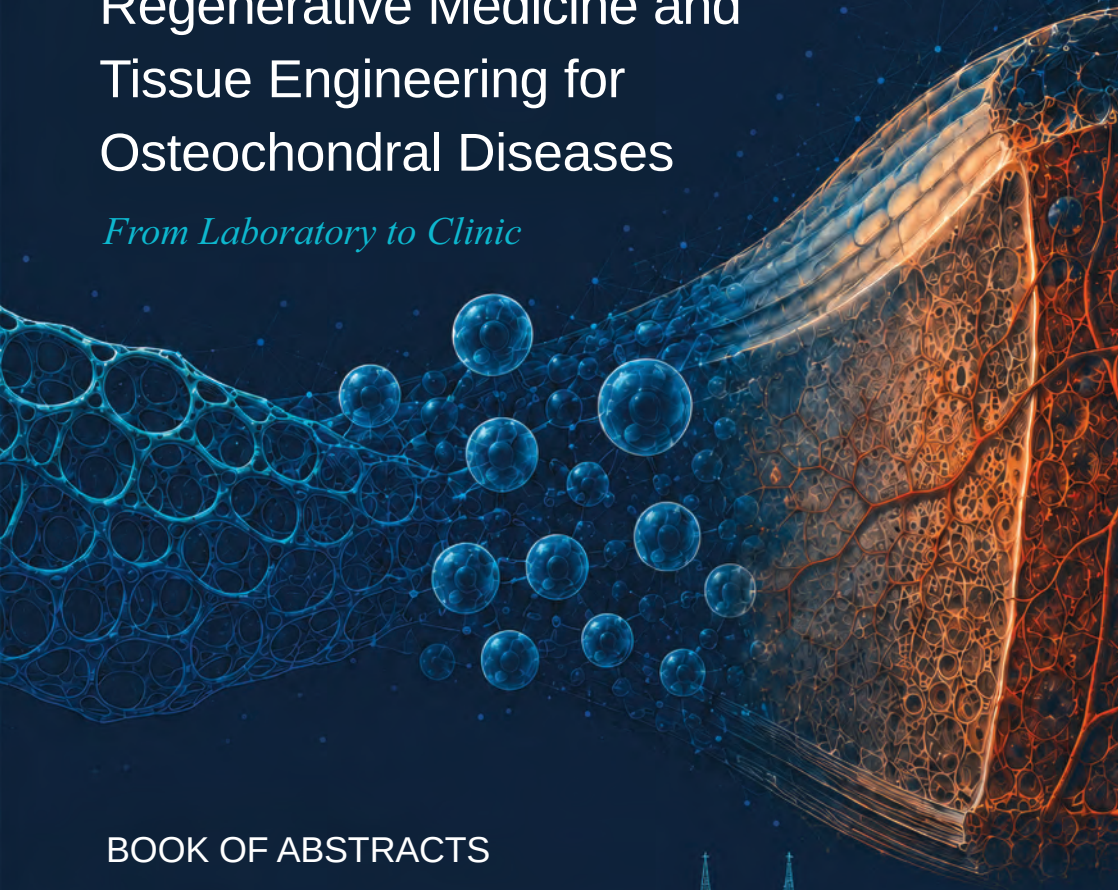
REPUBLIC OF CROATIA
Ministry of Science, Education and Youth

