AGENDA
Fairmont Banff Springs Hotel
Banff, Alberta
April 10-12, 2025

# GRIBOI

# 33rd Interdisciplinary Research Conference on Injectable Osteoarticular and Biomaterials and Augmentation Procedures

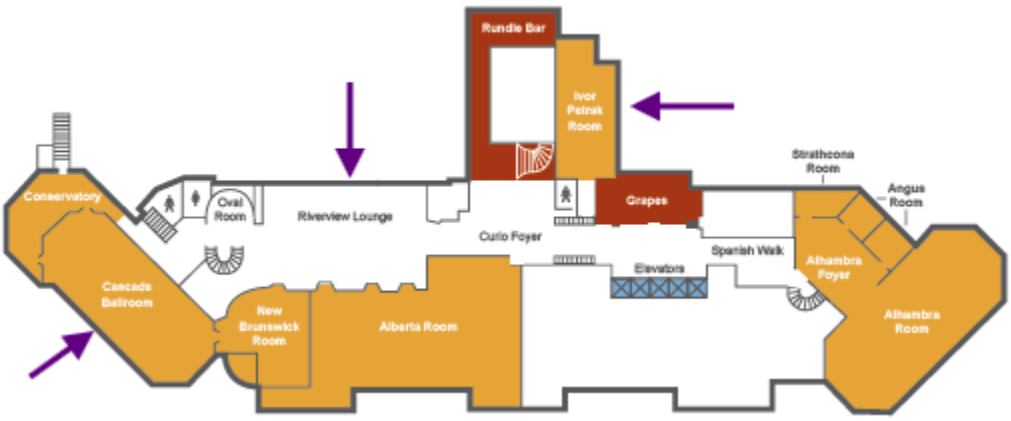
## Registration Desk Hours

Thursday April 10 from 1730-2000h: Mt. Stephen Hall Foyer
Friday April 11 from 0730-1500h: Oval Room beside Cascade Ballroom
Saturday April 12 from 0730-1500h: Oval Room beside Cascade Ballroom

If you need added support, please email us at info@griboi.com or refer to the GRIBOI website.

## Mezzanine Level One – Mt. Stephen Hall


## Mezzanine Level Two – Cascade Ballroom, Riverview Lounge and Ivor Petrak



## Thursday April 10

### Cadaver Lab – Beam Radiology – Trinity Hills
340 Na'a Common SW, Calgary, AB T3H 6A3

0730h Shuttle leaves Banff Springs Hotel to Beam Radiology
0830h Breakfast
0900h Lab Time
1130h Lunch

1200h Lab Time
1515h Transfer from Beam Radiology to Banff Springs Hotel
1630h Arrive in Banff

Registration is required →Please inquire if you are interested in participating.

Your involvement in the Cadaver Lab does not include registration or securing accommodation to the GRIBOI Conference April 10-12. Please visit our website to register.

GRIBOI wishes to express their gratitude to the following companies for their support:
Stryker, Philips, SpinaFX, and JnJ.

### Fairmont Banff Springs Hotel

1830h Registration Desk is open
Mt. Stephen Hall Foyer
Mezzanine Level One

1900h Welcome Reception
Mt. Stephen Hall
We will provide two complimentary beverage tickets. Cash bar is available for additional beverages.
Guest tickets can be purchased from our website.

2230h Event Concludes

## Friday April 11

0730h Registration Desk is open
Oval Room, Mezzanine Level Two
Breakfast
Cascade Ballroom and Riverview Lounge, Mezzanine Level Two

0815h Welcome and Opening Remarks
Cascade Ballroom, Mezzanine Level Two
Dr. Olivier Clerk-Lamalice
Dr. Stefano Marcia

### Vertebral Augmentation & Bone Cements: Part One
Moderators: Dr. Stefano Marcia and Dr. Olivier Clerk

0830h Sacroplasty Techniques and Updates
Dr. Edward Yoon

0850h The US Vertebral Augmentation Registry and novel augmentation techniques
Dr. Douglas Beall

0910h Bone Cements Used in Vertebral Augmentation: A State-of-the-art Narrative Review
Dr. Reade De Leacy

0930h First preliminary results from the SOFTBONE-study, comparing outcome of treatment of VCF using a standard bone cement vs a soft bone cement.
Dr. Malin Nilsson

