong Kong Polytechnic University, Kowloon,

Hong Kong. [4]Center for Neuromusculoskeletal Restorative Medicine, Hong Kong Science Park, New Territories, Hong Kong

EO.6.S11-O5 3D-Printed Mechanically Tendon-like and Bioactive Material for Large-to-Massive Rotator Cuff Repair

Xu Zhang[1], Ke Li[1], Chenyang Wang[1], Ying Rao[1], Rocky S Tuan[1], Dan Michelle Wang[1], Dai Fei Elmer Ker[2]

[1]The Chinese University of Hong Kong, Hong Kong, Hong Kong. [2]The Hong Kong Polytechnic University, Hong Kong, Hong Kong

EO.6.S11-O6 Cell-Adaptable Hydrogels Promote Bone Regeneration by Enhancing Mechanosensing of Mesenchymal Stem Cells

Kunyu Zhang

South China University of Technology, Guangzhou, China

EO.8.S11 – SPINE
Fracture risk in patients with vertebral metastases: stratification and personalised treatment

11:15 - 12:40 Thursday, 19th June, 2025

Chair: Jorrit-Jan Verlaan, Luca Cristofolini

EO.8.S11-K66 The METASTRA project: development and validation of computational tools to stratify patients with vertebral metastases at risk of fracture

Luca Cristofolini[1], Giovanni Barbanti-Bròdano[2], Enrico Dall'Ara[3], Rudolf Ferenc[4], Stephen J Ferguson[5], José Manuel García-Aznar[6], Aron Lazary[7], Peter Vajkoczy[8], Jorrit-Jan Verlaan[9], László Vidács[10]

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EO.8.S11-O1 Clinically relevant parameters to stratify the risk of fracture in vertebrae with metastases: insight from biomechanical experiments

Marco Palanca[1], Giulia Cavazzoni[1], Margherita Pasini[1], Enrico Dall'Ara[2], Luca Cristofolini[1]

[1]Alma Mater Studiorum - University of Bologna, Bologna, Italy. [2]University of Sheffield, Sheffield, United Kingdom

EO.8.S11-O2 3D Parametric Finite Element Modeling of Metastatic Vertebrae: Insights on Bone-lesion Interface

Jaime Muñoz-Allué, José Manuel García-Aznar, María Ángeles Pérez
Aragon Institute of Engineering Research (I3A), Zaragoza, Spain

EO.8.S11-O3 Comparison of spinal load predictions from musculoskeletal and statistical shape modeling.
Florian Rieger[1], Guillem Fernandez[2], Enrico Dall'Ara[3], Dominique A. Rothenfluh[2], Stephen J. Ferguson[1], Dominika Ignasiak[1]
[1]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland. [2]Centre de Chirurgie Spinale, CHUV Lausanne, Lausanne, Switzerland. [3]School of Medicine and Population Health, University of Sheffield, Sheffield, United Kingdom

EO.8.S11-O4 Why technical innovations are needed to facilitate better characterization of pathological fractures in metastatic spinal disease
Jorrit-Jan Verlaan[1], Peter Vajkoczy[2], Gastone Castellani[3], Giovanni Barbanti Bròdano[4], Floris van Tol[1], Anne Versteeg[1], Aron Lazary[5]
[1]University Medical Center Utrecht, Utrecht, Netherlands. [2]Charite Universitätsmedizin Berlin, Berlin, Germany. [3]S.Orsola Hospital, Bologna, Italy. [4]IRCCS Rizzoli Orthopaedic Institute, Bologna, Italy. [5]National Center for Spinal Disorders, Budapest, Hungary

EO.8.S11-O5 We need to better assess the risk of fracture in spine metastatic patients
Giovanni Barbanti Brodano[1], Aron Lazary[2], Sabato Mellone[3], Jorrit-Jan Verlaan[4], Cristiana Griffoni[1], Peter Vajkoczy[5]
[1]IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy. [2]National Center for Spinal Disorders, Buda Health Center, Budapest, Hungary. [3]Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI, University of Bologna, Bologna, Italy. [4]Department of Orthopedics, University Medical Center Utrecht, Utrecht, Netherlands. [5]Department of Neurosurgery, Charité-Universitätsmedizin Berlin, Berlin, Germany
EO.8.S11-O6 Functional disability and work ability in workers affected by Low Back Pain: An Innovative Multidisciplinary Approach.
Fabrizio Russo[1,2], Gianluca Vadalà[1,2], Giuseppe Francesco Papalia[2], Luca Ambrosio[1,2], Girolamo Maltese[2], Niccolò Nardi[2], Giorgia Petrucci[1], Sergio Iavicoli[3], Rocco Papalia[1,2], Vincenzo Denaro[1,2]
[1]Fondazione Policlinico Universitario Campus Bio-Medico, Rome, Italy. [2]Università Campus Bio-Medico di Roma, Rome, Italy. [3]Ministero della Salute, Rome, Italy

EO.9.S11 – OTHER
Tech-driven advances in the treatment of paediatric musculoskeletal injuries and disorders

11:15 - 12:40 Thursday, 19th June, 2025

Chair: Uwe G. Kersting, Bhushan Borotikar

EO.9.S11-K67 The search for indiviualised lower extremity models – the needs and what can be done?

Uwe G Kersting

German Sport University Cologne, Institute of Biomechanics and Orthopaedics, Cologne, Germany

EO.9.S11-O1 3d technology enabled correction of Paediatric Deformity – Byte to Bone Part 1. Planning and 3d printing

Vikas Jain

Aarogyam Orthorpaedics, Yapi, Gujarat, India

EO.9.S11-O2 The 4th dimension of paediatric deformity correction using 3 D technology

Taral Nagda

SRCC Children Hosptal, Mumbai, India. Jupiter Hospital, Thane, India

EO.9.S11-O3 Pathologic vs. healthy paediatric populations – Challenges in modeling and treatment of orthopaedic disorders

Bhushan Borotikar

Symbiosis International University, Pune, India

EO.9.S11-O4 Predicting missing bone anatomy – how good can we get?

Jasper G Kwasny[1], Cynthia Fantini Pagani[1], Alexander Zimmerer[2,3,4], Uwe Kersting[1], Bhushan Borotikar[5]

[1]Deutsche Sporthochschule Köln, Cologne, Germany. [2]Center for Orthopaedics, Trauma Surgery and Rehabilitation Medicine, University Medicine Greifswald, Greifswald, Germany. [3]Arcus Clinic, Pforzheim, Germany. [4]Center for Sportraumatology, Diakonie-Klinikum Stuttgart, Stuttgart, Germany. [5]Symbiosis International University, Pune, India

EO.9.S11-O5 Simulation of functional ankle testing – what a musculoskeletal model can reveal

Uwe G Kersting[1], Ilias Theodorakos[2]

[1]German Sport University Cologne, Cologne, Germany. [2]Aalborg University, Aalborg, Denmark

EO.9.S11-O6 The Paediatric Anterior Cruciate Ligament (ACL) National Audit Study (PANA)

Benjamin Gompels[1], Daniel Hide[1], Daniel Collins[1], Alagu Subramanian[1], Florence Bradshaw[1], Simone Castagno[1], Tom Molloy[1], William Nabulyato[2], Ignatius Lieu[2], Chinmay Gupte[3], Nicolas Nicolaou[4], Stephen McDonnell[1]

[1]Cambridge University Division of Trauma and Orthopaedics, Cambridge, United Kingdom. [2]Cambridge University Teaching Hospital, Cambridge, United Kingdom. [3]Imperial College London, London, United Kingdom. [4]Sheffield Children's Hospital, Sheffield, United Kingdom

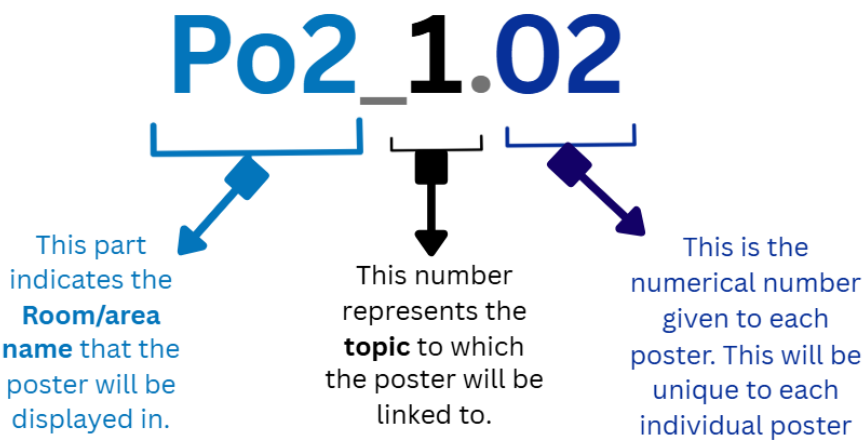
Poster session (subject to change)

There is no specific time allocated to each poster presentation. We encourage presenters to be available during both sessions.

- Poster sizes- **A0 Portrait** style (no landscape) – max 841 mm wide by 1189 mm tall.
- Please **bring along your printed poster** as the congress does not provide printing services.
- Please check the lists below for your poster number. Your poster location will be identified by that number.
- Posters will be arranged numerically and organized by topic. A poster map will be displayed next to the poster area and be available at the registration desk.
- We encourage presenters to set up their poster on **Sunday, 15th June 2025** between **17:00 and 19:00**. The poster must be poster mounted **no later than 13:15 Monday 16th June 2025.**
- It will be the presenter's responsibility to hang the respective posters on the space assigned according to the given number. Help will be available on site for direction.
- Thumbtacks will be provided for you to fix your poster.

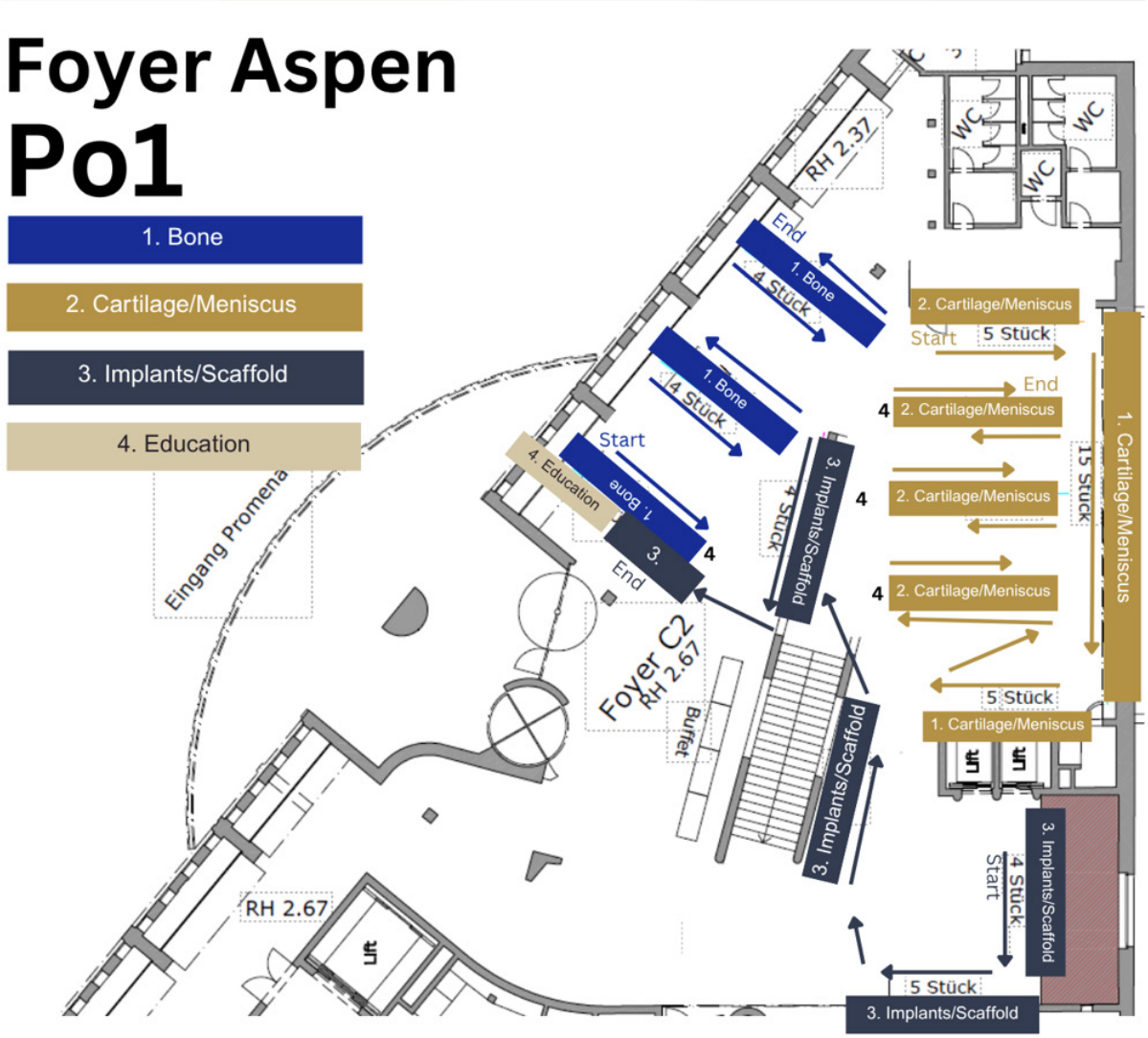
Posters must be removed by **Thursday 13:00.**

Poster Sessions



How to read the Poster number allocated to your poster.