CROATIAN ACADEMY OF SCIENCES AND ARTS
The Department of Medical Sciences

CONFERENCE ON

Regenerative Medicine and Tissue Engineering for Osteochondral Diseases

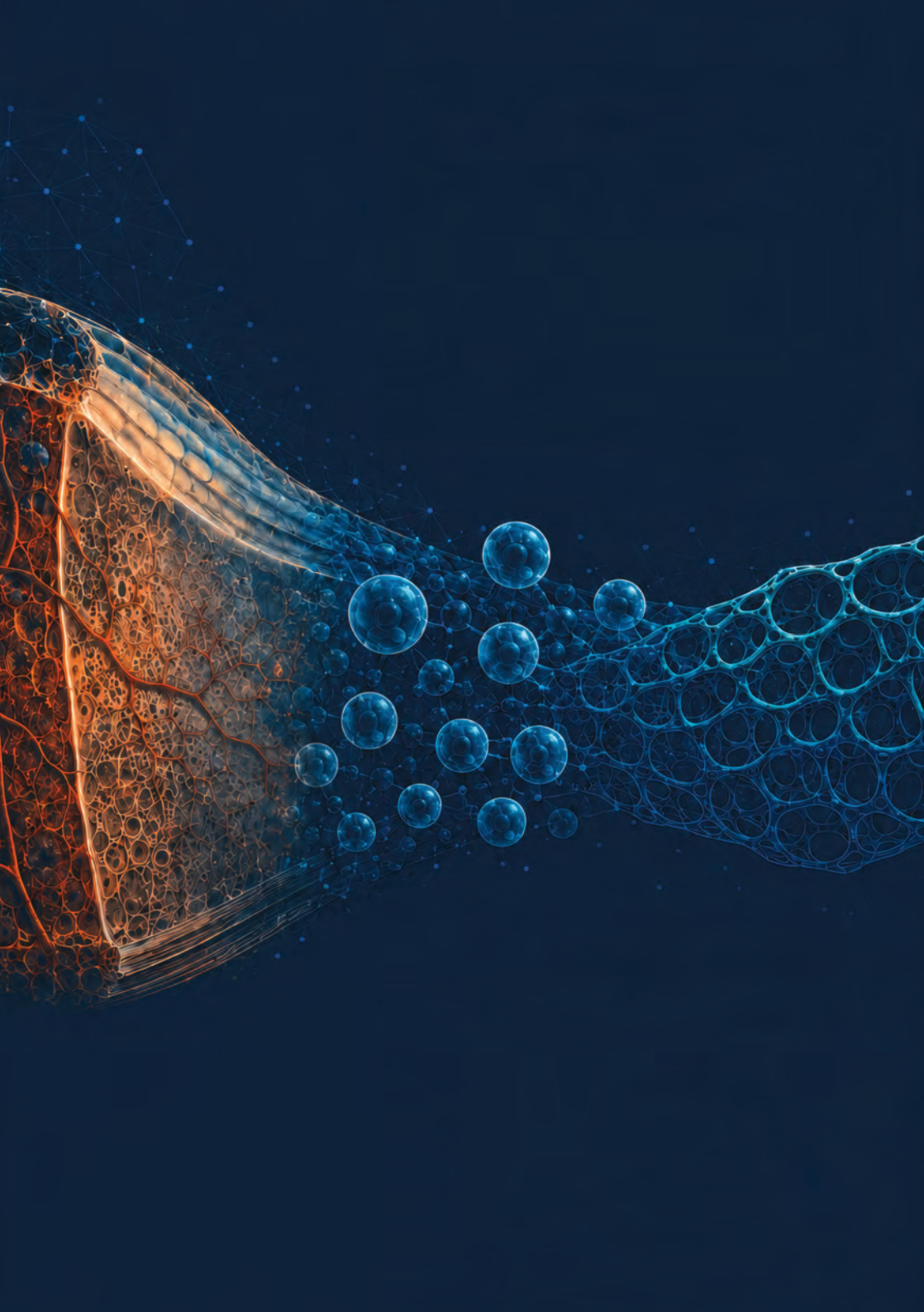
From Laboratory to Clinic



BOOK OF ABSTRACTS

JUNE 15th, 2026

ZAGREB, CROATIA



REPUBLIKA HRVATSKA
Ministry of Science, Education and Youth

ACADEMIA SCIENTIARUM ET ARTIUM CROATICA
MDCCCLXI

Conference on Regenerative Medicine and Tissue Engineering for Osteochondral Diseases

From Laboratory to Clinic

June 15th, 2026
Zagreb, Croatia

Book of Abstracts

The Ministry of Science, Education and Youth, Croatia
and
The Ministry of Science and Technology, China

Partner – Institute Program

Faculty of Veterinary Medicine, University of Zagreb
and
Wenzhou Institute, University of Chinese Academy of Sciences

BOOK OF ABSTRACTS

Book of Abstracts Editor in Chief:
Dražen Matičić, Professor, PhD, MSc, DMV, Full Member of CASA

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WELCOME MESSAGE

Dear Esteemed Conference Participants,

The Ministry of Science, Education and Youth, Republic of Croatia in cooperation with the Department of Medical Sciences of the Croatian Academy of Sciences and Arts on the basis of Partner - Institute program between the Faculty of Veterinary Medicine of University in Zagreb and Wenzhou Institute, University of Chinese Academy of Sciences proudly presents the Conference on Regenerative Medicine and Tissue Engineering for Osteochondral Diseases: "From Laboratory to Clinic" in Zagreb, Croatia on June 15th, 2026.

We extend our warmest welcome to you as we kick off the Conference. Your presence here is highly appreciated, and we are thrilled to have you join us for what promises to be an inspiring and informative event.

President of the Organizing Committee

Drazen Maticic

Drazen Maticic, DMV, MSc, PhD is a Full Professor at the Clinic for Surgery, Orthopedics and Ophthalmology, Faculty of Veterinary Medicine, University of Zagreb. He is a full Member of the Croatian Academy of Sciences and Arts in the Department for Medical Sciences and Vice President of the Croatian Academy of Medical Sciences. His expertise is small animal trauma and fracture management. He has been particularly recognized as a researcher and head of animal experimentation on the EU FP7 project Bioreactor-Based, Clinically Oriented Manufacturing of Engineered Tissues (BIO-COMET), EU Horizon 2020 project BIOengineered Grafts for Cartilage Healing in Patients (BIO-CHIP), EU Horizon 2020 project Novel Bone Regeneration Drug Osteogrow: Therapeutic Solution for Lumbar Back Pain (OSTEOproSPINE) and EU Horizon Europe project Lightning the Way Towards in situ Osteochondral Regeneration through Microextrusion and Filamented Light Bioprinting (LUMINATE). He is a project leader in Croatian Chinese exchange project, Research on the use of Photoresponsive Thermo-Sensitive Microspheres for Controlled Release of Rehmannioside D in the Treatment of Osteochondral Disease.

GENERAL INFORMATION

Title of the conference

Conference on Regenerative Medicine and Tissue Engineering for Osteochondral Diseases: "From Laboratory to Clinic"

Date

June 15th, 2026

Organizers

Ministry of Science, Education and Youth

Croatian Academy of Sciences and Arts – The Department of Medical Sciences

Faculty of Veterinary Medicine, University of Zagreb

Venue

The Library of the Croatian Academy of Sciences and Arts (CASA)
Josip Juraj Strossmayer Square 14, Zagreb

Language

The official language of the Conference is English.

ORGANIZING COMMITTEE

President: Dražen Matičić, Professor, PhD, DMV, Full Member of CASA

Vice President: Domagoj Delimar, Professor, PhD, MD

Honorary President: Marko Pećina, Professor Emeritus, MD, Full Member of CASA

Organizing Committee Members:
Dražen Vnuk (CRO)
Huaqiong Li (PRC)
Dmitrij Kvitka (LT)
Federico Longo (SUI)
Vladimira Erjavec (SLO)
Plamen Trojačanec (MK)
Valentina Kos (CRO)
Karlo Tanhofer (CRO)

SCIENTIFIC COMMITTEE

President: Slobodan Vukičević,Professor (Full Member of CASA)

Full Members of the Department of Medical Sciences of CASA:
Željko Cvetnić
Ivo Čikeš
Dragan Dekaris
Vida Demarin, Head of the Department of Medical Sciences,
Bojan Jelaković
Vjekoslav Jerolimov
Željko Kaštelan
Ivica Kostović
Zvonko Kusić
Josip Madić, Deputy Head of the Department of Medical Sciences,
Davor Miličić
Željko Reiner
Miroslav Samaržija
Mirna Šitum

CONFERENCE INFORMATION

Registration desk

Registration desk is located at the entrance of The Library of the Croatian Academy of Sciences and Arts.

Opening hours

09:00; Monday, June 15th, 2026

Accreditation badges

All delegates and guests will receive a name badge at the registration desk.

ACKNOWLEDGEMENTS

REPUBLIC OF CROATIA
Ministry of Science, Education and Youth

The Ministry of Science, Education and Youth (MZOM), Republic of Croatia is the central state administrative body of the Republic of Croatia responsible for the system of education, science, technology, and youth policy. Its scope covers preschool, primary, and secondary education, the national curriculum, higher education, and student standards. In the field of science, the Ministry oversees the development of scientific, technological, and innovation activities, coordinates the financing of research programs and projects, manages intellectual property policy to encourage technology transfer from research institutions into the economy, maintains the registry of scientists and scientific organizations, and coordinates international scientific and technological cooperation. It directly supports the scientific community through State Awards for Science, funding for scientific associations and journals, co-financing of scientific conferences and schools, and the implementation of EU-funded projects.