0950h Updates of the Stent-Screw Assisted Internal Fixation Technique
Dr. Alessandro Cianfoni

1010h Discussion

1040h Refreshment Break
Riverview Lounge, Mezzanine Level Two
Exhibitor Booths are open

## Disc Interventions: Part One

Moderators: Dr. Jacob Fleming and Dr. Reade De Leacy

1110h Intradiscal Biologics and Other Biomaterials
Dr. Douglas Beall

1130h Intradiscal Ozone
Dr. Alexis Kelekis

1150h Nucleus augmentation mitigates disc degeneration in a goat model and decreases pain scores in clinical pilot trial
Dr. Erik Brewer

1210h Expert Level Discoplasty: Indications, Pearls and Pitfalls
Dr. László Kiss

1230h Discussion

1240h Lunch
Riverview Lounge and Cascade Ballroom, Mezzanine Level Two
Exhibitor Booths are open

1300h Stryker Sponsored Presentation
Topic: All Patient Solutions
Dr. Douglas Beall
Cascade Ballroom

1330h Free time

## Segmental Instability

Moderators: Dr. Malin Nilsson and Professor William Lu

1400h Spine Anatomy and Biomechanics
Dr. Mark Driscoll

1420h Accurately Diagnosing Spinal Instabilities: Challenges and Opportunities
Dr. John Hipp

1440h Imaging and grading Spinal Canal Stenosis: A Multimodal Approach to Diagnosis and Imaging
Dr. Ana Mafalda Reis

1500h Percutaneous treatment of lumbar spinal stenosis and instability
Dr. Stefano Marcia

1520h Discussion

1530h Refreshment Break
Riverview Lounge, Mezzanine Level Two
Exhibitor Booths are open

## Degenerative Spine Diseases and More: Part One

Moderators: Dr. Alexis Kelekis and Dr. Ana Mafalda Reis

1600h V-Strut: biomechanical, finite element analysis and early clinical data
Dr. Reade De Leacy

1620h Struggling to Navigate the Medical Device Regulatory Maze? A Startup Regulatory Affairs Survival Guide
Louis-Paul Marin

1640h Innovations in Bioinks and 3D Bioprinting for Tissue Engineering and Regenerative Medicine
Dr. Keekyoung Kim

1700h A Novel Surgical Planning System Using AI Model for bone voids filler injection for elderly patients
Professor William Weijia Lu

1720h Discussion

1740h Closing Remarks
Conclusion of Day One

### Sponsored Dinner – Stryker: Ivor Petrak Room, Mezzanine Level Two

Join us for an exclusive evening of insight and networking at the Stryker Sponsored Dinner. We are thrilled to present renowned experts in the field: Dr. Olivier Clerk and Dr. Stefano Marcia, who will be sharing their expertise on cutting-edge treatments for spine conditions with presentations on SpineJack and OptaBlate.

1845h Cocktails served
1915h Seating begins
1930h Dinner is served
2030h Presentation provided by Dr. Olivier Clerk and Dr. Stefano Marcia
2200h Event concludes

## Saturday April 12

0715h Registration Desk is open
Oval Room, Mezzanine Level Two
Breakfast
Cascade Ballroom and Riverview Lounge, Mezzanine Level Two

0730h GRIBOI General Assembly – Everyone is welcome to attend

0820h Stryker Sponsored Presentation
Dr. Jason Dunleavy
Topic: Opta Blate
Cascade Ballroom

0840h Opening Remarks
Cascade Ballroom, Mezzanine Level Two
Dr. Olivier Clerk

### Implants and Instability
Moderators: Professor Jean-Michel Bouler and Dr. Dan Nguyen

0850h NanoCement™: An Innovative Bone Void Filler with Smart Drug Delivery for Regenerative Healing
Dr. Sumrita Bhat

0910h Functionalization of biomimetic apatite-based injectable cements for bone filling and repair
Professor Christèle Combes

0930h Instability: Micro & Macro instability (attending virtually)
Dr. Luigi Manfre

0950h SI Joint Fusion in 2025: New approaches and pitfalls
Dr. Jason Dunleavy

1010h Osteo inductive Trabecular porous 3D Ti cage from the concepts to the clinical application (attending virtually)
Dr. Gianluca Maestretti

1030h Discussion

1040h Refreshment Break
Riverview Lounge, Mezzanine Level Two
Exhibitor Booths are open