Poster Room numbers:	**Topic Number per Room:**	**EXAMPLES:**
Po1 - C2 Aspen Foyer	1. Bone 2. Cartilage/Meniscus 3. Implants/Scaffold 4. Education	Po1_1.13
Po2 - C 1 Sanada	1. 3D Modeling 2. Biomaterials 3. Infection 4. Injury & Healing 5. Medical Devices 6. Stem Cells 7. Tendon/Ligament 8. Tissue Engineering 9. Wearables	Po2_3.07 Po2_8.16
Po3 - Foyer A2	1. Spine	Po3_1.67
Po4 - A Studio	2. Artificial Intelligence 3. Biomechanics/Simulation 4. Other	P04_1.06
Po5 - A Forum	1. Clinical 2. Preclinical	Po5_1.25
Po6 - Foyer B2	1. CAOS Regular posters 2. CAOS Special Posters	Po6_1.20



Poster: Foyer Aspen

Po1

Bone

Po1_1.03 Effect of interfragmentary stimuli on repair tissue formation in a bone healing model with monotonically increasing interfragmentary strain.
Jan Barcik, Manuela Ernst, Tim Buchholz, Caroline Constant, Karen Mys, Devakara Epari, Stephan Zeiter, Boyko Gueorguiev, Markus Windolf

Po1_1.05 Optimizing RNA In Situ Hybridization for Gene Expression Mapping in Mouse Fracture Healing.
Claire Chabot, Maria Schröder, Nico Giger, Claudia Siverino, Esther Wehrle

Po1_1.08 Characterization of the Osteocyte Lacunocanalicular Network in Subchondral Bone of Healthy Mice.
Valentine Gaillard, Albano Malerba, Gaëtan Lefevre, Stéphane Blouin, G. Van Lenthe, Richard Weinkamer, Markus Hartmann, Davide Ruffoni

Po1_1.09 Cortistatin prevents glucocorticoid-associated osteonecrosis of the femoral head via the GHSR1a/Akt pathway.
Yuan Gao, Yuhua Li, Yunpeng Zhao

Po1_1.11 Does Freeze-Thawing Change the Metabolomic Active of Platelet-Rich Plasma?
Ozan Kaplan, Bilge Fidan, Emine Koc, Ilayda Demirdis, Mustafa Çelebier, Feza Korkusuz

Po1_1.12 Role of the β2-Adrenoceptor in Chondrocytes for Long Bone Growth and Fracture Healing in Mice.
Melanie Kuhn, Melanie Haffner-Luntzer, Sandra Dieterich, Anita Ignatius, Stefan Reber, Miriam Tschaffon-Müller

Po1_1.15 Regulating stem cell growth factor-β fine-tuned balance of osteogenesis and adipogenesis of mesenchymal stem cells endows Statins with new anti-osteonecrosis effect.
Chengjie Lian, Lei Liu, Fangzhou Fan

Po1_1.17 Differential Pain Resolution Behaviors Following Fracture in Rodents Based on Sex and Fracture Stability.
Jacob Matityahu, Molly Czachor, Jonny Layne, Dustin Snapper, Dane Lind, Charles Lam, Matthieu Huard, Kazuhito Morioka, Allan Basbaum, Jarret Weinrich, Chelsea Bahney

Po1_1.18 Gambogic Amide induces Heterotopic Ossification expansion after Soft Tissue Trauma modulating TrkA+ neurons.
Stefano Negri, Masnsen Cherief, Qizhi Qin, Chase Pagani, Benjamin Levi, Aaron James

Po1_1.19 The Biofiligree® concept: innovative approach to bone fracture healing.
Olga Noronha, Rafael Coelho, Antonio Ramos, Jose Simoes, Jose Noronha

Po1_1.20 Understanding the behaviour of macrophages and vascular cells on shifted laser surface textured titanium discs for implant integration.
Girish Pattappa, Theresia Stich, Tomas Křenek, Tomáš Kovářík, Denitsa Docheva

Po1_1.21 The Role of Mineral Heterogeneity, Trabecular Orientation, and Collagen Fibers Arrangement on Tissue-Level Trabecular Bone Mechanics.
Edoardo Pedrinazzi, Stéphane Blouin, Alexandre Hego, Aude Simar, Markus Hartmann, Davide Ruffoni

Po1_1.22 Bridging Biology and Engineering: Pre-Vascularized Grafts for Craniofacial Therapy.
Idan Redenski, Reema Fadoul, Shadi Daoud, Samer Srouji

Po1_1.23 ATR inhibition reverses doxorubicin resistance in human osteosarcoma cells by increasing DNA damage response.
Chongmin Ren, Francis Hornicek, Bin Yue, Zhenfeng Duan

Po1_1.24 Regeneration of Critical-Size Bone Defects in a Rat Model Using Demineralized Bone Matrix and Low-Intensity Pulsed Ultrasound.
Ieva Šimoliūnė, Mantas Liudvinaitis, Milda Alksnė, Povilas Daugėla, Mindaugas Pranskūnas, Pedro Gomes, Egidijus Šimoliūnas

Po1_1.25 Adaptation of the mouse tibia to fatigue under weekly pathological in vivo axial loading.
Claudia Siverino, Claire Acevedo, Vincent Stadelmann

Po1_1.29 Development of a Prototype Model for Lateral Split-Depressed Tibial Plateau for Bench Testing and Fixation Studies.
Antzela Tzagiollari, Paul Dorrell, Gerard Insley, Thomas Russell

Po1_1.32 Hepatokine AGP2 Mediates Physical Exercise-Induced Bone Augmentation through Liver-Bone Signaling Communication.
Zhenglin Zhu, Wei Huang, Di Chen

Po1_1.34 Single-cell and spatial transcriptomics reveal cellular features and crosstalk between synovium and cartilage in human haemophilic arthritis.
Jiong Jiong Guo, Yufan Qian, Huilin Yang

Cartilage / Meniscus

Po1_2.03 The molecular path of PRP formulations on osteoarthritic chondrocytes presenting a tight therapeutic window.
Özge Boyacıoğlu, Bilge Başak Fidan, Ozan Kaplan, Mustafa Çelebier, Feza Korkusuz, Petek Korkusuz

Po1_2.04 Chondrocyte mitochondrial dysfunction as a target for osteoarthritis therapy: identification of a new molecule.
Lucie Danet, Romain Guiho, Anais Defois-Le Menn, Nina Bon, Boris Halgand, Joëlle Veziers, Denis Waast, Antoine Hamel, Jérôme Guicheux, Marie-Astrid Boutet, Claire Vinatier

Po1_2.08 Novel approach to identify disease severity marker candidates in osteoarthritis patients based on gene expression changes in human chondral plugs and their association with electromechanical properties as a proxy for cartilage pathology.
Jürg Gasser, Joanna Mitchelmore, Yufei Li, Ivan Osinnii, Agnese Beretta-Piccoli, Lukas Hils, Ines Honorio, Janine Kuch, Angelika Meyer, Stefan Utzinger, Michelle Schäublin, Alain Schilb, Valentina Taddini, Edi Schuepbach, Rachel Kettle, Franziska Saxer, Peter Richards, Albrecht Heitner, Jochen Paul, Carsten Jacobi

Po1_2.09 Characterisation of Cultured Human Chondrocytes Conditioned Under Low Oxygen.

Benjamin Gompels, Hayat Muhammad, Rawiya Al Hosni, Ilias Epanomeritakis, Alexandra MacMillan, Wasim Khan, Stephen McDonnell, Mark Birch, Andrew McCaskie

Po1_2.10 Chemical Induction and Regulation of Functional Cartilage Repair.
Fengjin Guo, Nana Geng, Mengtian Fan

Po1_2.11 POSTN potentiates chondrocyte hypertrophy by promoting RUNX2 in osteoarthritis.
Ruiyang Jiang, DongQuan Shi

Po1_2.12 Outcomes of Meniscal Allograft Transplants: The Oswestry Experience.
Rakan Kabariti, Peter Davies, Alexander Glover, Paul Jermin, Gallacher Peter

Po1_2.13 Learning Curve for Meniscal Allograft Transplants.
Rakan Kabariti, Peter Davies, Peter Gallacher

Po1_2.14 Meniscal Allograft Transplants: Oversizing the grafts in the AP dimension Increases Post-operative Complications but Does Not Affect Failure Rates.
Rakan Kabariti, Peter Davies, Peter Gallacher

Po1_2.15 The choice of fixation device or the number of meniscus sutures used does not affect the post-operative complication rates nor patient reported outcomes following Meniscal Allograft Transplants.
Rakan Kabariti, Peter Davies, Alexander Glover, Paul Jermin, Peter Gallacher

Po1_2.16 Allograft Donor Age and Gender Does not Influence Post-operative Outcomes in Meniscal Allograft Transplant Surgery.
Rakan Kabariti, Peter Davies, Peter Gallacher

Po1_2.17 MRI-Based Assessment of Donor Site Healing Following OATS: Evidence of Good Cartilage Regeneration At a mean Follow-up of 1.9 Years.
Rakan Kabariti, Nicolas Dziadulewicz, James Richardson, Peter Gallacher, Paul Jermin

Po1_2.21 Causal relationship between hallux valgus, flat feet, and osteoarthritis: a bi-directional two-sample mendelian randomized study.
Chengjie Lian, Fangzhou Fan, Lei Liu

Po1_2.22 Serum biochemical markers and rheumatoid arthritis: Insights from observational study and Mendelian randomization analysis.
Chengjie Lian, Lei Liu

Po1_2.23 A Multi-Omics Journey into Synovial Fluid: Advancing Molecular Classification of Knee Osteoarthritis.
Xiyu Liu, Zhongyang Lv, Dongquan Shi

Po1_2.24 High osmolality mediates the Nfat5-Gas1-SHH axis to delay osteoarthritis.
Yuan Liu

Po1_2.25 Do Macrophages have a Dual Role in Cartilage Repair: Priming then Enhancing Chondrogenesis?
Alexandra Macmillan, Hayat Muhammad, Rawiya Al Hosni, Mohammed Alkhayref, Ilias Epanomeritakis, Benjamin Gompels, Steven McDonnell, Wasim Khan, Mark Birch, Andrew McCaskie

Po1_2.26 Human osteochondral cylinders as a model to investigate degenerative processes in osteoarthritis.
Giulio Gatto, Moritz Laucks, Zsuzsa Jenei-Lanzl, Frank Zaucke

Po1_2.27 Impact of Triamcinolone Acetonide on Fibroblast-Like Synoviocytes: Insights into Viability, Biomechanical Fingerprints, and Mechanosensitivity.
Anna Mücke, Marina Danalache, Rosa Riester

Po1_2.29 Clinical outcomes following medial meniscus posterior root repairs: A minimum of 5-year follow-up study.
Yuki Okazaki, Takayuki Furumatsu, Kazuhisa Sugiu, Yusuke Kamatsuki, Yusuke Yokoyama, Masanori Tamura, Koki Kawada, Tsubasa Hasegawa, Toshifumi Ozaki

Po1_2.30 Fiber-Reinforced Self-Healing Gels for Meniscus Tissue Engineering.
Selma Padilla Padilla, Indra Apsite

Po1_2.31 Nano mineral crystals perturbance from osteochondral interface initiates osteoarthritis.
Rong Ren, Songsong Zhu, Nan Jiang

Po1_2.32 Coaxial 3D Printing: synergistic approach of natural and synthetic biomaterials for knee meniscus replacement.
Francisco Rodrigues, Ana Oliveira, João Costa

Po1_2.33 Impact of glucose and oxygen on osteochondral-synovium co-culture.
Fatemeh Safari, Jovana Zvicer, Sibylle Grad, Martin Stoddart, Zhen Li

Po1_2.34 α-MSH modulates senescent and metabolic state of human osteoarthritic and non-osteoarthritic chondrocytes.
Nicole Schäfer, Marianne Ehrnsperger, Brian Johnstone, Markus Böhm, Susanne Grässel

Po1_2.35 An ex vivo calcified tissue explant model to study the response of cells in the cartilage-bone interface to osteoarthritic factors.
Andrea Schwab, Nicole Kops, Eric Farrell, Gerjo Van Osch

Po1_2.36 Differentially Expressed Genes and Pathways between Degenerated and Healthier Human Articular Cartilage.
Anja Stirnimann, Fabian Ille

Po1_2.37 Modelling meniscal degeneration: a 3d culture platform for studying inflammatory and matrix responses.
Graciosa Teixeira, Jessica Beyermann, Maria Ahrens, Jonas Schwer, Michael Gross, Luisa de Roy, Anita Ignatius, Andreas Seitz

Po1_2.38 Dynamic loading enhances collagen-rich matrix formation in pet scaffolds for meniscal replacement.
Graciosa Teixeira, Luisa de Roy, Anna-Lotta Feldmeier, Anita Ignatius, Carsten Linti, Andreas Seitz

Po1_2.39 Injectable Bilayer Elastin-Like Recombinamer Bioactive Hydrogels with Differential Layer Degradation Rates for Osteochondral Regeneration in an In Vivo Rabbit Model.
Desiré Venegas-Bustos, Gonzalo Martínez, Sonia Martínez-Páramo, Israel González de Torre, A. Gato, A.J. Álvarez-Barcia, A. Vega-Castrillo, Mercedes Alberca, J.C. Rodríguez-Cabello

Po1_2.41 Uncovering the Impact of Irrigation Fluid Acidity on Articular Cartilage in an ex Vivo Injury Model.
Svenja Wacker, Fatemeh Safari, Zhen Li, Gian Salzmann, Martin Stoddart, Sibylle Grad, Hagen Schmal, Eva Kubosch

Po1_2.42 Multi-omics reveals cellular interactions in knee osteoarthritis.
Zheng Wang

Po1_2.44 Mechanism exploration of Notoginsenoside R1 delaying osteoarthritis.
Nuo Xu

Po1_2.47 Hnrnpk Protects Against Osteoarthritis through Targeting WWC1 mRNA and Inhibiting Hippo Signaling Pathway.
Shun Zhang, Peiqiang Su

Po1_2.49 Magnetic Nanoemulsions for Intra-Articular Therapy: Preclinical In Vitro and In Vivo Evaluation
Luminita Labusca, Camelia Mihaela Zara Danceanu, Cristina Stavila, Anca Emanuela Minuti, Dumitru Daniel Herea, Valentin Nastasa, Robert Capota, Eusebiu Sindilar, Aurelian Sorin Pasca Sorin Pasca, Mihai Mares, Nicoleta Lupu