Croatian Academy of Sciences and Arts conduct its scientific and artistic work through nine departments, as well as various scientific councils, committees, and research units. The Academy collaborates with numerous academies, universities, institutions, and individual scholars and artists both in Croatia and internationally. International cooperation is considered one of its key priorities. It has established agreements with 26 academies from 23 countries, promoting academic exchange, joint research projects, publications, and conferences. In addition, the Academy has organized more than one hundred scientific conferences and symposiums focused on Croatian history, culture, and economic development.

The Faculty of Veterinary Medicine (FVM), University of Zagreb is the main and only research and educational institution in the field of veterinary medicine in Croatia. The Faculty organizes and conducts university studies, scientific and professional work in the scientific field of biomedicine and health, the field of veterinary medicine, as well as lifelong learning programs for Doctor of Veterinary Medicine (DVM). It is one of the oldest faculties in the Republic of Croatia (founded in 1919), and with its long tradition and established criteria of excellence, is inseparable from the development of the veterinary profession in Croatia. The Faculty has a long history of promoting high quality education through research and exchange of information between international institutions. It employs more than 200 academic and research staff who work on the development and shape of the future careers of about 1000 students of veterinary medicine with programs both in Croatian and English.

Wenzhou Institute of the Chinese Academy of Sciences is a research and innovation institute affiliated with the Chinese Academy of Sciences, China's leading scientific and technological institution. The institute focuses on advanced research in areas such as materials science, medicine, pharmaceuticals, and high-end scientific equipment. It aims to become an international innovation center that integrates scientific research, technology development, and commercialization of research achievements. The institute is equipped with advanced laboratories and research facilities, supporting both domestic and international scientists. It also promotes collaboration between academia, industry, and government to accelerate technological innovation and economic development in the Wenzhou region. In addition, the institute supports talent development and international scientific cooperation through partnerships, training, and research programs.

University of Zagreb School of Medicine, founded in 1917, is the oldest and largest medical school in Croatia and one of the leading institutions in the field of biomedicine and health sciences in the region. The school provides comprehensive medical education that integrates basic scientific knowledge, clinical training, and public health studies, preparing students for professional careers in medicine, healthcare, and scientific research. It offers a six-year medical program leading to the degree of Doctor of Medicine, with courses available both in Croatian and through an internationally recognized English-language program. The curriculum places strong emphasis on evidence-based medicine, the development of practical clinical skills, and extensive training in affiliated hospitals and healthcare institutions. The school is also recognized for its significant scientific contributions, international partnerships, and its important role in the advancement of medical education and healthcare in Croatia and internationally.

BIO-COMET (Bioreactor-based, Clinically Oriented Manufacturing of Engineered Tissues) was a four-year research project funded by the European Union Seventh Framework Program and completed in November 2015. The project was dedicated to the development and preclinical evaluation of a sensor-controlled bioreactor system designed to produce functional autologous tissue grafts with reliable and standardized quality. BIO-COMET contributed to the advancement of bioreactor-based manufacturing methods for cartilage regeneration and brought together leading specialists from academic, clinical, and industrial sectors within the field of regenerative medicine.

BIOengineered grafts for Cartilage Healing in Patients (BIO-CHIP) is a €5.2 million initiative funded through the Horizon 2020 program, involving seven partners from five different countries. The project focuses on advancing cartilage regeneration by conducting a Phase II clinical study called "Nose to Knee II", which is aimed at treating traumatic cartilage injuries in the knee. BIO-CHIP introduces two major innovations: the use of patients owns nasal chondrocytes as an improved cell source and the transplantation of fully developed tissue grafts to enhance treatment success. Alongside the clinical trial, an additional preclinical study is being carried out to investigate treatment options for complex "kissing lesions", conditions that are currently difficult to treat and frequently result in knee replacement surgery.

OSTEOproSPINE is a European research project focused on developing innovative regenerative therapies for degenerative spinal disorders and chronic lower back pain. The project aimed to improve spinal fusion treatments by using biologically active proteins combined with the patient's own blood to stimulate bone regeneration. Through collaboration between academic, clinical, and industrial partners from several European countries, OSTEOproSPINE contributed to the advancement of regenerative medicine and modern spinal surgery techniques

LUMINATE is a European research project focused on developing advanced regenerative therapies for osteochondral injuries, particularly those affecting cartilage and bone tissue in the knee. The project aims to improve tissue regeneration through innovative bioprinting technology that combines biomaterials and patient-derived cells directly at the site of injury. By bringing together academic, clinical, and industrial partners from several European countries, LUMINATE contributes to the advancement of regenerative medicine and minimally invasive orthopedic treatments.

VENUE

The Conference on Regenerative Medicine and Tissue Engineering for Osteochondral Diseases "From Laboratory to Clinic" will be held at The Library of The Croatian Academy of Sciences and Arts (CASA), located at Josip Juraj Strossmayer Square 14, Zagreb, Croatia.

The Library of the Croatian Academy of Sciences and Arts is one of the oldest and richest public libraries in Croatia. It was founded in 1867, and represents its oldest institutional unit. The Library of the Croatian Academy of Sciences and Arts is a public general scientific library. Today, it is classified as a special library within the largest scientific institution in Croatia, carrying out library and information services while also serving as the Central Library of the Academy. In accordance with this role, it supervises and coordinates the professional work of other libraries within the Academy's institutes and departments. The Library also functions as the Academy's informational, referral, and bibliographic center.