## Disc Intervention: Part Two

Moderators: Dr. Olivier Clerk and Dr. Marc Bohner

1110h Imaging of Discogenic and Vertebrogenic Pain
Dr. Levi Chazen

1130h Basivertebral Plexus Ablation: Indications, clinical data and challenges/pitfalls
Dr. Dan Nguyen

1150h Intradiscal Electrical Stimulation Mediated Tissue Healing
Dr. Olivier Clerk

1210h Novel Intradiscal Implant: Intralink
Adam Rogers

1230h Discussion

1240h Lunch
Cascade Ballroom, Mezzanine Level Two
Exhibitor Booths are open

## Degenerative Spine Diseases and More: Part Two

Moderators: Dr. Lu-Ning Wang and Dr. Dan Holzwanger

1330h Nanoparticles in Microparticles as Macrophage Targeting Immunomodulatory and Injectable Drug Delivery System for Osteoarthritis Therapies
Dr. Era Jain

1350h The Role of Proteoglycan 4 in maintaining dural homeostasis
Dr. Roman Krawetz

1410h Tarlov Cysts and Interventional Treatments
Professor Kieran Murphy

1430h Bioactive Injectable Materials for Vertebroplasty
Professor Haobo Pan

1450h Is a low extracellular calcium level an important link between dystrophic calcification and heterotopic ossification?
Dr. Marc Bohner

1510h Potential anticancer activity of biomaterials combined with drugs
Professor Jean-Michel Bouler

1530h Discussion

1540h Refreshment Break
Riverview Lounge, Mezzanine Level Two
Exhibitor Booths are open

1600h Presentation from Stryker
Opta Blate and Spine Jack
Cascade Ballroom

## Interventional Pain Management

Chair: Professor Haobo Pan and Professor Christèle Combes

1610h Demystifying RF Ablation: Exploring Monopolar and Bipolar Lesion Dynamics
Dr. Samuel Peter

1630h Engineering Multifunctional Biomaterials with Antifouling and Biomimetic Properties
Dr. Maryam Badv

1650h Machine learning design of biodegradable Zn alloys and topological design of Zn scaffolds
Dr. Lu-Ning Wang

1710h Embolization of peripheral joints and tendons
Dr. Dan Holzwanger

1730h Discussion

1740h Closing Remarks and Conclusion of Conference

1900h Pendopharm Sponsored Dinner
Park Distillery
219 Banff Ave, Banff, AB *please notify the registration desk if you wish to attend

# Our Distinguished Presenters

**Dr. Maryam Badv**
Department of Biomedical Engineering
Libin Cardiovascular Institute
University of Calgary

Dr. Badv is currently an Assistant Professor in the Department of Biomedical Engineering and a member of the Libin Cardiovascular Institute at the University of Calgary. She has contributed significantly to the field of biomaterial science and engineering, especially in antifouling biointerface design, development, and testing. After earning her PhD from McMaster University and being honored as the Valedictorian of the 2019 graduating class, Dr. Badv furthered her research at UCLA as an NSERC postdoctoral fellow. During her training, she collaborated with an interdisciplinary team of nanoscientists, engineers, clinicians, and industry professionals to develop multifunctional scaffolds for biomedical applications. The Badv Lab (Translational Biomedical Engineering Laboratory) focuses on translational biomedical engineering research, working at the interface of engineering, medicine, chemistry and biomedical sciences with the aim to develop multifunctional biomaterials and biomimetic models for various biomedical applications. Throughout her academic journey, Dr. Badv has authored numerous high-impact journal articles, with some of her innovative work leading to patents.

**Dr. Douglas Beall, M.D.**
Fellow of Interventional Pain Practice (FIPP)
Fellow of the Society of Interventional Radiology (FSIR)
Diplomate of the Academy of Integrative Pain Management (DAIPM)
Chief of Services, Comprehensive Specialty Care; Director of Research Clinical Investigations LLC.

Douglas P. Beall, MD, is board-certified in Diagnostic Radiology, has an added fellowship in Musculoskeletal Radiology, is a Diplomate of the American Academy of Pain Management and is a Fellow of the Society of Interventional Radiology and Interventional Pain Practice and board certified by the World Institute of Pain. He is currently in private practice focused on interventional pain management and minimally invasive surgical procedures.

Dr. Sumrita Bhat
CEO and Founder Conlis Global Inc.