Implants / Scaffolds

Po1_3.01 Tribological evaluation of melt electrowritten three-layer PCL multi-scale scaffolds for articular cartilage repair.
Alessio Amicone, Edona Hyla, Gregory de Boer, Stephen Ferguson

Po1_3.02 Multi-Ion Reinforced Collagen Hydrogels: A Therapeutic Strategy for Osteoporosis.
Adriana Barroso, Diana Pacheco, Rafaela Seabra, Nuno Alves, Carlos Mota, Monica Montesi, Silvia Panseri, Antonio Gloria, Tatiana Patrício

Po1_3.03 Effect of different Polycaprolactone/Bioactive Glass composite scaffolds on the osteogenic potential of RIA-derived mesenchymal stem cells in a 3D cell culture.
Laura Boehm, Tim Bewersdorf, Jakob Hofmann, Kai Borcherding, Ulrike Sommer, Gerhard Schmidmaier, Tobias Grossner

Po1_3.05 Preclinical investigation of a novel constant force implant concept for the treatment of leg length discrepancies.
Jan Buschbaum, Maria Hildebrand, Theodor Slongo, Stephan Zeiter, Michael Schütz, Markus Windolf

Po1_3.06 Development and Preliminary Clinical Evaluation of a Novel Ankle Joint Prosthesis.
Liangliang Cheng, Dewei Zhao

Po1_3.07 From 3D to 4D – The future of personalized 3D printed medical implants.
Mihai Dragomir

Po1_3.08 Pre-clinical biomechanical assessment of a patient-matched multi-parametric osseointegrated prosthesis for transfemoral amputees.
Giulia Galteri, Valentina Betti, Cristina Curreli, Domenico Alesi, Stefano Zaffagnini, Marco Palanca, Kavin Morellato, Emanuele Gruppioni, Luca Cristofolini

Po1_3.09 Mid-term Analysis of the Survival of Uncemented Total Knee Arthroplasties with Modular Tibial Components Made of Porous Tantalum.
Žiga Godicelj, Jure Kastelic, Samo Fokter

Po1_3.11 Patient-specific Distal Tibia Titanium Trabecular prosthesis for reconstruction in a case of recurrent Giant Cell Tumour in a Young female. 2-year retrospective Case study.
Vikas Jain, Lalit Maini

Po1_3.12 Impact of Cyclic Loading on the Mechanical Properties of Degradable Braided Scaffolds for ACL Reconstruction: For Walking and Running Conditions.
Viktoria Kiaulehn, Saskia Hesse, Christian Weber, Benedict Bauer, Frank Hildebrand, Thomas Gries, Elizabeth Rosado Balmayor, Caroline Emonts

Po1_3.13 First measurements of the Active Implant system based on SMA actuation and sensing for improved bone fracture healing.
Susanne-Marie Kirsch, Felix Welsch, Tim Pohlemann, Bergita Ganse, Paul Motzki

Po1_3.14 Experimental Study on the Design of a Biomimetic Osteochondral Scaffold Based on Microstructure Characteristics of the Adult Knee Joint Osteochondral Complex.
Meng Li

Po1_3.16 Collagen-Based 3D Scaffolds Enriched with Multi-Ion Doped Hydroxyapatite for Osteosarcoma Therapy.
Diana Pacheco, Adriana Barroso, Rafaela Seabra, Artur Mateus, Nuno Alves, Abílio Sobral, Telma Encarnação, David Barata, Silvia Panseri, Monica Montesi, Carlos Mota, Tatiana Patrício

Po1_3.17 Dual-Polymer Mineralized Hydroxyapatite Scaffolds for Enhanced Bone Tissue Regeneration.

Rafaela Seabra, Adriana Barroso, Diana Pacheco, Joana Valente, Monica Montesi, Silvia Panseri, Nuno Alves, Artur Mateus, Carlos Mota, Antonio Gloria, Tatiana Patrício

Po1_3.19 Investigation of Zinc-, Copper-, and Silver-Doped Fluorapatite as Bacteriostatic Bone Grafts.
Samantha Steyl, Pooya Elahi, Jill Shea, James Beck, Jay Agarwal, Alec Griffin, Sujee Jeyapalina

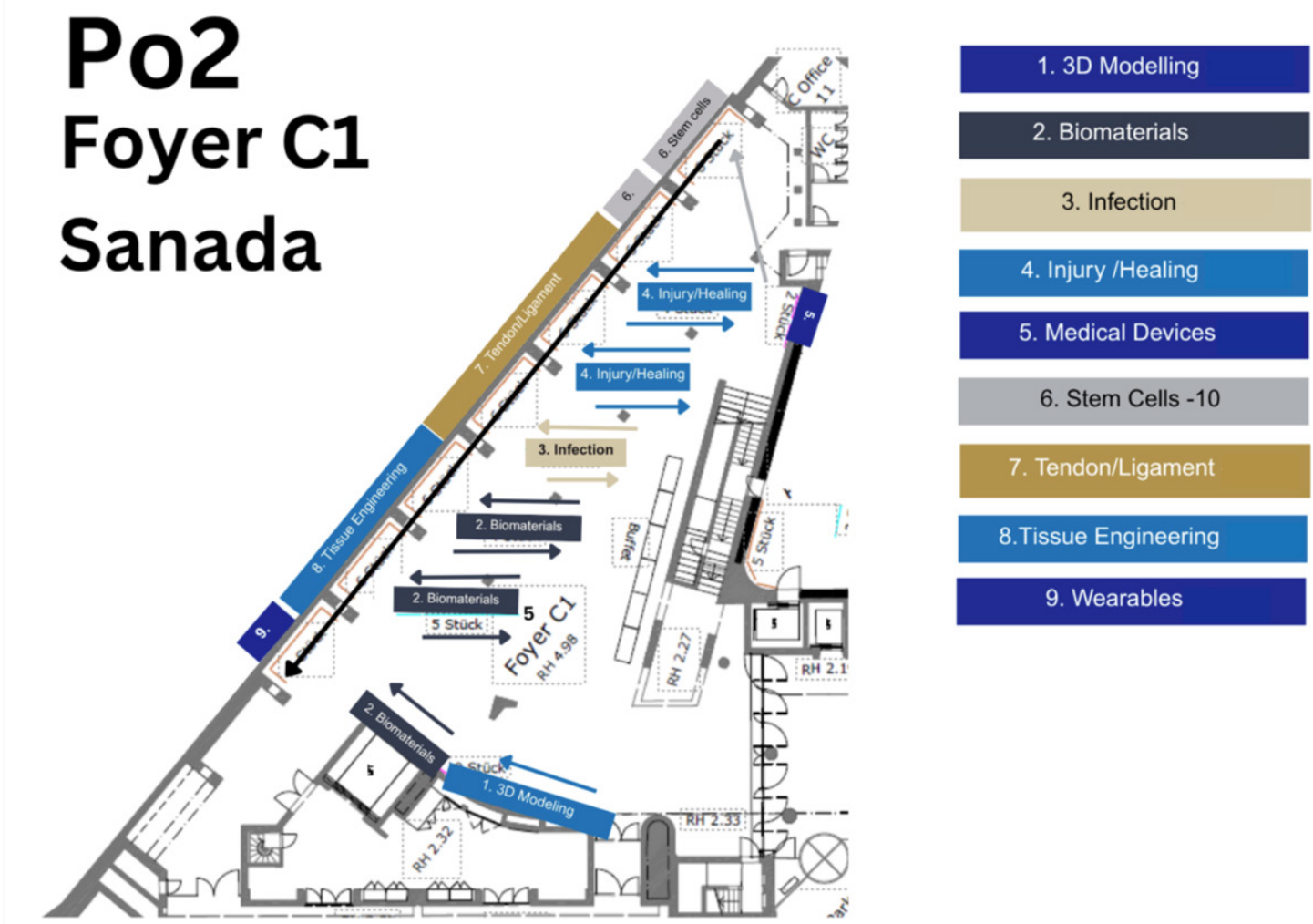
Po1_3.20 Multidisciplinary optimal design for improved personalized bioactive glass/ceramic bone substitute implants
Pasquale Vena

Po1_3.24 Application of 3D printing Integrated Acetabular Prosthesis in the treatment of hip dysplasia in total hip arthroplasty.
Dewei Zhao, Liang Cheng, Jiawei Ying

Po1_3.26 HOBBIT - Highly porous bioinert bone implants for non-union fracture healing.
Simon Sperger, James Ferguson, Veronika Hruschka, Gabriele Leinfellner, Darja Marolt, Johannes Grillari, Xavier Monforte Vila, Andreas Teuschl-Woller, Thomas Nau, Patrick Heimel, Lydia Zopf, Daniel Bomze, Martin Schwentenwein, Heinz Redl, Regina Brunauer

Education

Po1_4.01 Functional Outcomes and Imaging-Related Factors in Distal Radius Fractures Among Older Adults: A Comprehensive Review.
José Aponte-Reyes, José Acosta-Julbe, Joseph Salem-Hernández, Emmanuel Belardo, Fernando Arocho, Christian Foy-Parrilla



Poster: Sanada Foyer C1

Po2

3D Modelling

Po2_1.01 Application of 3D printing Integrated Acetabular Prosthesis in the treatment of hip dysplasia in total hip arthroplasty.
Liangliang Cheng, Dewei Zhao

Po2_1.06 Tailor-made: 3D Printing-assisted Autologous Costal Cartilage Remodeling in the Treatment of Complex Carpal Bone Lesions.
Zhenzhong Zhu, Qian Tang, Jiagen Sheng

Po2_1.07 Reliability Evaluation of Surface-Based Registration Approach to Determine Femoral Rotation Using 3D Bone Models.
Shima Gholinezhad, Ahmed Halloum, Søren Kold, Ole Rahbek, John Rasmussen

Po2_1.08 3D-Planned Corrective Osteotomy for the Treatment of Distal Radioulnar Joint Instability in Diaphyseal Forearm Malunions.
Sebastiaan Fischer, Eline Van Es, Joost Colaris

Po2_1.09 Active Parallax-effect Compensation (APC) for AR-assisted Hard Tissue Interventions: Feasibility and Performance.
Sepehr Madani, Carlo Santaguida, Robert Turcotte, Amir Hooshiar, Ahmed Aoude

Biomaterials

Po2_2.02 Development and evaluation of silk fibroin methacrylate (SilMA)-based biomaterials for human hip acetabular labrum regeneration.
Giorgia Borciani, Alessio Bucciarelli, Michela Battistelli, Amber van der Beek, Keita Ito, Brunella Grigolo, Eleonora Olivotto

Po2_2.03 Electrochemical Behavior of Ti-Nb-Zr-Si Alloy: Potentiodynamic Study in Normal and Inflammatory Conditions.
Aydin Bordbar-Khiabani, Michael Gasik

Po2_2.04 Elucidating the Molecular Mode of Action of the Osteogenic P-15 Peptide: A Systematic Literature Review.
Eva Burgers, Anna Lodewijks, Thomay Hoelen, Taco Blokhuis, Tim Welting, Marjolein Caron, Scott Johnson, Chris Arts

Po2_2.06 Synergistic Influence of Mesoporous Bioactive Glass Particle Size and Concentration on the Osteogenic Potential of Calcium Phosphate Cements.
Oznur Demir, Shahrbanoo Jahangir, Mauro Alini, Aldo Boccaccini, Dagnija Loca

Po2_2.07 “Biodigital Twins”: optimizing biomaterials for orthopaedic implants.
Michael Gasik

Po2_2.10 Physicochemical characterization and in vitro-evaluation of Bi-doped dendritic mesoporous bioactive glass nanoparticles for bone void-filling applications.
Daniela Jaramillo, Germán Clavijo Mejía, Lenka Buňová, Meng Li, Fatih Kurtuldu, Dušan Galusek, Aldo Boccaccini, Martin Michálek

Po2_2.12 Mimicking physiology: Perfusion bioreactor characterisation of the polyphenol-functionalized hydrogels for controlled drug delivery.
Anais Morgane Le Masson, Jovana Zvicer, Silvia Spriano, Francesca Gamna, Sara Ferraris, Jasmina Stojkovska

Po2_2.14 Next-Generation Biomaterials: Mesoporous Bioactive Glasses Enhance the Performance of Calcium Phosphate Bone Cements.
Dagnija Loca, Öznur Demir, Aldo Boccaccini

Po2_2.18 Templated Synthesis of Hollow RuO2 Nanospheres for Alleviating Metal Wear Particle-Induced Osteoclast Activation and Bone Loss.
Ziying Sun, Hui Wei, Dongquan Shi, Nirong Shi

Po2_2.20 Dual-targeted Therapy Based On The Macrophage Niche In Rheumatoid Arthritis.
Siyue Tao, Jian Chen, Fengdong Zhao

Po2_2.37 Breathing Micelles For Combinatorial Treatment Of Rheumatoid Arthritis
Siyue Tao, Tao You

Po2_2.23 Effect of LIPUS on the degradation behavior of magnesium alloy scaffolds for bone repair: Insights from in vitro and in vivo studies.
Jun Wang, Yuan Zhang, Mingran Zheng, Delin Ma, Shaokang Guan

Po2_2.24 Near-Infrared Light-Responsive Nanozymes for Reversible Modulation of ROS to Regulate Osteogenic Differentiation.
Zhenzhen Wang

Po2_2.25 Stem Cell-Laden Hydrogels with Biomimetic Microenvironment for Osteochondral and Cartilage Tissue Engineering.
Bingbing Xu, Wei Liu

Po2_2.26 Comparative Study of Mechanical and Biological Properties of Decellularized Extracellular Matrix Hydrogels Prepared Using Two Crosslinking Strategies for Cartilage Repair.
Jiangyao Xu, Jacek K Wychowaniec, Matteo D'Este, Mauro Alini, Sibylle Grad, Jeroen Geurts, Zhen Li