PROGRAM

June 14th, 2026, Sunday
Partner-Institute Program work group meeting

June 15th, 2026, Monday
Conference day

9:00-9:45 Participants registration

9:45-10:00 Welcome Address
Vida Demarin, Professor, PhD, MD, Head of the Department of Medical Sciences, Full Member of CASA

Marko Pećina, Honorary President, Professor Emeritus, PhD, MD, Full Member of CASA

Slobodan Vukičević, Professor, PhD, MD, Full Member of CASA, President of the Scientific Board,

Dražen Matičić, Professor, PhD, DMV, Chair of the Organizing Committee, Full Member of CASA

Symposium Moderators: Dražen Matičić, Petar Kostešić, Dražen Vnuk

10:00-10:15 Acetabular Bone Defects: The Next Frontier for Regenerative Medicine
Domagoj Delimar, Professor, PhD, MD
Head of the Clinic and Chair of the Department of Orthopedic Surgery, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia

10:15-10:30 Treatment of knee cartilage pathology from focal chondral lesions to osteoarthritis: what are our options?
Mislav Jelić, Professor, PhD, MD
Head of the Biological reconstruction unit at the Department of Orthopedic Surgery, University Hospital Centre Zagreb, School of Medicine, University of Zagreb, Croatia

10:30-10:45 Low Immunogenic Naturally Derived Biomaterials for Tissue Engineering Applications
Huaqiong Li, Professor, PhD,
Director, Department of Science and Technology, Bioactive Materials Research Group, Wenzhou Institute, University of Chinese Academy of Sciences, Wenzhou, China

10:45-11:00 AI-Based Wearable System for Fall Detection and Indoor Localization in Elderly Rehabilitation Care
Xiaofan Guo, PhD candidate at Sorbonne University, France
Department of Science and Technology, Bioactive Materials Research Group, Wenzhou Institute, University of Chinese Academy of Sciences, Wenzhou, China

11:00-11:15 Discussion

11:15-11:45 Coffee break

11:45-12:00 Personalized, one-stage cartilage regeneration with 3D bioprinting
Inga Urlić, Professor, PhD
Department of Molecular Biology, Faculty of Science, University of Zagreb, Croatia

12:00–12:15 Nose2Knee Beyond Focal Lesions: Preclinical Large Animal Evidence for Treating Patellofemoral Osteoarthritis
Alan Ivković, Professor, PhD, MD
Head of Orthopedics at Clinical Hospital Sveti Duh, School of Medicine, Associate Professor at the University of Zagreb and University of Applied Health Sciences, Croatia

12:15-12:30 From the Laboratory to the First Veterinary Patient: The Development of an Osteoinductive Drug for Bone Regeneration
Nikola Štoković, Assistant Professor, PhD, MD
Department of Anatomy and Clinical Anatomy, Laboratory of Mineralized Tissues, Centre for Translational and Clinical Research, School of Medicine, University of Zagreb, Croatia

12:30-12:45 Animal models as a gateway for knowledge transfer
Petar Kostešić, Assistant Professor, PhD, DMV

Clinic for Surgery, Orthopedics and Ophthalmology
Faculty of Veterinary Medicine, University of Zagreb, Croatia

12:45-13:00 Discussion

13:15-14:00 Lunch break

14:00-14:15 Orthobiology – the future is now
Iva Borovečki, MD, Arthrex

14:15-14:30 Platelet-Rich Plasma for Non-Union Fractures: Translating Regenerative Strategies into Orthopedic Practice
Dalia Juodzente, Assistant Professor, PhD, DMV
Head of the dr. L. Kriauceliunias Small Animal Clinic, Lithuanian University of Health Sciences, Kaunas, Lithuania

14:30-14:45 Different approaches to treat OCD lesions in dogs
Federico Longo, Small Animal Surgery, PhD, DVM, ECVS Candidate, Clinic for Small Animal Surgery, Vetsuisse Faculty, University of Zurich, Switzerland

14:45-15:00 Diagnostic Approaches and Surgical Management of Osteochondral Diseases in Dogs
Milan Matko, DVM, Veterinary Hospital Toplica, Slovenia

15:00-15:15 Pain management in patients with osteochondral diseases
Petra Dmitrović, PhD, DMV, ECVAA Candidate, Clinic for Surgery, Orthopedics and Ophthalmology, Faculty of Veterinary Medicine, University of Zagreb, Croatia

15:15-15:30 Clinical perspective on common joint diseases in dogs
Marko Stejskal, PhD, DVM, DACVS, Kansas City Canine Orthopedics, Kansas City, USA

15:30-16:00 Closing Remarks

June 16th, 2026, Tuesday
Partner-Institute Program leaders meeting at the Faculty of Veterinary Medicine University of Zagreb, Croatia

LECTURERS

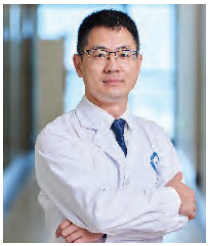
Domagoj Delimar, Croatia

Domagoj Delimar is a Full Professor at the School of Medicine, University of Zagreb, and Head of the Department of Orthopedic Surgery at University Hospital Centre Zagreb since 2009. He completed his orthopedic specialization in 2000 and earned his PhD in 2002. He has held fellowships at Harvard Medical School and Massachusetts General Hospital through the AAOS International Emerging Leaders program. He is President of the Croatian Orthopedic and Traumatology Association and lead the HIPoCART project funded by the Croatian Science Foundation. His work focuses on primary and revision hip and knee arthroplasty and reconstructive surgery.

Mislav Jelić, Croatia

Mislav Jelić is a knee surgeon, presently the head of the Biological reconstruction unit at the Department of Orthopedic Surgery, School of Medicine, University of Zagreb. His scientific interest in the regeneration of the articular cartilage. He was elected for several international travelling fellowships: 2002 EFFORT Travelling Fellowship, 2004 ICRS Travelling Fellowship, 2011 ESSKA/AOSSM Travelling fellowship, 2013 "Insall Knee Society Travelling Fellowship. He has received several awards in the field of knee surgery and/or field of articular cartilage regeneration: 1991 University of Zagreb Rector's award; 1995 "Drago Perovic" award for the best morphological work at the Medical School in Zagreb; 1994 ESSKA best poster, 2002 awarded presentation at "Second European Conference on Bone Morphogenetic Proteins"; 2003 "Jacques Duparc" Award, EFORT Conference, Finland Helsinki; 2009 Hughston award His papers have been cited more than 5000 times. Mislav Jelić is inventor of three internationally patented inventions in the field of articular cartilage regeneration.

Huaqiong Li, China



Professor Huaqiong Li is a Principal Investigator at Wenzhou Institute, University of Chinese Academy of Science (WIUCAS). Before he joined in WIUCAS in 2015, he worked in Singapore for two years after completing his PhD study in Nanyang Technological University. His current research interests are biomaterials and nanomedicine. In particular, he has focused on (1) development of advanced biomaterials to guide cell behavior and applied them to the field of tissue engineering and regenerative medicine; (2) construction of nano-drug delivery platforms for cancer and other diseases. He received more than 11 research grants at the national, provincial, and municipal levels. He is also the co-inventor of 5 filed patents. He has published over 80 journal papers, which have total Google Scholar Citations of over 4600 till April 2026. He has been awarded Outstanding Reviewer Awards 2021 & 2019 of Journal of Nanobiotechnology.