Dr. Sumrita Bhat is a translational research professional specializing in business innovation, regulatory affairs, and biomaterial development for orthopedic applications. With extensive experience in experimental models, she has worked across in vitro, ex vivo, and animal models, focusing on material implantation, data acquisition, and functional tissue engineering to advance regenerative medicine.
Her expertise lies in implantable medical devices, orthopedic biomaterials, and in vitro diagnostic devices (IVDDs), with a strong foundation in FDA Class II and III regulatory pathways. She has a proven track record of ensuring compliance with global regulatory standards while driving the clinical translation of novel biomaterials.

A passionate researcher, Dr. Bhat is committed to transforming innovative concepts into clinically viable products that improve patient outcomes. She is highly skilled in safety assessments, regulatory strategy, and industry compliance, making her a key contributor to discussions on biomaterials, implantable devices, and regulatory affairs.

In her current role as a CEO of Conlis Global, Dr. Bhat actively collaborates with research institutions, clinical experts, and regulatory bodies to translate cutting-edge biomaterial innovations into clinical applications. Her work integrates nanotechnology, bioceramics, and drug delivery systems, addressing critical challenges in bone repair and orthopedic surgery.

Dr. Marc Bohner
PhD EPFL, PhD h.c. U. Uppsala, FBSE
Research Director, RMS Foundation
Bettlach, Switzerland

Dr. Bohner holds a MSc and PhD degree from the Swiss Federal Institute of Technology of Lausanne (EPFL; 1990, 1993). His career included positions as postdoctoral fellow at the University of Utah, and the Swiss Federal Institute of Technology of Zurich (ETH). In 1998, he joined RMS Foundation, a private research and testing lab located in Bettlach, Switzerland. Currently, he serves as a research director. His interests include the synthesis, production, and use of calcium phosphates for bone repair.

He holds over fifteen distinct patents, is the inventor of 4 commercial products, and has published and presented widely in his field (>140 articles; h = 56-67). He has given 150 invited lectures in English, French, and German. His teaching positions have included adjunct and affiliated appointments at the University of Sherbrooke (2004 – 2019), the University of Berne (2011 - present), and ETH (2009 - present).

His services to the scientific community include activities in publishing (Editor of Acta Biomaterialia; 2008 □; IF (2023) = 9.6), funding agencies (Member of the Research Council of the Swiss National Science Foundation (SNSF; 2016 – present)), and scientific societies (Secretary, vice-president and president of the Swiss Society for Biomaterials (SSB+RM; 2004 – 2012); Secretary and president of the Groupe de Recherche Interdisciplinaire sur les Biomatériaux Ostéo-articulaires Injectables (GRIBOI; 2007 – 2016); Secretary and then treasurer of the European Society for Biomaterials (ESB; 2013 – 2021); Secretary of the International Union of Societies for Biomaterials Science and Engineering (IUSBSE; 2024 – present). Marc Bohner has also been active in congress organizations, in particular as chair or co-chair of the annual congress of SSB+RM (2005), GRIBOI (2006, 2023), ESB (2009), and ISCM (2023). His work and services have been recognized by SSM+RM ("honorary life membership", 2013), the "International Society for Ceramics in Medicine" (ISCM; "Racquel LeGeros Award", 2014), GRIBOI ("honorary president", 2016), ESB ("Georges Winter Award", 2023), the IUSBSE (Fellowship, 2024), and the University of Uppsala (Dr. h.c., 2024). Marc Bohner is among the top 60 scientists in Biomedical Engineering according to the Stanford database (https://dx.doi.org/10.17632/btchxktzyw).

Prof. Jean-Michel Bouler
Directeur de l'Unité de Recherche - Research Institute Director
Laboratoire CEISAM - UMR 6230 CNRS - Nantes Université

Jean-Michel Bouler was appointed as full-Professor in the Department of Materials Science (Dental College - University of Nantes) in September 2005 after serving as Assistant-Professor since 1999. He completed a BSc and a MSc in chemistry respectively at University of Nantes, France and University of Wales, U.K. before joining a Biomaterials Research Center at INSERM to study for a PhD in bioceramics. Prof. Bouler was then asked to run the BIOMAT Group within this INSERM Unit focused in Bone & Dental Tissue Engineering from 1999 till 2014. Then he joined a larger CNRS Research Institute (CEISAM UMR 6230, https://ceisam.univ-nantes.fr) where he develops hybrid CaP biomaterials able to release specific therapeutic agents. Areas of particular interest in his group include the synthesis and characterisation of novel drug-combined calcium phosphate matrices with the objective of systematically studying the biological effects of the association of various drugs and/or ions with calcium phosphate biomaterials. Research in this field was funded through numerous National Research Programs involving academic labs, clinical centers and private companies. These collaborations have led to 9 patents and patent applications and some specific systems are now being taken forward to clinical applications and CE/FDA agrements.