Po2_2.31 In-situ Sprayed platelet-derived small extracellular vesicles for the skin flap survival by reducing PANoptosis.
Liu Zhe, Zhu Zhong, Zhang Qing

Po2_2.32 Decellularized-disc based allograft and xenograft prosthesis for the long-term precise reconstruction of temporomandibular joint disc.
Haozhe Chen, Nan Jiang, Zhen Li, Songsong Zhu

Po2_2.33 Fibercoll-Flex-N® in Bone Tissue Engineering: A new formulation of fibrillar collagen and Hydroxyapatite Bioink for Functional Bone Regeneration.
Teresa Zuñiga Arrarás, Amaia Guembe, Iker Ateca, Lena Figur, Loli Gálvez, Jesús Izco

Po2_2.34 Amorphous calcium phosphate with incorporated glutamic acid enhances bone regeneration.
Jingzhi Fan, Annija Vaska, Antons Sizovs, Janis Locs, Kristaps Klavins

Po2_2.35 Development of Antibacterial Bone Cements Based on Calcium Phosphate Composites for the Treatment of Bone Infections.
Hanaa Mabroum, Hicham Ben Youcef, Hassane Oudadesse, Allal Barroug, Hassan Noukrati

Po2_2.36 The wear assessment of a hip implant comprised of a silicon nitride femoral head paired with UHMWPE cup.
Rafael M Trommer, Ricardo dos Santos, Rui Silva

Infection

Po2_3.01 Arthroscopic debridement enhanced by intra-articular antibiotic-loaded calcium sulphate beads for septic arthritis of a native knee following iatrogenic joint injection: a case report.
Simone Alongi, Elisa Troiano, Cristina Latino, Giovanni Battista Colasanti, Nicola Mondanelli, Stefano Giannotti

Po2_3.02 Regulatory Role of Mycobacterium tuberculosis Secreted Protein ESAT-6 in Osteoclast Differentiation.
Mengxuan Dai, Chen Tu, Wensheng Zhang, Minye He, Liming Dong, Jie Zhang, Liang Wang

Po2_3.03 Characteristics and anatomical location of infected pin-sites.
Marie Fridberg, Anirejuoritse Bafor, Hans-Christen Husum, Christopher Iobst, Ole Rahbek, Søren Kold

Po2_3.04 Monitoring Early-Stage Osteoarthritis in a Tissue-Engineered In Vitro Model Using Near-Infrared Spectroscopy.
Arjen Gebraad, Harini Karunarathna, Nithin Sadeesh, Omar Elkadi, Antti Eskelinen, Ervin Nippolainen, Susanna Miettinen, Isaac Afara

Po2_3.09 Tobramycin and BMP2-loaded collagen scaffold for treatment of fracture related infection while promoting bone healing in a critical size defect model in rabbits.
Claudia Siverino, Daniel Arens, Fintan Moriarty

Po2_3.12 Assessing diagnostic accuracy: 18F-FDG PET-CT Scans in Low-Grade Infection Detection among Post-traumatic Long Bone Non-unions.
Lotte van der Broeck, Anna Lodewijks, Cristina Mitea, Daan Loeffen, Martijn Poeze, Shan Shan Qiu Shao, Jan Geurts, Taco Blokhuis

Po2_3.14 Evaluation of daptomycin-supplemented antibiotic-loaded bone cement for treating vancomycin-resistant Enterococcus faecalis in the Galleria mellonella implant infection model.
Martina Humez, You Z, Gopala-Krishna Mannala, Volker Alt, Martijn Riool, Klaus- Kühn

Po2_3.16 Gel for delivery of antibiotics (GEDAI) demonstrates antibacterial efficacy in sheep models of S. aureus orthopedic device-related infections (ODRI).
Claudia Siverino, Lena Gens, Pamela Nylund, Andrew Foster, Willemijn Boot, Mats Bue, Stephan Zeiter, R. Richards, Matteo D'Este, T. Moriarty

Po2_3.17 Using Metabolomics as a Diagnostic Tool for Early Detection of Fracture-Related Infections: Insights from a Pilot Study.
Theresa Schiemer, Claudia Siverino, Fintan Moriarty, Kristaps Klavins

Injury & Healing

Po2_4-01 Synovial Inflammation Increases Anti-Inflammatory and Anti-Degradative Activity in Mesenchymal Stromal Cells.
Pratham Adajania, Rawiya Al Hosni, Mark Birch, Andrew McCaskie

Po2_4.02 The Role of Immobilised Wnt16 in Modulating Adaptive Immunity and Directing Cartilage Repair and Regeneration.
Rawiya Al Hosni, Richard Moakes, Karthik Chary, Nisha Ramakrishnan, Hayat Muhammad, Joshua Kaggie, Alicia El Haj, Mark Birch, Andrew McCaskie

Po2_4.04 PML3 A Risk Prediction Tool In Patients With Displaced Neck Of Femur Fractures.
Filip Brzeszczyński, Angela Dziedic, David Hamilton, Marek Synder, Oktawiusz Bończak

Po2_4.05 Mineralization of ATDC5 cells in an in vitro endochondral ossification model.
Eva Burgers, Chris Arts, Tim Welting, Marjolein Caron

Po2_4.07 A “Lucky” Shoulder Injury.
Yuchen He, Weihong Zhu

Po2_4.08 Enhancing Diabetic Wound Healing by Tibial Cortex Transverse Transport (TTT): The Role of Monocyte-Dependent Th17 Cell Activation.
Jiakang Jin, Huating Wang, Gang Li, Sien Lin

Po2_4.09 The role of viscoelasticity in shaping pro-inflammatory macrophage phenotypes.
Raphael Knecht, David Mooney, Katharina Schmidt-Bleek, Georg Duda

Po2_4.10 Investigating the Role of Osteoporosis in Rotator Cuff Tears: Causal Relationships and Shared Genetic Loci.
Yibin Liu, Rong Zhao, Zhiyu Huang, Feifei Li, Xing Li, Kaixin Zhou, Kathleen Derwin, Xiaofei Zheng, Hongmin Cai, Jinjin Ma

Po2_4.11 Unravelling the immuno-mechanical dynamics in the early stages of long bone fracture healing.
Liesbeth Ory, Gabriele Nasello, Tom Verbraeken, Przemko Tylzanowski, Liesbet Geris

Po2_4.13 Effect of epidermal growth factor on primary wound healing.
Serkan Savaş, Mehmet Konya, Sakhi Fazli, Osman Tosun, Bilge Yılmaz, Merve Savaş

Po2_4.14 Investigating lymphangiogenesis in bone fracture models using a spatial transcriptomic approach.
Tom Verbraeken, Gabriele Nasello, Liesbeth Ory, Ioannis Papantoniou, Liesbet Geris, Przemko Tylzanowski

Po2_4.16 Therapeutic Application of Recombinant Human Platelet-Derived Growth Factor-B Homodimer and Collagen-Bioceramic Composites for Critically-Sized Non-Union Bone Defects.
Lukasz Witek, Vasudev Nayak, Quinn Ehlen, Joseph Costello II, Nicholas Mirsky, Blaire Slavin, Sophie Kelly, Camila Suarez, Paulo Coelho

Po2_4.17 The impact of medial patellotibial ligament injury on the tension of the medial patellofemoral ligament.
Xingquan Xu, Shuyu Yuan, Qing Jiang

Po2_4.20 Comparative spatial analysis of axolotl and mammalian patterning during limb development and regeneration.
Alex Trostle, Dimitri Sokolowskei, Mimi Sammarco, Catherine McCsuker, Robert Tower

Po2_4.21 Case report: severe subgaleal haematoma associated with methamphetamine intoxication.
Rita Falcao, Cátia Ferreira

Po2_4.22 TrkA+ sensory nerve signaling is required to promote digit regeneration.
Mimi Sammarco, Emily Busse, Dimitri Sokolowskei, Kyle Berry, Sarah McMahon, Robert Tower

Medical Devices

Po2_5.04 Clinical Application of an Intelligent Walker and Remote Rehabilitation System in Lower Limb Orthopedic Postoperative Rehabilitation.
Zhenzhong Zhu, Changqing Zhang, Qian Tang, Jiagen Sheng

Po2_5.05 Ultrasonic vs. Conventional Saw Bone Cutting in a Rat Tibial Fracture Model: Comparable Healing Outcomes.
Nisreen Al-Namnam, Steph Collishaw, Melanie Wheeldon, Xuan Li, Margaret Lucas, A. Hamish R. W. Simpson

Stem Cells

Po2_6.01 Exploiting Mechanical Cues to Enhance Mesenchymal Stem Cell Differentiation for Modern Orthopaedic Applications.
Farah Daou, Stefano Gabetti, Beatrice Masante, Eleonora Zenobi, Carlotta Achille, Elisa Scatena, Simone Israel, Cristina Bignardi, Diana Massai, Andrea Cochis, Lia Rimondini

Po2_6.02 Dexamethasone-Induced Gene Expression Dysregulation in Osteogenic Differentiation and Inflammation of Human Mesenchymal Stromal Cells.
Jorge Úbeda Garrido, Antoine Buetti-Dinh, Claudia Siverino, Martin Stoddart, Elena Della Bella

Po2_6.03 Targeting MCH Neuroendocrine Circuit in Lateral Hypothalamus to Protect Against Skeletal Senescence.
Bin Guo, Yuqi Liu, Yong Zhu, Jianxi Zhu

Po2_6.04 Live Tracking of Cellular Functional Osteogenic Differentiation Using Spherical Nucleic Acid mRNA Nanoflare-based Sensors.
El Mustapha Haddouti, Tianli Hu, Hannes Beckert, Christof Burger, Dieter Wirtz, Chenjie Xu, Frank Schildberg

Po2_6.05 Towards a 3D Organoid Model to study Effects of the Immune Checkpoints Programed Cell Death Ligand 1 (PD-L1) and Its Receptor PD-1 on Bone Homeostasis.
El Mustapha Haddouti, Mengbo Zhu, Surendar Jayagopi, Viktoriia Mospan, Tianli Hu, Hannes Beckert, Janine Becker-Gotot, Alina Armbruster, Chenjie Xu, Lamia Singer, Christoph Bourauel, Christof Burger, Dieter Wirtz, Frank Schildberg

Po2_6.06 Optimizing MSC-based Therapies: Enrichment of Immunomodulatory Populations for Inflammatory Orthopedic Disorders.
Luan Hatt, Nick Herger, Jan Devan, Tamara Mengis, Mazda Farshad, Oliver Distler, Stefan Dudli

Po2_6.11 A Comparison of Bovine Adipose-Derived Mesenchymal Stromal Cells With Nucleus Pulposus Progenitor Cells: Exploring Extracellular Vesicle Therapy for Intervertebral Disk Regeneration.
Leon Schlagenhof, Carla Raffaele, Cristina Zivko, Paola Luciani, Ali Hashemi Gheinani, Benjamin Gantenbein

Po2_6.13 Adipose stem cells from supra lata area: As efficient as abdominal adipose tissue source.
Julia Vettese, Julie Manon, Gaspary Fodjeu, Alexandre Goussens, Benoît Lengelé, Olivier Cornu

Po2_6.14 Role of timing in mechanically induced in vitro cartilage formation.
Katrin Wendrich, Maja Schlittler, Laura Mecchi, Elena Della Bella, Martin Stoddart

Po2_6.15 Stem Cell-Laden Hydrogels With Biomimetic Microenvironment for Osteochondral and Cartilage Tissue Engineering.

Bingbing Xu, Wei Liu

Tendon /Ligament

Po2_7.02 The Biomechanical Properties of Hamstring Autografts Presoaked with Vancomycin Under Cyclic Loading.
Tae Soo BAE, Hyung-Jun Park, Dai-Soon Kwak

Po2_7.05 Enhanced cell proliferation and cytoskeletal reorganization depending on cyclic stretch program of lapine Achilles tenocytes and human mesenchymal stem cells.
Clemens Gögele, Clea Wiedmann-Kline, Jens Konrad, Christian Werner, Kerstin Schäfer-Eckart, Bernd Hoffmann, Gundula Schulze-Tanzil

Po2_7.06 Comparative efficacy and safety of different surgical approaches for the treatment of anterior cruciate ligament injury: a Bayesian network meta-analysis.
Yuchen He, Weihong Zhu

Po2_7.07 Biomimetic Poly-ε-caprolactone Braids for Anterior Cruciate Ligament Reconstruction: An Analysis of the Influence of the Filament Arrangement on Mechanical Behavior.
Saskia Hesse, Benedict Bauer, Thomas Gries, Caroline Emonts

Po2_7.08 Age-Related Alterations in 3D Microvasculature of Equine Tendons: Insights from Immunolabelling and Micro-Computed Tomography.
Nodoka Iwasaki, Jack Llewellyn, Elizabeth Finding, Caroline Wheeler-Jones, Chavaunne Thorpe

Po2_7.09 Analysis of imaging presentations, full endoscopic evaluation, and pathological characteristics of a novel interlaminar ligament.
Xiaofeng Le

Po2_7.10 The ageing tendon extracellular matrix is compromised by senescent cells.
Jack Llewellyn, Nodoka Iwasaki, Jay Dudhia, Richard Faragher, Chavaunne Thorpe

Po2_7.12 The Cambridge Knee Injury Tool (CamKIT): A Clinical Prediction Tool for Acute Soft Tissue Knee Injuries.
Thomas Molloy, Benjamin Gompels, Simone Castagno, Stephen McDonnell

Po2_7.13 Assessing Diagnostic Challenges in Acute Soft-tissue Knee Injuries: A Delphi Study.
Thomas Molloy, Benjamin Gompels, Stephen McDonnell

Po2_7.14 PIEZO1 promotes tendon growth in adults via mechanical stress.
Ryo Nakamichi, Masataka Ueda, Hisakazu Shitozawa, Taichi Saito, Toshifumi Ozaki