Xiaofan Guo, China

Xiaofan Guo is a PhD candidate at Sorbonne University, conducting research at the LISITE Laboratory, Isep (Paris, France), in collaboration with the Wenzhou Institute, University of Chinese Academy of Sciences (WIUCAS), Wenzhou, China. Her research focuses on wireless communications, machine learning, and algorithm development, with current interests in fall detection, indoor localization, and wearable sensing for healthcare-related applications.

Inga Urlić, Croatia

Inga Urlić is a biomedical scientist and Full Professor of Molecular Biomedicine at the Faculty of Science, University of Zagreb, Croatia. Her research combines fundamental and translational approaches to investigate tumor progression, identify novel therapeutic targets, and develop advanced regenerative strategies for bone and cartilage. She obtained both her MSc and PhD degrees from the University of Zagreb and completed a three-year research appointment at the University of Connecticut Health Center, USA. She has led multiple competitive research projects and currently coordinates Croatia's participation in the Horizon Europe project LUMINATE, focused on in situ osteochondral regeneration using advanced bioprinting technologies

Alan Ivković, Croatia

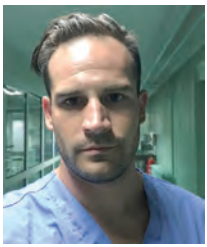
Alan Ivković is an orthopedic surgeon based in Zagreb, Croatia, with a clinical and academic focus on sports medicine, cartilage repair, joint preservation, and regenerative orthopedics. After finishing the residency at the Department of Orthopedic Surgery, School of Medicine University of Zagreb, he was awarded with prestigious Fulbright Fellowship. He joined a multidisciplinary research team at the Center for Molecular Orthopedics at Harvard University, SAD. where he conducted his doctoral research. Professor Ivković was principal investigator on two major European projects (BIO-CHIP and BIO-COMET) with the goal to develop technology for successful laboratory cultivation of articular cartilage for transplantation to patients.

His work includes translational research, conference education, and the development of biologic treatment strategies for knee disorders. He is particularly interested in connecting clinical practice with preclinical evidence to advance surgical innovation.

Nikola Štoković, Croatia

Nikola Štoković, MD, PhD, is an Assistant Professor at the University of Zagreb School of Medicine. His research focuses on the biology of bone morphogenetic proteins and the application of calcium phosphate ceramics in regenerative medicine. In recognition of his scientific contributions, he has received several international awards and was elected to the ECTS Academy in 2025. He is the principal investigator of several scientific projects and has been among the key contributors to the implementation of projects within the Centre of Excellence for Reproductive and Regenerative Medicine, as well as the H2020 project OSTEOproSPINE. In 2026 he has been awarded by Croatian Academy of Sciences and Arts for best scientific paper.

Petar Kostešić, Croatia



Dr. Petar Kostešić is Assistant Professor at the Clinic for Surgery, Orthopedics, and Ophthalmology, Faculty of Veterinary Medicine, University of Zagreb. His clinical and research focus is small animal orthopedics and trauma. He has contributed to international projects including FP7 BIO-COMET, Horizon 2020 BIO-CHIP, HRZZ SECRET, and Horizon Europe 2024 LUMINATE. He has co-authored over 25 peer-reviewed publications. In addition to his academic and clinical commitments, he is periodically engaged in surgery of wildlife and zoo animals. At the Faculty of Veterinary Medicine University of Zagreb he teaches orthopedics in integrated study of veterinary medicine and postgraduate study as well. He has also served as a guest lecturer at the Faculty of Veterinary Medicine, Ljubljana, Slovenia and at the Lithuanian University of Health Sciences, Kaunas, Lithuania.

Iva Borovečki, Croatia

Iva Borovečki is healthcare professional with an M.D. and a Master's degree in Leadership & Management of Health Services. After completing clinical internships and a family medicine residency, I transitioned into the medical industry, where I've built more than a decade of experience in medical devices and Orthobiologics. Over the years, I've developed deep expertise and a genuine passion for Orthobiologics. Today, as Sales Manager for Orthobiologics and PCT in the Adria region, I combine clinical insight, strategic leadership, and a strong commitment to advancing regenerative solutions.

Dalia Juodzente, Lithuania

Dr. Dalia Juodžentė is a Veterinary surgeon and Associate Professor at the Lithuanian University of Health Sciences (LUHS). She serves as Head of the Dr. L. Kriaučeliūnas Small Animal Clinic and specializes in orthopaedics and anaesthesiology. She graduated with honours in Veterinary Medicine in 2012, completed a local surgical residency in 2014, obtained a PhD in Veterinary Sciences in 2018, and earned a Master's degree in Enterprise Management in 2024. She is actively involved in teaching and residency training in small animal surgery and anaesthesia. Her research focuses on clinical and experimental studies in anaesthesia and orthopaedics, particularly oxidative stress and the effectiveness of platelet-rich plasma (PRP) therapy. Dr. Juodžentė has completed international clinical training in Finland, UK, Norway, and the USA. She is a member of ESVOT and Lithuanian veterinary associations, and a certified expert in elbow and hip dysplasia.

Federico Longo, Switzerland

Federico Longo currently works as Associate Faculty in Small Animal Surgery at the University of Zurich. His research focuses on orthopedic surgery, with particular interest in limb deformity correction, minimally invasive surgical techniques, and arthroscopy/arthroplasty. He is a co-author of key reference textbooks in small animal surgery, including Canine and Feline Small Animal Arthrology and Arthroscopy, Veterinary Surgery: Small Animal, and invited speaker to several international congresses.

Milan Matko, Slovenia

Milan Matko, DVM, Specialist in Veterinary Medicine for Dogs and Cats, and Senior Adviser, graduated from the Faculty of Veterinary Medicine in Ljubljana in 1983. After working in general veterinary practice in Šoštanj and later at the Veterinary Clinic in Celje, he became the founder and CEO of the Veterinary Clinic Toplica – Centre for Animal Treatment in Topolšica in 1999. He has attended more than 100 professional courses, congresses, and workshops, and has lectured at over 40 international scientific and professional events. He also served as President of the Slovenian Small Animal Veterinary Association and the Celje Veterinary Association. His professional interests focus on diagnostics, surgery, orthopaedics, and neurology in dogs and cats.