Since January 2017, Prof. Bouler has been appointed Director of the CEISAM Research Institute. Jean-Michel Bouler has been a consultant to major orthopedic groups for over 15 years and has co-financed three biotech companies (Biomatlante in 1995, Graftys in 2005 and Biomadvanced Diagnostics in 2021).

Prof. Bouler has taken part in several scientific panels evaluating biomaterials programs for the Agence Nationale pour la Recherche (ANR, France), the Fundação para a Ciência e a Tecnologia (FCT, Portugal) and for European Framework Programs.

### Erik Brewer, Ph.D

Polymer Engineer; ReGelTec Inc., Baltimore, MD, USA
Associate Teaching Professor, Chair of Innovation and External Partnerships; Rowan University, Glassboro, NJ, USA

Erik Brewer is a polymer chemist at ReGelTec and inventor of HYDRAFIL, a minimally invasive spinal implant for the treatment of degenerative disc disease, currently undergoing an FDA pivotal clinical trial. In addition to his role at ReGelTec, Dr. Brewer serves as an Associate Teaching Professor and Chair of Innovation and Industry Partnerships at Rowan University in Glassboro, New Jersey. At Rowan, he fosters collaborations between healthcare partners and university resources, creating student and investigator-driven teams to develop innovative engineering solutions that address real-world challenges in healthcare. A graduate of Drexel University (BS-MS ’07, PhD ’14) in Chemical Engineering, Dr. Brewer previously worked as an Associate Scientist in the Biopharmaceutics division at Merck.

### Dr. J. Levi Chazen, MD

Professor of Radiology, Weill Cornell Medicine
Director of Spine Imaging, Hospital for Special Surgery
President, American Society of Spine Radiology
Senior Editor, American Journal of Neuroradiology

Dr. Chazen is a Professor of Radiology at Weill Cornell Medicine and the Director of Spine Imaging at the Hospital for Special Surgery in New York City. He is Past-President of the American Society of Spine Radiology and the Senior Editor for Spine Imaging and Image-Guided Interventions at the American Journal of Neuroradiology.

### Dr. Alessandro Cianfoni, MD, PhD

Alessandro Cianfoni, MD, is a diagnostic and interventional neuroradiologist, currently serving as the Head of Neuroradiology at the Neurocenter of Southern Switzerland-EOC in Lugano, Switzerland. He completed his medical studies at the Università Cattolica del Sacro Cuore in Rome where he also specialized in Radiology and served as staff neuroradiologist. He has held a position as Senior Clinical Fellow at the University of California, San Diego, and he served as Associate Professor of Neuroradiology at the Medical University of South Carolina. He completed a PhD at University of

Maastricht – NL on minimally invasive vertebral body reconstruction. Since 2021 he is a Titular Professor in Neuroradiology at the University of Bern - Switzerland. His research focuses on neuroradiology, stroke treatment, and minimally invasive spinal interventions.

Dr. Olivier Clerk, MD, MSc, FRCPC, FIPP
Beam Interventional & Diagnostic Imaging
ASNR - Spine Interventional Council

Dr. Clerk is the Chief Medical Officer and Founder of Beam Radiology, Calgary, Canada as well as a Neuroradiologist and musculoskeletal interventionalist. His expertise is in diagnosing spine pathologies and performing image guided interventional treatments. He is Board Certified in Diagnostic Radiology by the Royal College of Physicians and Surgeons of Canada and Interventional Pain Management by the World Institute of Pain (Fellow of Interventional Pain Practice). He is an associate member of McCaig Institute for Bone and Joint Health in Calgary, an inaugural member of the Interventional Spine Council of the American Society of Neuroradiology (ASNR), and an Interventional Pain Management Committee Leader of the Society of Interventional Radiology (SIR)

Professor Christèle Combes
Professeur des universités chez Toulouse INP-ENSIACET
Toulouse, Occitanie, France

Christèle Combes received her PhD in Materials Science at the Institut National Polytechnique de Toulouse (INPT, France) in 1996. In 1997, she held a postdoctoral position at the Ecole Polytechnique de Montréal (Canada) dedicated to the development of polysaccharide based hydrogels for cartilage substitution and repair. Since 1998, she has been a teacher-researcher at the Ecole Nationale Supérieure des Ingénieurs en Arts Chimiques et Technologiques (ENSIACET).