Po2_7.17 The effect of mechanical stress on enthesis homeostasis in a rat Achilles enthesis organ culture model.
Taichi Saito, Masataka Ueda, Hisakazu Shitozawa, Ryo Nakamichi, Toshifumi Ozaki

Po2_7.19 Anterior cruciate ligament in the osteoarthritic human knee: fibril-level changes revealed by the atomic force microscopy.
Adnan Tahir, Cristina Florea, Petri Tanska, Mikko Finnilä, Heikki Kröger, Rami Korhonen, Aapo Ristaniemi

Po2_7.21 The role of SIRT3 of mitochondrial homeostasis regulation in rotator cuff injury and repair.
Xueying Zhang, Jiebo Chen

Po2_7.23 Unveiling inflammation dissipation and pro-fibrotic cell populations of subacromial bursa as critical contributors to frozen shoulder by integrating single-cell transcriptomics and spatial

Tissue Engineering

Po2_8.01 Osteochondral tissue regeneration in an orthotopic rat model using gelatin-based cellular implants.
Hannah Agten, Jasper Van Hoorick, Sandra Van Vlierberghe, Veerle Bloemen

Po2_8.05 Bridging the Gap in Cartilage Repair: Development of a Human Osteochondral Explant Model for Advanced Regenerative Therapies.
Johanna Brobeil, Dorothea Alexander- Friedrich, Marina Danalache, Felix Umrath, Johanna Brobeil

Po2_8.07 Cytoskeleton reorganization rejuvenates senescent chondrocytes via FAK/Dnmt1 pathway.
Yuchen He

Po2_8.08 Detergent-free supercritical CO2–assisted protocol for the sustainable production of highly preserved decellularized porcine meniscus for orthopedic applications.
Chou Ho, Francisco Rodrigues, Mariana Reis, Viviana Ribeiro, Ana Oliveira, João Costa

Po2_8.09 MiRNA modulation for bone-vessel-nerve triad regeneration: A breakthrough in bone defect therapy?
Virginie Joris, Noémie Tilquin, Martijn van Griensven

Po2_8.10 Guiding cell alignment and chondrogenesis for articular cartilage repair.
Alisa Suturin, Julia Kamp, Laura De Laporte, Jietao Xu, Nicole Kops, Gerjo van Osch

Po2_8.11 Adaptation of Near Infrared Spectroscopy for In Situ Monitoring and Optimisation of Tissue Engineered Cartilage Growth.
Harini Karunarathna, Nithin Sadeesh, Omar Elkadi, Antti Eskelinen, Ervin Nippolainen, Arjen Gebraad, Susanna Miettinen, Isaac Afara

Po2_8.13 Injectable polymeric hydrogel for advanced cell delivery in cartilage regeneration.
Ján Kováč, Pavla Hájovská, Zuzana Kroneková, Juraj Kronek, Stanislav Žiaran, Ľuboš Danišovič, Abolfazl Heydari, Igor Lacík

Po2_8.14 A New In Vitro Model of Inflammation and Endothelial Dysfunction to Investigate the Effects of Ion-Releasing Fabrics on Musculoskeletal Inflammatory Processes.

Erwin Pavel Lamparelli, Saveria Batti, Vincenzo Visco, Nicola Maffulli, Giovanna Della Porta

Po2_8.17 Macromolecular crowding in the development of advanced therapy medicinal products for orthopaedic indications.
Dimitrios Zeugolis

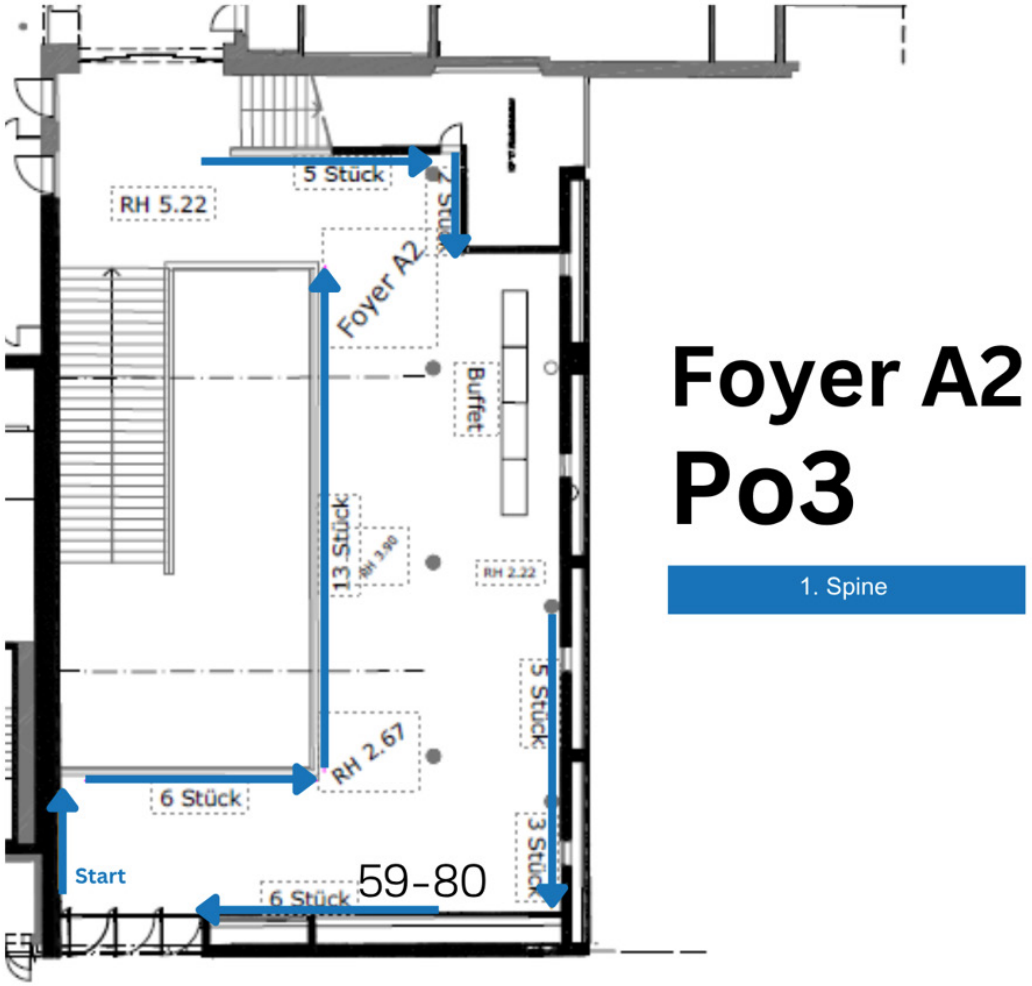
Po2_8.18 The Study of Osteoporosis Induced by Chronic Colitis Through the Tryptophan Metabolism Pathway.
Ping Zhang, Hao Wu, Liang Zhang

Po2_8.19 The Role of GDF5 in Enhancing Cell Survival on Silk Scaffolds for Intervertebral Disc Regeneration.
Ashish Kumar, Sophie van Leemput, Sónia Filipa Fernandes Marques, Parisa Torabi Rahvar, Michael Wöltje, Benjamin Gantanbein

Wearables

Po2_9.01 Tracking Recovery: From Injury to Recovery with Motion Capture and Sensor Technology.
Annchristin Andres, Michael Roland, Marcel Orth, Stefan Diebels

Po2_9.02 Digital monitoring of patients undergoing orthopedic deformity correction: feasibility and patient acceptability.
Pernille Clasen, Lili Jensen, Tina Jensen, Arash Ghaffari, Harshit Mahapatra, Ole Rahbek, Søren Kold



Foyer A2

Po3

Spine

Po3_1.01 Exploring the 3D architecture of native and stained human intervertebral discs through micro-CT.
Raluca Barna, Federica Orellana, Marie-Rosa Fasser, Daniel Valent, Jonas Widmer, Annapaola Parrilli

Po3_1.03 A Degradable Nanofibrous Scaffold Of Poly(E-Caprolactone-Co-Lactide) For Annulus Fibrosus Regeneration.
Mansoor Chaaban, Chloé Falcoz, Coline Pinese, Hans-Joachim Wilke, Jan Ulrich Jansen, Floriane Etienne, Marion Fusellier, Benjamin Nottelet, Xavier Garric, Jérôme Guicheux, Catherine Le Visage

Po3_1.04 Vertebral fracture prediction from MRI-based vertebral bone quality scores in postmenopausal women: A longitudinal cohort study.
Tao Chen, Zhiyun Wang, Wentao Lin, Xiaoqian Wang, Houjie Yin

Po3_1.07 Noggin Expression in Human Nucleus Pulposus Cells: A Comparative Study of Degenerative and Healthy Intervertebral Discs.
Shuimu Chen, Sebastian Bigdon, Sonja Häckel, Christoph Albers, Zhen Li, Benjamin Gantenbein

Po3_1.08 Improved Intervertebral Disc Fusion with Biologics: The prostaglandin E2 receptor 4 agonist KMN159 acts synergistically with BMP2 and L51P to induce osteogenic differentiation of human annulus fibrosus cells.
Shuimu Chen, Xinggui Tian, Stefan Zwingenberger, Christoph Albers, Benjamin Gantenbein, Sonja Häckel

Po3_1.09 TAL1/FOXO3 axis in chondrocyte apoptosis regulated by the PI3K-Akt-mTOR signaling pathway in LFJOA.
Tao Chen, Zhiyun Wang

Po3_1.10 ECM degradation-driven accumulation of cytotoxic Vδ1 T-cells in Modic type 1 changes.
Jan Devan, Irina Heggli, Tamara Mengis, Michaela Sandalova, Dominick Burri, Pamela BItterli, NIck Herger, Danilo Menghini, Phelipe Hatt, Kenta Brender, Melina Valdes, Cristoph Laux, Mazda Farshad, Oliver Distler, Stefan Dudli

Po3_1.13 Immune cell alterations in patients with post-operative infections of the spine.
Pia Fehrenbach, Siegmund Lang, Puk Kwant, Maja Gocevic, Anne Sophie Mittlmeier, Claudia Siverino, Cezmi A. Akdis, Esther C. de Jong, T. Fintan Moriarty, Sybille Grad, Markus Loibl

Po3_1.14 Mitophagy inhibitor SPP1 regulates nucleus pulposus cell fate during degeneration and calcification by activating ITGα5/β1 and inhibiting ubiquitin-dependent PINK1/PARKIN pathway.
Yuan Gao, Hanwen Gu, Lei Cheng

Po3_1.17 Plasmacytoid dendritic cells expand in Modic type 1 change bone marrow lesions and overexpress toll-like receptor 4.
Irina Heggli, Jan Devan, Dominik Burri, Tamara Mengis, Kenta Brender, Oliver Distler, Mazda Farshad

Po3_1.18 Impact of Caudal Segment Bone Fusion on Rod Load at the Cranial Segment in a Two-Level Spinal Interbody Fusion Construct – A Biomechanical Study.
Maximilian Heumann, Chencheng Feng, Boyko Gueorguiev, Jan Buschbaum, Christian Mazel, Maarten Spruit, Robert Richards, Manuela Ernst

Po3_1.20 Is there an association between scoliosis in childhood and adolescence and long term risk of cancer? A systematic review.
Frederik Højsager, Lea Laursen, Ane Simony, Rene Castelein

Po3_1.22 How to implant a degradable, regenerative annulus fibrosus closure? An in vitro study.
Jan Ulrich Jansen, Leonie Riek, Mansoor Chaaban, Chloé Falcoz, Xavier Garric, Marion Fusellier, Cornelia Neidlinger-Wilke, Jérôme Guicheux, Catherine Le Visage, Hans-Joachim Wilke

Po3_1.23 Development of High-throughput Assay to Screen Potential Drugs Identifies Papaverine as Neuroprotection Drug for Spinal Cord Injury via Blood-spinal Cord barrier protection.
Yuki Suzuki, Ken Kadoya, Akihito Sotome, Atsushi Sakuraba, Takeshi Endo, Tsuyoshi Asano, Satoko Otsuguro, Katsumi Maenaka, Shinsuke Nakagawa, Norimasa Iwasaki

Po3_1.25 3D bioprinting of whole intervertebral discs analogues reveals regulation of cell phenotype and regional matrix formation through stiffness and oxygen tension modulation.
Matthew Kibble, Marco Domingos, Stephen Richardson

Po3_1.28 Discordance in lumbar bone mineral density measurements by quantitative computed tomography and dual-energy X-ray absorptiometry in postmenopausal women: a prospective comparative study.
Wentao Lin, Zhiyun Wang, Houjie Yin, Tao Chen, Xiaoqian Wang

Po3_1.29 Hypoplasia of the atlas pedicle in patients with os odontoideum: a CT-based morphometric analysis.
Wentao Lin, Faqin Xie, Xiaoqian Wang, Zhiyun Wang

Po3_1.30 Assessment of bone density using the 1.5 T or 3.0 T MRI-based vertebral bone quality score in older patients undergoing spine surgery: Does field strength matter?
Wentao Lin, Zhiyun Wang

Po3_1.34 Calcium pyrophosphate dehydrate crystals induce pro-inflammatory and proteolytic gene expression in disc cells and are walled-off in situ.
Tamara Mengis, Andreas Invernizzi, Olivia Hardegger, Andrea Laimbacher, Roy Marcus, Mazda Farshad, Oliver Distler, Florian Brunner, Stefan Dudli

Po3_1.35 Intervertebral Disc State Fingerprint to classify degeneration and low back pain in the Northern Finland Birth Cohort 1966.
Estefano Muñoz-Moya, Terence McSweeney, Francis Kiptengwer-Chemorion, Mark van Gils, Jaro Karppinen, Carlos Ruiz Wills, Gemma Piella, Jérôme Noailly

Po3_1.37 The Role of Platelet-Rich Plasma (PRP) in Posterolateral Lumbar Fusion: A Meta-Analysis of Fusion Success and Safety With Subgroup Analyses by Instrumentation and PRP Preparation.
Chawakrit Pansritoom

Po3_1.38 Optimizing Cage Material and Surgical Approach (Open vs. MIS) in TLIF: A Network Meta-Analysis of PEEK, Titanium, TiPEEK, and 3D-Printed Titanium.
Chawakrit Pansritoom

Po3_1.39 Long-Term Outcomes of Cortical Bone Trajectory versus Traditional Pedicle Screws in Lumbar Fusion: A Systematic Review and Meta-Analysis.
Chawakrit Pansritoom

Po3_1.40 The Importance of Psoas Muscle on Low Back Pain: a Single-Center Study on Lumbar Spine MRI.
Giuseppe Francesco Papalia, Fabrizio Russo, Gianluca Vadalà, Luca Ambrosio, Girolamo Maltese, Niccolò Nardi, Carlo Augusto Mallio, Rocco Papalia, Vincenzo Denaro.