Petra Dmitrović, Croatia

Petra Dmitrović, PhD, is a Senior Teaching and Research Assistant at the Faculty of Veterinary Medicine, University of Zagreb, Croatia, working in the field of veterinary anaesthesia, analgesia, and intensive care. She graduated in 2015 and completed an ECVAA residency program at the University of Liège, Belgium, where she gained extensive clinical and research experience. She is also a certified RECOVER instructor.

Dr. Dmitrović is the author and co-author of several peer-reviewed scientific publications and serves as an Editor for Frontiers in Veterinary Science in the sections Pain Assessment and Management in Veterinary Medicine and Veterinary Emergency and Critical Care Medicine.

Marko Stejskal, USA

Dr. Marko Stejskal graduated from the University of Zagreb Faculty of Veterinary Medicine in 2001. He completed a small animal surgical residency at the University of Georgia in 2015, became board-certified surgeon of the ACVS in 2016, and the ECVS in 2017. After the residency, Dr. Stejskal returned to Zagreb, advancing to assistant professor position and a head of the surgery department. In 2019 he moved to the United Kingdom where he worked as a RCVS recognized specialist orthopedic surgeon at several prestigious referral hospitals. Dr. Stejskal has joined the Kansas City Canine Orthopedics in September 2025.

ABSTRACTS

1. Acetabular Bone Defects: The Next Frontier for Regenerative Medicine

Domagoj Delimar, Professor, PhD, MD

Acetabular bone defects remain a major challenge in contemporary hip reconstruction, particularly in two clinical settings: young patients with developmental dysplasia of the hip (DDH) and elderly patients undergoing revision total hip arthroplasty. While reconstructive options such as bone grafts, trabecular metal augments, and custom implants are widely available, the biological capacity for bone regeneration remains a critical limiting factor in long-term success. In younger DDH patients, structural deficiencies are typically addressed with combinations of implants, grafts and controlled acetabular medial wall fracture. However, the underlying biological environment differs significantly from that of primary osteoarthritis. Elderly patients with large or massive acetabular defects pose an even greater challenge, as graft incorporation and remodeling are often insufficient to ensure durable implant fixation. Large acetabular bone defects are precisely where the next advances in bone regeneration should take place. Recent insights from the HIPoCART project provide a deeper understanding of cartilage and subchondral bone biology in these conditions. The presence of hyaline cartilage in both acetabulum and neo acetabulum challenges traditional paradigms of cartilage formation, while immunophenotypic analyses reveal fundamental differences in progenitor cell populations. Primary osteoarthritis demonstrates features of “stem cell exhaustion,” whereas DDH-associated osteoarthritis retains regenerative potential.

Successful management therefore requires a tailored approach that balances mechanical reconstruction with biological augmentation, guided by defect size, patient age, and intrinsic regenerative capacity.

2. Novel articulated knee distraction device for treating knee OA

Mislav Jelić, Professor, PhD, MD; Tin Šklebar, MD; Ivan Levaj, MD; Dražen Matičić, Professor, PhD, MSc, DMV

Knee osteoarthritis is a degenerative condition of the articular cartilage impacting 12 percent of world population. Knee joint distraction (KJD) is a well established procedure that aims to treat patients with advanced knee osteoarthritis by unloading the deteriorated cartilage and the subchondral bone with a goal of avoiding knee replacement surgery. The treatment in the long term significantly improves pain and function in patients with osteoarthritis. The devices that are commonly used for KJD are based on external fixator concept where the knee is distracted and fixed in full extension. When these devices are removed after 6 weeks, the primary goal of distraction is achieved, but accompanied with unpleasant side-effect of fixed extension contracture. These patients need aggressive physical therapy for the period of 3-6 months to achieve the same range of motion as before the surgery. We have developed an articulated knee distraction device which successfully distracts the damaged femoral and tibial knee surfaces in knee OA and at the same time preserves normal knee motion from 0 to at least 90 degrees of flexion. Our device contains a system of joints which allow all six degrees of freedom allowing normal knee biomechanics during 6 weeks the device is applied.

3. Low Immunogenic Naturally Derived Biomaterials for Tissue Engineering Applications

Huaqiong Li, Professor, PhD

Tissue injury and repair have always been a cutting-edge scientific issue in the world. The tissue regeneration and repair barriers after damage seriously endanger human life and health. To solve the key problems of transplant-induced immune rejection, insufficient mechanical support, and poor biological functions in the process of tissue injury and repair, our research team has developed dECM (decellularized extracellular matrix) based composite hydrogels for tissue defect repair. Through constructing tissue engineered composite biomaterials, we can modulate tissue regeneration with an optimized microenvironment (such as multi-scale physical signal stimulation and biochemical signals) and precisely regulate the biological behaviour of cells in the tissue injury site, thereby achieving regeneration and repair of damaged tissues (such as intervertebral discs, bone, cartilage, wound, etc.).

4. AI-Based Wearable System for Fall Detection and Indoor Localization in Elderly and Rehabilitation Care

Xiaofan Guo, PhD candidate at Sorbonne University, France

Falls are common and high-risk events among elderly individuals and patients undergoing rehabilitation, often leading to complications and prolonged recovery. In indoor environments such as hospitals or rehabilitation facilities, achieving reliable fall detection, rapid localization, and real-time alerting remains a challenging and practically significant problem.

To address this issue, a wearable system for fall detection and indoor localization is proposed, based on data-driven methods and intelligent sensing technologies. The system enables real-time detection of fall events in dynamic environments, such as hospitals or rehabilitation facilities, while providing location information at the time of the alert.

By combining wearable sensing and computational methods, the system improves robustness and adaptability under different environmental conditions. It can send fall alerts, location information, and user-related data to caregivers or medical staff, enabling timely response and assistance. This helps reduce the risk of secondary injuries caused by falls.

From an engineering perspective, this study explores how AI-based methods can be applied to healthcare-related scenarios, providing a practical approach to supporting timely response after fall events in indoor environments.