Currently professor, head of the Materials Science and Engineering Department of ENSIACET-Toulouse INP (since 2015) where she has been at the head of the 'Phosphates, Pharmacotechnics, Biomaterials' research group of the CIRIMAT laboratory from 2007 to 2015. Her research focuses on calcium phosphate and calcium carbonate-based biomaterials and biomineralizations to substitute and/or repair bone defects and to go towards better understanding the formation of normal and pathological calcifications.

She has been the treasurer of the GRIBOI association from 2010 to 2024 and in the scientific committee of the International Society for Ceramics in Medicine since 2014. Professor Christèle Combes has over 110 scientific papers published in international peer-reviewed scientific journals and 8 patents.

Dr. Reade De Leacy MBBS (Hons) FRANZCR
Associate Professor
Departments of Neurosurgery & Radiology
Director of Cerebrovascular Services Mount Sinai Queens
Cerebrovascular Center, Mount Sinai Health System

Reade De Leacy, MD, is an Associate Professor of Neurosurgery and Radiology in the Cerebrovascular Center at The Mount Sinai Hospital, the Director of the Neurointerventional Spine program and Co-director of the Neuroendovascular surgery fellowship at Mount Sinai. Additionally, he serves as Director of Cerebrovascular Services at Mount Sinai Queens.
A specialist in diagnostic and interventional neuroradiology, Dr. De Leacy is board certified in both diagnostic radiology and neuroradiology by the American Board of Radiology. He completed his fellowship trainings in neuroendovascular surgery/neurointerventional radiology and separately diagnostic neuroradiology at The Mount Sinai Hospital. He also completed fellowship training in interventional radiology at St. Vincent's Hospital in Melbourne, Australia and in musculoskeletal MRI and sports medicine intervention with Qscan Radiology Clinics in Queensland, Australia.

Dr. De Leacy obtained his medical degree and graduated with honors from the University of Queensland, Australia. In 2012, he completed his specialist training becoming a fellow of the Royal Australian and New Zealand College of Radiologists, where he earned the prestigious Uhr Clarke Bursary and HR Sear Prize awards as the highest-ranked graduate from both diagnostic radiology and radiation oncology in Australia, New Zealand, and Singapore.

Mark A. Driscoll, Eng., Ph.D.
Professor, Department of Mechanical Engineering
Canada NSERC Chair Design Engineering for Interdisciplinary Innovation of Medical Technologies
Chwang-Seto Faculty Scholar
Director of Musculoskeletal Biomechanics Research Lab

Mark Driscoll is a Professor of Mechanical Engineering at McGill University, in Montreal, Canada. His published research focuses on the biomechanics of the spine from the perspective of devising an improved understanding of stability, diagnostics, or treatments – having a particular focus on the involvement of soft tissue such as fascia. Dr. Driscoll is the Natural Sciences and Engineering Research Council of Canada Chair for Design Engineering for Interdisciplinary Innovation of Medical Technologies. He directs the Musculoskeletal Biomechanics Research Lab at McGill and co-directs the Otrhopeadic Research Lab and the Montreal General hostpial. Dr. Driscoll has received many awards for his research and corresponding inventions which serve in assisting people with disabilities around the world.

### Dr. Jason Dana Dunleavy, MD

Dr. Dunleavy is an interventional radiologist who has performed hundreds of minimally invasive procedures to treat neurological, orthopedic, oncological, and gynecological conditions. In addition to his role as medical director of Atlas Interventional Radiology, he also currently serves as the medical director of the Interventional Radiology program at Olean General Hospital.

### Dr. John A. Hipp, Ph.D

Chief Scientist
Medical Metrics, Inc.

Dr. Hipp received his Ph.D. in Biomedical Engineering from Rensselaer Polytechnic Institute in 1986. He spent several decades in academia, initially at a biomechanics laboratory in Boston, and later directing the Spine Research Laboratory at Baylor College of Medicine (BCM) in Houston. While at BCM, he developed a more precise method for measuring intervertebral motion, which led to the creation of Medical Metrics, Inc. (MMI) to commercialize that technology.