Po3_1.41 The Fear-Avoidance Model in Patients with Low Back Pain: A Systematic Literature Review and Meta-Analysis.
Giorgia Petrucci, Giuseppe Papalia, Luca Ambrosio, Fabrizio Russo, Rocco Papalia, Gianluca Vadalà, Vincenzo Denaro

Po3_1.43 Advancements in AI for Low Back Pain Integrating Automated Muscle Analysis and Disc Identification.
Fabrizio Russo, Gianluca Vadalà, Giuseppe Francesco Papalia, Luca Ambrosio, Mario Merone, Federico D'Antoni, Rocco Papalia, Vincenzo Denaro

Po3_1.44 Cross-Cultural Adaptation and Validation of the Spanish Version of The Early-OnsetScoliosis Self Report Questionnaire (EOSQ-SELF).
Joseph Salem-Hernández, Cristian Cortés-Nieves, Hiroko Matsumoto, Norman Ramirez-Lluch, Pablo Marrero

Po3_1.45 Thoracic pedicle screw anchorage using the new modified slide technique.
Werner Schmoelz, Fabian Krumm, Anna Spicher, Romed Hoermann, Richard Lindtner

Po3_1.50 Accuracy of subaxial cervical pedicle screw placement with computer navigation system.
Yasuyuki Shiozaki

Po3_1.51 Mechanosensitive ion channel PIEZO1 regulates ossification of Annulus Fibrosus.
Hisakazu Shitozawa, Ryo Nakamichi, Ueda Masataka, Taichi Saito, Aki Yoshida

Po3_1.52 Targeting cellular senescence to combat osteoarthritis and intervertebral disc degeneration.
Joseph Snuggs, Heather Wilson, Endre Kiss-Toth, J Mark Wilkinson, Christine Le Maitre

Po3_1.55 Mechanism of FTO-Mediated m6A Demethylation Regulation of YAP in Nucleus Pulposus Cell Senescence.
Rui Sun, Cong Zhang, Xiaotao Wu

Po3_1.57 Fusion Rate of Biphasic Calcium Phosphate Bone Graft with Needle-Shaped Submicron Topography in Interbody Lumbar Fusion for Degenerative Disc Disease: A Single-Center Retrospective Review.
Samuel Wakelin, Kelsey D. Cobourn, Thomas Stirrat, Katherine Sage, James T. Ryaby, Faheem A. Sandhu, Luuk Van Dijk, Ceri-Anne Suurmond

Po3_1.58 Value of different preoperative bone evaluation methods in predicting intraoperative screw insertion torque-a prospective clinical comparative trial.
Zhiyun Wang, Houjie Yin, Wentao Lin

Po3_1.59 Macrophage-derived Legumain Attenuates Intervertebral Disc Degeneration by Regulating Stress-induced Catabolism and Metabolism Imbalances of Nucleus Pulposus cells via the Integrin αvβ3/RhoA/ROCK1 Pathway.
Peiyang Wang, Zhiyang Xie, Lei Liu, Cong Zhang, Yuntao Wang, Xiaotao Wu

Po3_1.75 A cadaver feasibility study of extradural contralateral C7 ventral root transfer technique for treating upper extremity paralysis.
Kaixiang Yang

Po3_1.78 Early Markers of Mechanical Intervertebral Disc Degeneration of Whole Bovine Discs Loaded in a Multiaxial Bioreactor.
Barbora Kubincova, Marcia Mürner, Junxuan Ma, Aapo Ristaniemi, Stephen Ferguson, Francesco Crivelli, Diane Ledroit, Gilles Weder, Amra Šećerović, Sibylle Grad

Po3_1.79 Low-magnitude high-frequency vibration and Piezo1 contribute to intervertebral disc degeneration.
Luisa de Roy, Claudia Goerlich, Astrid Schoppa, Melanie Haffner-Luntzer, Anita Ignatius, Cornelia Neidlinger-Wilke, Graciosa Teixeira

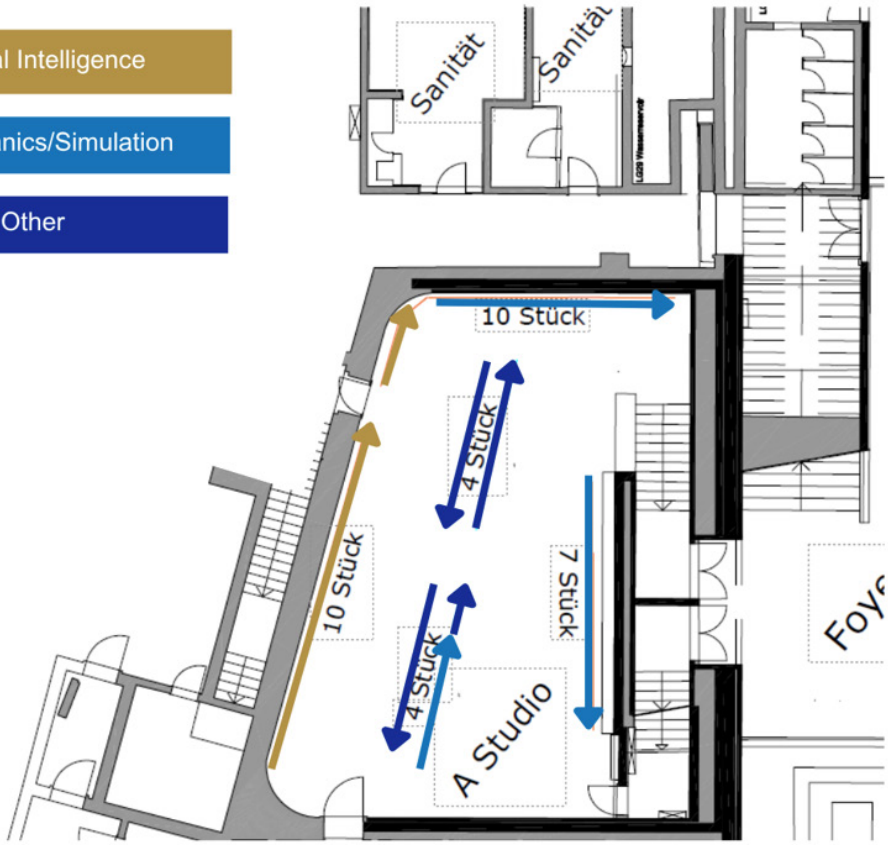
Po3_1.80 Controllable nitric oxide release material relieves intervertebral disc degeneration through antibacterial effect and inhibiting osteoclast activation.
Siyue Tao, Fengdong Zhao

A Studio
Po4

1. Artificial Intelligence

2. Biomechanics/Simulation

3. Other



A Studio

Po4

Artificial intelligence

Po4_1.02 Can web-based applications improve visualisation and interpretation of machine learning predictions in Orthopaedics?
Simone Castagno, Stephen McDonnell, Mark Birch, Mihaela van der Schaar, Andrew McCaskie

Po4_1.03 Evaluating the Reliability of AI-Based Long Leg Alignment Analysis in EOS Imaging and Severe Deformities.
Shima Gholinezhad, Ole Rahbek, Hans-Christen Husum, Søren Kold

Po4_1.04 Automated Radiographic Assessment of Lower Limb and Foot Alignment Using Deep Neural Networks.
Luca Häfliger, Sydney Schmuki, Anika Stephan, Vincent Stadelmann

Po4_1.08 AI-assisted diagnosis using DEANet to improve correct diagnosis of iliac wing fracture and ischial spine fracture.
Chun-Hao Tsai, Kai-Cheng Lin, Yi-Chin Fong, Tsung-Y Ho

Po4_1.09 Deep Learning-Based Volumetric Analysis and Steinberg Classification of Osteonecrosis of the Femoral Head.
Keisuke Uemura, Kazuma Takashima, Yoshito Otake, Ganping Li, Hirokazu Mae, Hidetoshi Hamada, Yoshinobu Sato, Nobuhiko Sugano

Po4_1.10 Revolutionizing Orthopaedics: Opportunities and Challenges of Code-Free Deep Learning Technologies.
Nicholas Tin Lik Wong, Yu Tung Wong

Po4_1.11 Foundation Models: Shaping the Future of AI in Real-World Orthopaedic Practice.
Nicholas Tin Lik Wong, Yu Tung Wong

Po4_1.12 Orthopaedics-grounded generative adversarial network: friend or foe?
Nicholas Tin Lik Wong, Yu Tung Wong

Po4_1.13 Utilizing Machine Learning to Enhance Core Outcome Set Development: Automating the Extraction and Classification of Outcomes.
Ali Yalcinkaya, Kristian Kjelmann, Ole Rahbek, Søren Kold, Hans-Christen Husum

Po4_1.15 Deep learning model for differentiating acute and chronic osteoporotic vertebral compressive fracture from multidetector CT.
Kaixiang Yang

Po4_1.16 Automated Prediction of Bone Mineral Density and T-Score from Radiographs via Deep Learning.
Elvis Chun-Sing Chui, Xiaoli Liu, Xin Ye, Patrick Shu-Hang Yung

Po4_1.17 Effectiveness of a Large Language Model in Reverse Shoulder Surgery.
Elvis Chun-Sing Chui, Xiaoli Liu, Xin Ye, Patrick Shu-hang Yung

Po4_1.18 Diagnosis of Femoral Head Necrosis and Three-dimensional Spatial Localization of Necrotic Lesions Based on CT Perfusion Imaging Technology.
Ruo-Tao Liu, Zhen-Zhong Zhu, Chang-Qing Zhang

Biomechanics / Simulation

Po4_2.01 The Impact of Bilateral Total Hip Arthroplasty on Lower Extremity Biomechanics in Bilateral Developmental Dysplasia of the Hip-Associated Secondary Coxarthrosis: Medium-to-Long-Term Valgus Alignment in the Knee Joint.
Muhammed Yusuf Afacan, Mahmut Gorkem Gurcinar, Cumhur Deniz Davulcu, Mehmet Can Unlu, Gokhan Kaynak

Po4_2.02 The Impact of Total Hip Arthroplasty on Lower Extremity Biomechanics in Unilateral Developmental Dysplasia of the Hip-Associated Secondary Coxarthrosis: The Course of Valgus Alignment in the Knee Joint.
Muhammed Yusuf Afacan, Mahmut Gorkem Gurcinar, Cumhur Deniz Davulcu, Mehmet Can Unlu, Gokhan Kaynak

Po4_2.03 Regulatory Network Modeling of Macrophage Polarization Signaling Pathways in the Synovium of the Normal Knee Joint: Establishing a Baseline for Subsequent Modeling of Osteoarthritic Knee Joint Dynamics.
Yalemzerf Alemu, Jérôme Noailly

Po4_2.06 Combined Clinical, Biological and Biomechanical Investigations in The Evaluation of Knee Osteotomy Alone and Combined With Meniscal Allograft Transplantation.
Claudio Belvedere, Andrea Varaschin, Nicoletta Sileoni, Gina Lisignoli, Alessandro Di Martino, Stefano Zaffagnini, Lorenzo Zanasi, Elena Gabusi, Enrico Lenzi, Valentina Matti, Alberto Leardini

Po4_2.10 Dxa-Based 3d Finite Element Models Predict Hip Fractures Better Than Bmd In Ostpre Cohort.
Lorenzo Grassi, Sami Väänänen, Antti Voss, Tomi Nissinen, Reijo Sund, Heikki Kröger, Hanna Isaksson

Po4_2.11 Understanding the crosstalk between mechanical stimulation, macrophage polarisation and MSC differentiation: An in vitro model to simulate early events during bone fracture healing.
Anne Géraldine Guex, Ursula Menzel, Yann Ladner, Angela Armiento, Martin Stoddart

Po4_2.15 Unraveling the Mechanics of Buckyball Microscaffolds: A Computational Approach.
Ajay Kumar, Valentina Kumbolder, Rathina Balasubramanian, Julia Fernandez Perez, Aleksandr Ovsianikov, Christian Hellmich, Stefan Scheiner

Po4_2.17 Superior-Segment Bilateral Facet Violation in Lumbar Transpedicular Fixation: A Biomechanical Study.
Xiaofeng Le

Po4_2.19 Impact of Robotic-Assisted Unicompartmental Knee Arthroplasty on Tibial Periprosthetic Fracture: A Comparative Analysis to Conventional Approach.
Nirav Mungalpara`, Michael Redondo, Crystal Lin, Hristo Piponov, Farid Amirouche

Po4_2.21 How accurately can surgeons perform angle manipulation? Quantitative assessment of the accuracy of manual angle manipulation of orthopedic surgery: a cadaver study.
Young Hwan Park, Sang Gyun Kim, Woo Hyeun Kim

Po4_2.22 Piezo1 Conjugated Nanoparticles Induced Osteogenic and Anti-osteoclastogenesis Activation Regulated by Dynamic Magnetic Stimulation.
Yixian Qin, Elias Georgas, Muzhaozi Yuan, Ya Wang