5. Advanced 3D bone and cartilage tissue modeling and biological evaluation in vitro

Inga Urlić, Professor, PhD

Biomaterials intended for bone and cartilage regeneration require robust in vitro biological evaluation to assess their safety, bioactivity, and capacity to support tissue-specific cellular responses prior to preclinical testing. Such evaluation focuses on understanding how material composition, architecture, and degradation behaviour influence cell adhesion, proliferation, and lineage commitment within physiologically relevant microenvironments. In bone-oriented systems, particular attention is given to the promotion of osteogenic differentiation and matrix mineralization, while cartilage-targeted biomaterials are assessed for their ability to support stable chondrogenic phenotype and extracellular matrix formation.

Recent advances in bioprinting have further expanded the possibilities for controlled fabrication of biomaterial-based constructs that better reproduce the structural organization of skeletal tissues. In this context, photopolymerizable biomaterials, including methacrylate derivatives of natural polymers, have emerged as versatile platforms due to their printability, tunable mechanical properties, and capacity to encapsulate living cells with high spatial precision. These features make them especially attractive for cartilage modelling and osteochondral interface studies.

Despite these advances, important challenges remain. Photopolymerization parameters may influence cell viability and long-term phenotype stability, while the absence of immune system interactions and physiologically relevant mechanical loading continues to limit the predictive value
of current in vitro systems. Overcoming these limitations is essential for improving biomaterial screening strategies and supporting the efficient translation of regenerative technologies toward clinical application.

6. Nose2Knee Beyond Focal Lesions: Preclinical Large Animal Evidence for Treating Patellofemoral Osteoarthritis

Alan Ivković, Professor, PhD, MD

Nose2Knee has shown how nasal chondrocyte-based cartilage engineering can expand joint-preservation strategies beyond conventional defect repair and toward more complex knee pathology. In this invited lecture, I will discuss the rationale for extending the Nose2Knee concept beyond focal lesions to patellofemoral osteoarthritis, a clinical setting in which biological reconstruction must address both cartilage loss and the demanding biomechanical environment of the patellofemoral joint. The presentation will focus on how a preclinical large animal model can serve as a translational platform to evaluate tissue integration, defect coverage, surface durability, and the feasibility of broader indication expansion before clinical implementation. Particular emphasis will be placed on study design, endpoint selection, and the relevance of animal models for predicting joint-level outcomes in osteoarthritis research. By linking regenerative cartilage engineering with translational preclinical evidence, this talk aims to outline a pathway from focal repair to biologic treatment strategies for patellofemoral osteoarthritis and to highlight the next steps required for responsible clinical adoption.

7. From the Laboratory to the First Veterinary Patient: The Development of an Osteoinductive Drug for Bone Regeneration

Nikola Štoković, Assistant Professor, PhD, MD

Osteogrow-C is an innovative therapeutic solution for bone regeneration, consisting of recombinant human bone morphogenetic protein 6 delivered within an autologous blood coagulum in combination with calcium phosphate ceramics. Synthetic ceramics are available in a wide range of chemical compositions, ranging from highly resorptive tricalcium phosphate (TCP) to stable hydroxyapatite (HA) and biphasic ceramics combining TCP and HA. They can also be produced in particle sizes from tens of micrometers to several millimeters. To evaluate safety and efficacy, extensive preclinical studies were first conducted in a rat subcutaneous model. These studies enabled selection of optimal composition and particle size and provided detailed insights into osteogenesis. These experiments also established key dose-response relationships and confirmed the role of BMP6 in driving controlled and spatially organized bone formation in vivo. The optimized formulations were then translated to large animal models, including posterolateral spinal fusion in rabbits and sheep and a rabbit ulnar segmental defect model. Studies demonstrated that Osteogrow-C promotes spinal fusion and regeneration of ulnar defects. Finally, Osteogrow-C was applied in a veterinary patient with a gunshot-induced humeral defect that had failed to heal and for which amputation was imminent. Following Osteogrow-C treatment, complete healing and full restoration of forelimb function were achieved. In conclusion, these findings indicate that Osteogrow-C represents a promising therapeutic solution for bone regeneration and spinal fusion.

8. Animal models as a gateway for knowledge transfer

Petar Kostešić, Assistant Professor, PhD, DMV

A practicing veterinarian often wonders what lies 'on the other side' of preclinical research, and what tips and tricks can one learn from working with human medicine doctors and introduce those novelties into every-day practice.

Since pre-clinical osteoarthritis research uses large animal models, (mostly sheep) to test out novel techniques, materials and methods before they reach human and veterinary clinical practice, these research projects are one of many pathways a clinician in small animal practice learns about different approaches to this major problem linking these two professions. Sheep knees are sized 'just right' to feel familiar to a canine orthopedic surgeon, and during this lecture I'm eager to share lessons I've learned in the last 15 years of conducting research as a veterinary surgeon certified for large animal pre-clinical studies.

From osteochondral biology and pathology, minimally invasive surgery, biomimetic materials and advanced surgical techniques, AI-driven state-of-the-art solutions and often overseen local effector molecules, let's see what solutions are translatable to veterinary clinical practice, and what can help a practicing veterinarian approach their patient with more confidence.

9. Orthobiology – the future is now

Iva Borovečki, MD, Arthrex

Orthobiology is reshaping musculoskeletal treatment in both human and veterinary medicine by harnessing the body's intrinsic regenerative capacity. Platelet-rich plasma (PRP) delivers concentrated growth factors that modulate inflammation and support soft-tissue repair, while mesenchymal stem cells provide multipotent regenerative activity and immunomodulatory effects relevant to tendon, ligament, and joint pathology. Advances in bone-augmentation techniques, including biologically active scaffolds and cell-enhanced grafts, have improved management of critical-size defects and degenerative bone conditions.

Progress in autologous cartilage-regeneration methods has expanded options for focal chondral and osteochondral lesions, enabling formation of durable repair tissue using patient-derived constructs. Together, these orthobiologic strategies reflect a shift toward personalized, minimally invasive, and biologically driven care, highlighting the growing convergence of translational research and clinical application across species.

10. Platelet-Rich Plasma for Non-Union Fractures: Translating Regenerative Strategies to Orthopedic Practice

Dalia Juodžentė, Assistant Professor, PhD, DMV

Non-union fractures present a persistent challenge in orthopedic care, often requiring repeated interventions and prolonged recovery. Biological approaches that enhance local healing are increasingly explored. Platelet-rich plasma (PRP), an autologous concentrate rich in growth factors, has shown potential to stimulate bone regeneration.

Objective is to assess the effectiveness of PRP injections in promoting healing of established non-union fractures.

Patients with clinically and radiologically confirmed non-union fractures were treated with percutaneous PRP injections at the fracture site. PRP was prepared using a standardized centrifugation protocol from autologous blood. Clinical and radiographic outcomes were evaluated during follow-up, focusing on callus formation, pain reduction, and functional improvement.

PRP application was associated with activation of fracture healing in a notable proportion of cases. Radiographic evidence demonstrated callus formation and progression toward union. Patients also reported reduced pain and improved function. No significant complications were observed, indicating the safety of the procedure.

PRP injections may serve as a safe and effective adjunct in managing non-union fractures by enhancing biological healing processes. These findings support further investigation through controlled studies to validate its role in routine orthopedic practice.

11. Different approaches to treat OCD lesions in dogs

Federico Longo, PhD, DVM, ECVS Candidate, Clinic for Small Animal Surgery, Vetsuisse Faculty, University of Zurich, Switzerland

Osteochondritis dissecans (OCD) is a common developmental orthopedic disorder in dogs that can lead to persistent lameness and early osteoarthritis. Surgical management remains the standard of care for clinically significant lesions, with multiple techniques available depending on lesion size, location, and chronicity. Arthroscopic debridement is currently the most widely performed procedure, allowing minimally invasive removal of cartilage flaps and necrotic subchondral bone, with generally good short-term outcomes but variable long-term cartilage repair.

For larger or more advanced defects, restorative techniques have gained attention. Mosaicoplasty (osteochondral autograft transfer) enables transplantation of hyaline cartilage plugs from non-weight-bearing areas, aiming to restore joint congruity and improve durability. More recently, cartilage resurfacing solutions such as Synacart (Arthrex, Naples,USA) have been introduced, to fill large cartilage defects of the shoulder and stifle.

In selected cases with significant biomechanical overload, corrective procedures such as off-loading osteotomies may be indicated to redistribute joint forces and protect the repair site. While short- to mid-term results of advanced techniques are promising, evidence remains limited and comparative data are still emerging and mainly applied to talus OCS. Treatment selection should therefore be individualized, considering patient factors, lesion characteristics, and surgeon expertise, with the goal of optimizing functional outcomes and slowing osteoarthritis progression

12. Diagnostic approaches and surgical management of osteochondral diseases in dogs

Milan Matko, DVM

Osteochondral diseases in dogs are disorders affecting cartilage and subchondral bone, caused by traumatic, degenerative, genetic, developmental, or multifactorial factors. These conditions may occur acutely or chronically and frequently progress to osteoarthritis, significantly impairing joint function and quality of life. Accurate diagnosis is therefore essential for selecting the appropriate therapeutic and surgical approach.

The main diagnostic methods include radiography as the primary screening tool, computed tomography (CT) as the preferred imaging modality, magnetic resonance imaging (MRI) for detailed assessment of cartilage and soft tissues, and diagnostic arthroscopy. Arthroscopy plays both a diagnostic and therapeutic role and is considered the treatment of choice for many acute and chronic osteochondral conditions, especially osteochondritis dissecans affecting the shoulder, elbow, stifle, and tarsal joints in young or adult dogs. Its minimally invasive nature allows superior visualization of the joint, reduced postoperative pain, faster recovery, and decreased long-term risk of osteoarthritis.

Modern surgical management also includes microfracture techniques and resurfacing of osteochondral defects using autografts or allografts. Synthetic cartilage implants combined with titanium mesh enable osseous integration when autografts are not suitable. In advanced chronic cases progressing to severe osteoarthritis, endoprosthetic replacement, particularly cementless total hip prostheses, represents the preferred treatment option. The increasing incidence of osteochondral diseases is associated with uncontrolled breeding practices and prolonged canine lifespan.

13. Pain management in patients with osteochondral diseases

Petra Dmitrović, PhD, DMV, ECVAA Candidate

Osteochondral diseases in dogs and cats are commonly associated with acute and chronic pain, reduced mobility, reduced activity levels, and impaired quality of life. Adequate pain recognition, assessment, and therapy are therefore essential components of patient management and long-term welfare. However, chronic pain in veterinary patients is often difficult to recognize, as clinical signs may be subtle, slowly progressive, or mistakenly attributed to aging. Changes in behavior, activity, posture, grooming habits, or interaction with owners may represent the only indicators of persistent pain, making systematic pain assessment particularly important in these patients.

This lecture will provide a concise overview of currently available pain assessment tools used in small animal medicine in patients with osteochondral disease. Particular emphasis will be placed on multimodal analgesia and individualized therapeutic planning. Different pharmacological options commonly used in chronic osteoarticular pain management, such as opioids, non-steroidal anti-inflammatory drugs and anti hyperalgesic medication, will be discussed together with non-pharmacological treatment.

The lecture will also address the challenges associated with long-term pain treatment and monitoring, as well as newer therapeutic options currently available in veterinary medicine, such as anti-nerve growth factor monoclonal antibodies. The aim of this presentation is to emphasize the importance of combining systematic pain assessment with individualized and multimodal therapeutic strategies in dogs and cats affected by osteochondral disease.

14. Clinical perspective on common joint diseases in dogs

Marko Stejskal, PhD, DVM, DACVS

This presentation focuses on clinical management of canine shoulder, elbow, and stifle joint. While many conditions may be responsive to conservative management, in this presentation, surgical treatment and the role of intraarticular platelet-rich plasma (PRP) injections will be discussed. Radiographs suffice for initial evaluation of certain common orthopedic conditions like osteochondritis dissecans (OCD) in the shoulder and cranial cruciate ligament (CCL) disease. CT sensitivity enables more accurate diagnosis of conditions like elbow dysplasia and joint incongruity in particular. Arthroscopy, on the other hand, facilitates thorough inspection of a joint's interior by magnification and by enabling visualization of otherwise inaccessible parts of the joint. It also offers a possibility for treatment of intraarticular pathology. Shoulder OCD is a relatively common osteochondral disease of young dogs. Arthroscopic examination of the joint allows visualization and treatment of the osteochondral defect. Medial compartment disease is the most common form of elbow dysplasia in dogs. Surgical management commonly includes arthroscopy and load-shifting osteotomy (proximal ulnar osteotomy). Intraarticular injection of PRP following these procedures is offered to clients. Management of CCL disease includes stifle arthroscopy and Tibial Plateau Leveling Osteotomy. There is some evidence suggesting that intraarticular PRP injections seem to be helpful in patients with partial CCL disease.

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