Po4_2.23 Investigation of the influence of screw position and screw insertion on the local micro-mechanics of the fracture gap and the interfragmentary movement.
Michael Roland, Annchristin Andres, Kerstin Wickert, Stefan Diebels, Benedikt Braun

Po4_2.24 Electromyography analysis of muscle activity during virtual reality dynamic plank exercise on icaros pro machine.
Hasan SHARIF, Mohamed Elnemr, Faisal Mahmood, Khalid Salih, Hassan Khan, Philip Heaton (JNR), Buju Heaton, Phil Heaton (Ph.D)

Po4_2.25 Medial Opening-Wedge High Tibial Osteotomy Alters Three-Dimensional Knee Joint Biomechanics and Trunk Posture.
Yuki Suzuki, Yasumitsu Ohkoshi, Kensaku Kawakami, Shigeyuki Sakurai, Kengo Ukishiro, Tomohiro Onodera, Koji Iwasaki, Ko Suzuki, Tatsunori Maeda, Sho'ji Suzuki, Eiji Kondo, Norimasa Iwasaki

Po4_2.26 Enhancing Protein Interaction Networks in IVDD Using Machine Learning Link Prediction.
Sofia Tseranidou, Francesco Gualdi, Paola Bermudez-Lekerika, Exarchos Kanelis, Benjamin Gantenbein, Leonidas G. Alexopoulos, Christine L. Le Maitre, Janet Piñero, Jérôme Noailly

Po4_2.27 Preclinical characterization of Mg-Zn-Ca implants biomechanics, by using ovine tibia model.
Valentin Weigl, Omer Suljevic, Christopher Stahle, Fernando Warchomicka, Romy Marek, Nicole Sommer, Gerhard Sommer, Annelie Weinberg, Begüm Okutan

Po4_2.28 Impact of Computational Models on the Outcome of FE Biomechanical Simulations.
Kerstin Wickert, Annchristin Andres, Michael Roland, Benedikt Braun, Tina Histing, Stefan Diebels

Po4_2.30 The Comparative Biomechanical Effects Of Remplissage And Dynamic Anterior Stabilization On Treating On-Track And Off-Track Bipolar Bone Loss.
Chenliang Wu

Po4_2.40 bilateral cervical and shoulder range of motion asymmetry in university para athletes with neurological disorders.
Ryan Moran, Elizabeth Elder

Others

Po4_3.01 A disruptive Organ-on-Chip device with a paper-based origami configuration: the Phoenix-OoC.
Valentina Basoli, Javier Ramon, Kersti Hermansson, Goran Stojanovic, Cosimo Loffreda, Luciano Riso, Laura Belcastro, Sanja Kojic, Milica Abeer, Andrea Mainardi, Andrea Barbero, Florian Thieringer, Luca Fiore, Fabiana Arduini

Po4_3.02 Identification of Two Biological Subgroups of Complex Regional Pain Syndrome Type 1 by Transcriptomic Profiling of Skin and Blood.
Pamela Bitterli, Melina Perez Vertti Valdes, Astrid Jüngel, Jan Devan, Hubert Rehrauer, Lennart Opitz, Laura Sirucek, Petra Schweinhardt, Sabrina Catanzaro, Oliver Distler, Florian Brunner, Stefan Dudli

Po4_3.04 Does Metabolomic Profile Differ in Conventional and Activated Platelet-Rich Plasma?
Bilge Fidan, Ozan Kaplan, Emine Koç, Mustafa Çelebier, Feza Korkusuz

Po4_3.06 Arthrodesis of the subtalar joint using a novel biphasic calcium phosphate bone graft.
Thomas Fusco, Katherine Sage, Stasia Rush, Felicia Blom, Kyle Colvin, Luuk van Dijk, Ceri-Anne Suurmond

Po4_3.07 A Mahjong Player's Hidden Handicap.
Yuchen He, Jianwei We

Po4_3.09 Vascular invasion model of hypertrophic cartilage-like pellets: An in vitro feasibility study.
Anita Jose, Aline Klaus, Martin Stoddart, Esther Wehrle, Eric Farrell, Sophie Verrier

Po4_3.10 Does Freeze-Thawing Change the Metabolomic Active of Platelet-Rich Plasma?
Ozan Kaplan, Bilge Fidan, Emine Koç, İlayda Demirdiş, Mustafa Çelebier, Feza Korkusuz

Po4_3.11 Mechanoadaptation and tumor stemness driven by O-GlcNAcylation of the Notch1 intracellular domain promote stiffness-resistance and chordoma recurrence.
Chengjie Lian, Lei Liu

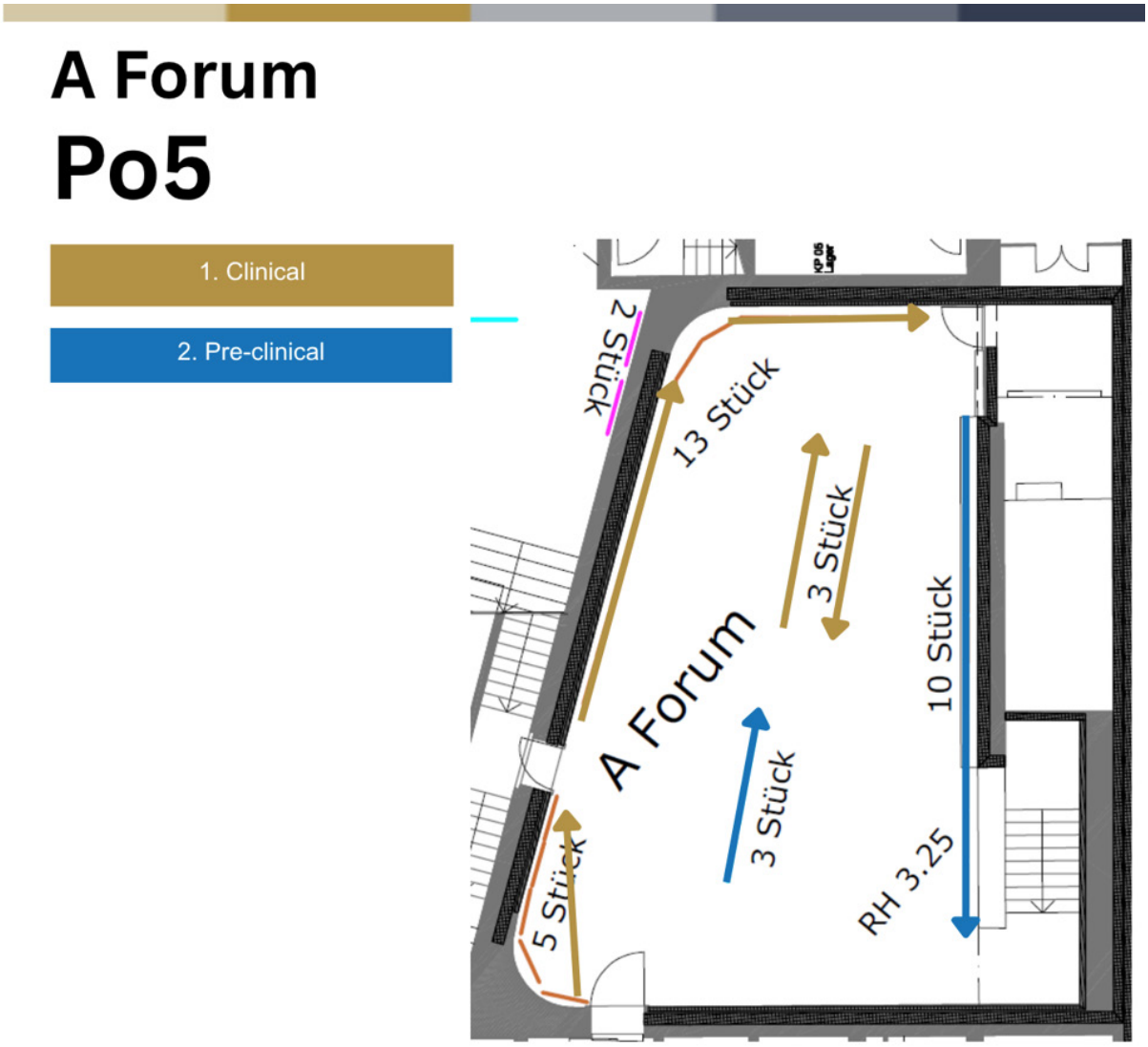
Po4_3.12 Expression and therapeutic potential of CDK11 in chordoma.
Xianzhe Liu, Francis Hornicek, Zhenfeng Duan

Po4_3.13 Decreased EZH2 expression impairs mitosis and cell cycle process through noncanonical mechanisms in senescent NPMSCs: Based on RNA-seq and CUT&Tag.
Zeta Ma, Zhen Tan, Jianrui Zheng, Deli Wang, Mohammed Saeed, Ruairí MacNiocaill, Wad Abdulla, Wisal Elryah, Swetha Ganesh

Po4_3.16 Tocopherol attenuates IVDD by inhibiting ferroptosis in nucleus pulposus mesenchymal stem cells.
Zhigang Peng, Jianrui Zheng, Zhen Tan, Gensen Ye, Deli Wang

Po4_3.17 Mechanisms of macrophage polarization toward M1 inhibition and delay of hormonal femoral head necrosis by EZH2 inhibitors through H3K27me3 modulation of SOCS3/TLR4 signaling.
Zhen Tan, Jianrui Zheng, Zhigang Peng, Gensen Ye, Deli Wang

Po4_3.18 EZH2 regulates the NPMSC senescence via cGAS/STING signaling pathway through H3K27me3 and alleviates.
Zhen Tan, Jianrui Zheng, Zetao Ma, Deli Wang



A Forum

Po5

Clinical

Po5_1.04 Reevaluating Patient Isolation for Post-Operative Infections: a scoping review.
Laura Bessems, Baixing Chen, Jolien Onsea, Annette Schuermans, Willem-Jan Metsemakers

Po5_1.08 Polyacrylamide Hydrogel For Knee Osteoarthritis: 5-Year Results From A Prospective Study.
Henning Bliddal, Jannie Beier, Andreas Hartkopp, Philip Conaghan, Marius Henriksen

Po5_1.09 Rehabilitation And Functional Outcomes In Oncological Patients Treated With Megaprosthesis Reconstruction: A Systematic Review.
Filip Brzeszczyński, Michał Karpiński, Marcel Brzeszczyński, Oktawiusz Bończak, David Hamilton

Po5_1.10 Evaluation of the Clinical Robotic-Assisted Total Hip Arthroplasty: A Meta-Meta-Analysis of Systematic Reviews and Meta-Analyses.
Josue Calderon, Jose Moreno, Diego Rincon

Po5_1.11 Mechanical failure after primary internal fixation of unstable ankle fractures – a retrospective observational study.
Pengchi Chen, Nicholas Heinz, Nathan Ng, Sam Molyneux, Tom Carter, Anish Amin

Po5_1.15 Safety and Accuracy of Percutaneous Osteotomy and Intramedullary Nailing Compared to Open Osteotomy with Plate Fixation in Femoral Derotational Surgery – a randomized controlled trial".
Anders Grønseth, Terje Terjesen, Joachim Horn

Po5_1.16 Inverse relationship between femoral lateralization and neck-shaft angle is a joint event after intramedullary nailing of per trochanteric fractures.
Wei Hao, Long Fang, Yongjie Lin

Po5_1.18 Mid-Term Results of The Modified Bereiter Trochleoplasty for patients with recurrent patellofemoral instability due to severe trochlear dysplasia: The Oswestry Experience.
Rakan Kabariti, Nikhil Sharma, Andrew George, Andrew Barnett

Po5_1.19 Incidence and Diagnostic Modalities used to detect Soft Tissue Knee injuries associated with fractures of the tibial plateau: A systematic review.
Rakan Kabariti

Po5_1.23 Ventilation Plaster As a Unique Way to Overcome Cutaneous Problems Associated During and Post Plaster Removal.
Shivam Mehra, Kamal Mehra, Nindiya Mehra, Sachin Kale

Po5_1.24 Data Insights on the Risks of Local Heat and Massage in Gouty Arthritis Treatment.
Shivam Mehra, Sachin Kale, Nindiya Mehra, Kamal Mehra, Bharat Manchanda

Po5_1.25 Atypical Presentation of Gout: Idiopathic Retrocalcaneal Pain in 400 Patients.
Shivam Mehra, Nindiya Mehra, Arvind Vatkar, Bharat Manchanda

Po5_1.26 Prevalence and Clinical Characteristics of Gout in Premenopausal and Postmenopausal Females: A Comparative Study.
Nindiya Mehra, Smruti Kale, Shivam Mehra, Sachin Kale, Kamal Mehra

Po5_1.27 Investigating the effects of inflammatory factors on joint tissues using near-infrared (NIR) spectroscopy on explant culture medium.

Nithin Sadeesh, Fatemeh Safari, Zhen Li, Adriaan Gebraad, Ervin Nippolainen, Susanna Miettinen, Sibylle Grad, Isaac Afara

Po5_1.29 Autonomic dysfunction with sympathetic dominance in patients with late-stage osteoarthritis recovered one year after total knee arthroplasty.
Rebecca Sohn, Tina Assar, Marco Brenneis, Sebastian Braun, Frank Zaucke, Georg Pongratz, Zsuzsa Jenei-Lanzl

Po5_1.30 Does intramedullary nailing through open growth plates cause harm? A scoping review.
Maria Tirta, Søren Kold, Ali Yalcinkaya, Jan Rölfing, Ole Rahbek

Po5_1.32 Geometric Modeling of Forearm Rotation for Subject-Specific Clinical Applications.
V. Tran, Wee Leow, Andy Yew, Joyce Koh, Tet Howe

Po5_1.33 "FengChao" Titanium Plate for Acromioclavicular and Coracoclavicular Ligament Reconstruction in the Treatment of Acromioclavicular Joint Dislocation.
Yuchen Wang, Weizhong Yu, Wenke Zhu, Chuan Jia

Po5_1.37 Impact Of Short Tibial Length On The Development Of Knee Osteoarthritis.
Xingquan Xu, Shuyu Yuan, Qing Jiang

Po5_1.40 The effect of femoral positioning deviation from the Schöttle point on graft tension in medial patellofemoral ligament reconstruction.
Shaojie Yang, Xingquan Xu, QING Jiang

Po5_1.41 Comparison of hip abductor muscle composition and its age-related alterations between the affected and the contralateral hip joints in female patients with unilateral osteoarthritis of the hip.
Tadashi Yasuda, Sadaki Mitsuzawa, Shinnosuke Yamashita, Yoshihiro Tsukamoto, Hisataka Takeuchi, Satoshi Ota, Eijiro Onishi

Po5_1.45 Total hip arthroplasty induced bullous pemphigoid with subsequent prosthetic joint infection: a case report and review of the literature.
Nadim Naim Rodriguez, Marc Saudan, Placido Bartolone

Po5_1.47 Effects of Total Hip Arthroplasty for Secondary Coxarthrosis Due to Developmental Dysplasia of the Hip on the Knee Joint.
Muhammed Yusuf Afacan, Mahmut Görkem Gürçınar, Cumhur Deniz Davulcu, Mehmet Can Ünlü, Gökhan Kaynak

Po5_1.48 Bone biomarkers and radiographic segmental weight bearing OA diagnostic scores as biomarkers for canine OA management.
Joel Alves, Eva Schnabl-Feichter, Deborah Mason

Preclinical

Po5_2.01 Translational osteochondral repair in a minipig model.
Pieter Berger, Marina Maréchal, Luis Mendes, Janne Vleminckx, Johan Lammens, Hendrik Delport, Frank Luyten, Liesbet Geris

Po5_2.02 Influence of different distraction regimes on femoral bone regeneration in a rat model.
Katrin Bundkirchen, Jan Ramge, Stefan Lienenklaus, Emmanouil Liodakis, Claudia Neunaber

Po5_2.03 Anti-RANKL treatment attenuates sarcopenia via modulating mitochondria and macrophage infiltration.
Wing-Hoi Cheung, Can Cui, Ronald Man Yeung Wong, Ning Zhang

Po5_2.04 The Role of the Gut-Bone-Brain Axis in Degenerative Shoulder Diseases: Mechanisms and Implication.
Yishu Fan, Yuchen He

Po5_2.05 The effect of rotational guided growth with flexible tethers on the distal femoral bone. An experimental study in a porcine model.
Ahmed Halloum, Maria Tirta, Søren Kold, Shima Gholinezhad, Jan Rölfing, John Rasmussen, Ahmed Abood, Ole Rahbek

Po5_2.06 Influence of fixation methods on macrophage expression and inflammatory cytokines in induced membranes during the Masquelet technique: A comparison of plate and interlocking intramedullary nail fixation in a mouse model.
Yota Kaneko, Hiroaki Minehara, Tatsuru Sonobe, Takahiro Seki, Takuya Kameda, Miho Sekiguchi, Takashi Matsushita, Yoshihiro Matsumoto

Po5_2.07 Investigating magnesium's role on murine bone in obese condition.
Kristina Kaufmann, Melina Amor, Begüm Okutan, Annelie-Martina Weinberg, Nicole Sommer

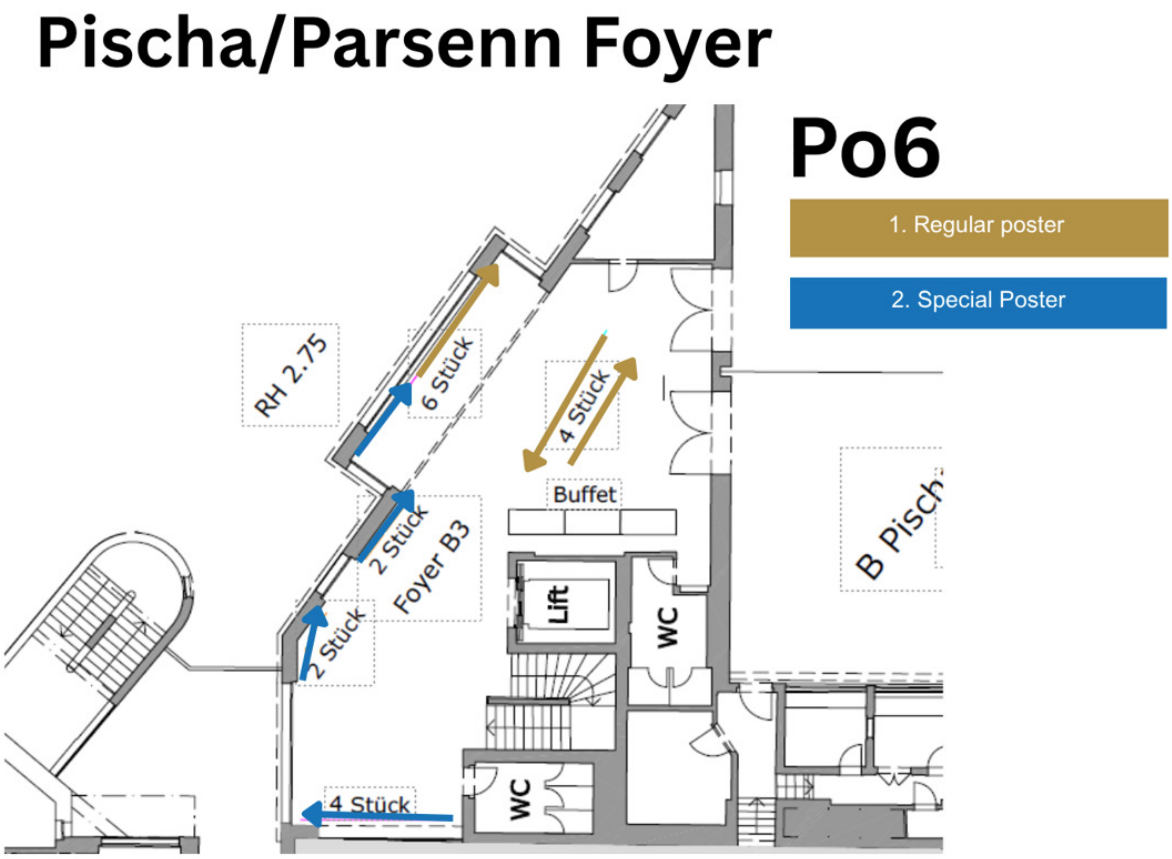
Po5_2.09 Triamcinolone Hexacetonide: Time- and Dose-Dependent Balancing Between MMPs and TIMPs in OA-Driven Synovial Inflammation.
Chen Liang, Marie Weeber, Rosa Riester, Frank Eisler, Sandra Frantz, Christian Walter, Marina Danalache

Po5_2.10 Piperlongumine mediates amelioration of OA via inhibition of chondrocyte senescence and inflammation.
Nindiya Mehra, Arijit Bhattacharjee, Saptomee Chakraborty, Dhirendra Katti

Po5_2.11 Reducing pin track infections by using implants with different coatings and antibiotic release.
Preslav Penev, Kristian Ivanov, Miroslav Raykov, Konstantin Ganchev, Milena Boshkova, Fintan Moriarty, Boyko Gueorguiev

Po5_2.13 ACLT + pMMx surgery successfully induces post-traumatic osteoarthritis in sheep.
Julie Uerlings, Juliane Grisart, Fanny Hontoir, Hak Bae Choi, Dae Kyong Kim, Ji Min Jang, Hyun Jung Ha, Jean-Michel Vandeweerd, Melanie Uebelhoer

Po5_2.15 A nociceptor predictive model of patient reported pain.
Ryan Jones, Deborah Masin



Foyer B3

Po6

CAOS Regular Poster

Po6_1.01 Small Implants in knee replacement: Patellofemoral and Uni-Compartmental Replacement.
Norberto Confalonieri, Alessio Maione and Pietro Simone Randelli

Po6_1.02 Development of a Statistical Shape Model of the Zygomatic-Maxillary Complex as Input to Plate Design Optimization.
Zuzanna Posluszna, Ruud Schreurs, Leander Dubois, Malte Asseln and Gabrielle Tuijthof

Po6_1.03 Stochastic Optimization based Design of C-Arm Calibration Phantoms.
Peter Zhang, Amandine Gout, Youyang Shen, Philipp Fürnstahl and Hooman Esfandiari

Po6_1.04 Concurrently Intra- and Extra-Articular Corrective Osteotomy for Malunion after Distal Radius Fractures with a Patient-Matched Surgical Guide and Plate: A Case Report.
Hiroki Kondo, Ryoya Shiode, Satoshi Miyamura, Arisa Kazui, Natsuki Yamamoto, Tasuku Miyake, Toru Iwahashi, Hiroyuki Tanaka, Tsuyoshi Murase, Seiji Okada and Kunihiro Oka

Po6_1.05 8 Years of Shoulder Arthroplasty Planning and Navigation, a Planning Habits Retrospective Study.
François Boux de Casson, Amaury Jung, Sandrine Polakovic and Josie Elwell

Po6_1.06 Towards Deployable Implants: Conceptual Designs of a Novel Deployable Interposition Wrist Implant Using Origami, Scissor, And Sliding Block Mechanisms.
Mathijs Boksebeld, Jasper Leverink, Mark Flinkert, Izadyar Tamadon, Ali Ramezani, Nico Verdonschot, Gabriëlle Tuijthof and Malte Asseln

Po6_1.07 Accuracy of ApolloHipX – A Novel System that Integrates CT-based Preoperative Planning with Intra-operative Fluoroscopy in THA.
Christopher Plaskos, Moritz Ehlke, Jevan Arulampalam, Whisper Grayson, Linden Bromwich, Jim Pierrepont, Jacob Haynes, Eric Slotkin, Arjun Saxena and Nicholas Brown

Po6_1.08 A study of bone strength of patella after total knee arthroplasty.
Kunihiko Watamori, Kazunori Hino, Tomofumi Kinoshita, Takashi Tuda, Tatsuhiko Kutsuna and Masaki Takao

Po6_1.09 Reproducibility of a new device for robotic assisted TKA surgery.
Domenico Alesi, Vito Gaetano Rinaldi, Tosca Cerasoli, Davide Valente, Giulio Maria Marcheggiani Muccioli and Stefano Zaffagnini

Po6_1.10 Patient & Surgeon Specific Automated THA Component Selection using Machine Learning.
Gerard Smith, Linden Bromwich, Christopher Plaskos, Jim Pierrepont, Joseph Kavolus and Nicholas Brow

Po6_1.11 Navigated Tibia First Total Knee Arthroplasty Using a Ligament Tensioning Device, Clinical Results at 1Y Follow-up.
François Boux de Casson, Laurent Angibaud and Omar Naji

Po6_1.12 Direct repair of spondylolysis using O-arm navigation.
Shintaro Yamaoka, Yusuke Murakami, Hiroshi Misaki, Masayuki Hino and Masaki Takao

CAOS Special Poster

Po6_2.1 Effect of age, sex, height, ethnicity, and femoral bowing on the anatomical fitting of the LCP Distal Femur plate.
Beat Schmutz, Minh Tri Phan, Jeremy Pople, Bertha Ching Wai Lam, Eden Schoofs, Jacelle Warren, Jaimi Conlon, Hiroaki Minehara, Kevin Tetsworth and Michael Schuetz

Po6_2.2 Garden classification of femoral neck fracture using deep-learning algorithm.
Chul-Ho Kim, Jin Yeob Park and Ji Wan Kim

Po6_2.3 Preoperative knee flexion muscle strength predicts postoperative daily activity immediately after total knee arthroplasty.
Tomofumi Kinoshita, Tatsuhiko Kutsuna, Kunihiko Watamori, Takashi Tsuda, Yusuke Horita, Kazunori Hino and Masaki Takao

Po6_2.4 Evaluating Intraoperative Dynamic Hip-Knee-Ankle Angle Under Controlled Load During Navigated Total Knee Arthroplasty.
Prudhvi Tej Chinimilli, Laurent Angibaud, Amaury Jung and James Huddleston

Po6_2.5 Open-Access 3D Bone Shape Databases in Orthopedics: An Unmet Need?
Seyed Hamidreza Alavi, Nico Verdonschot, Gabriëlle Tuijthof and Malte Asseln

Po6_2.6 Computer-simulated corrective osteotomy for malunion after distal radius fracture normalizes bone density distribution in the subchondral radius.
Tasuku Miyake, Satoshi Miyamura, Ryoya Shiode, Natsuki Yamamoto, Hiroki Kondo, Toru Iwahashi, Hiroyuki Tanaka, Tsuyoshi Murase, Seiji Okada and Kunihiro Oka

Po6_2.7 Surgical outcomes of arthroscopic osteophyte debridement for elbow osteoarthritis using a navigation system.
Ryoya Shiode, Satoshi Miyamura, Tasuku Miyake, Hiroki Kondo, Arisa Kazui, Natsuki Yamamoto, Toru Iwahashi, Hiroyuki Tanaka, Tsuyoshi Murase, Seiji Okada and Kunihiro Oka

Po6_2.8 Automatic Segmentation of Forearm Bones Using Deep Learning Approaches.
Théo Aguilar Vidal, Robin Cremese, Remy Winter, Isa Costantini, Thibault Poujade, Jean-Baptiste Masson and Marc-Olivier Gauci

Po6_2.9 When Navigating TKA, Tibia 1st Workflow Improves Functional Results Relative to Femur 1st Workflow, at 2Y Follow-up.
Gérard Giordano, Laurent Angibaud and François Boux de Casson

Po6_2.10 3D assessment of the hip joint of a patient with diffuse idiopathic skeletal hyperostosis (DISH) based on CT image

Ryosuke Nishimura, Yusuke Murakami, Kohei Kono, Tatsuhiko Kutsuna, Naohiko Mashima and Masaki Takao