Today, MMI operates as an imaging core laboratory, and has supported hundreds of spine-related research studies—including many FDA-regulated trials. Dr. Hipp has served as MMI's Chief Scientist since its founding, continuing his research to develop and validate intervertebral motion and alignment measurements that may improve the diagnosis and treatment of spinal disorders.

### Dr. Dan Holzwanger, MD

Daniel J. Holzwanger, MD, is a physician specializing in Vascular and Interventional Radiology. He is an Assistant Professor of Radiology at Weill Cornell Medicine and an Assistant Attending Radiologist at the NewYork-Presbyterian Hospital-Weill Cornell Campus.

Dr. Holzwanger graduated from Cornell University where he earned his BS in Biological Sciences in 2009 and received his MD from Weill Cornell Medical College in 2013.

Following internship at New York Hospital Queens, Dr. Holzwanger trained as a resident in Diagnostic Radiology from 2014 to 2018 at NewYork Presbyterian-Cornell, where he served as Chief Resident from 2017-2018. He then completed a fellowship in Vascular and Interventional Radiology from 2018 to 2019 at Vanderbilt University Medical Center and returned to join the

faculty at Weill Cornell Medicine in July 2019.

He has published peer reviewed journal articles and textbook chapters within the field of radiology and his clinical interests include the minimally invasive treatment of benign and malignant tumors, vascular and lymphatic disorders, hepatobiliary diseases, genitourinary diseases, and other conditions.

### Dr. Era Jain

Dr. Era Jain is an Assistant professor in the Biomedical and Chemical Engineering Department at the College of Engineering and Computer Science, Syracuse University. Before joining Syracuse University, Dr. Jain was a research scientist at Washington University in Saint Louis where she developed injectable sustained drug delivery systems for treatment of osteoarthritis. Prior to Washington University, she was a postdoctoral fellow at Saint Louis University where she developed biodegradable hydrogels for controlled delivery of therapeutic proteins. Dr. Jain earned her Ph.D. at the Indian Institute of Technology, Kanpur, India. Dr. Jain's research aims to develop clinically relevant biomaterials, particularly immunomodulatory platforms for advancing treatment of musculoskeletal disorders. A key focus is on macrophage-targeted drug delivery systems. We've pioneered scalable, cost-effective technologies for producing highly monodisperse nanoparticles and microparticles. Our research extends to designing multiscale nano-in-microparticle drug delivery systems, capable of sustained and targeted co-delivery of multiple therapeutics. By adjusting particle properties, we aim to target specific macrophage subtypes to either promote or suppress inflammation for disease resolution. We evaluate these systems through in vitro and pre-clinical animal models. She is a member of the Society for Biomaterials, Biomedical Engineering Society, and the Orthopaedics Research Society. She has contributed to over 33 publications and 3 patents. She recently received the Discovery Award from DoD for her work targeting activated macrophages for developing immunomodulatory therapies for osteoarthritis.

### Dr. Alexis Kelekis MD, PhD, EBIR, FSIR FCIRSE

National and Kapodistrian University of Athens
Division of Radiology - Radiotherapy II

Alexis Kelekis currently works at the Division of Radiology - Radiotherapy II, National and Kapodistrian University of Athens. Alexis does research in Radiology, Orthopedic Surgery and Neuroradiology. He is Member of the Board for SIO ( http://www.sio-central.org). He is actively researching on injectable biomaterials for bone lesions, on pain management and on disc disease. Their current project is 'Prospective Randomized Trial between Percutaneous Ozone injection and Surgery for disc herniation'.

### Dr. Keekyoung Kim, PhD, Peng

Associate Professor, Schulich School of Engineering, Department of Mechanical and Manufacturing Engineering, University of Calgary

Dr. Keekyoung Kim is an Associate Professor in Mechanical & Manufacturing Engineering and Biomedical Engineering at the University of Calgary's Schulich School of Engineering, where he leads the Advanced Biofabrication Laboratory. His interdisciplinary research integrates 3D bioprinting, biomaterials science, tissue engineering, regenerative medicine, and microphysiological systems, aiming to develop innovative biofabrication platforms for medical and pharmaceutical applications. Dr. Kim earned his PhD from the University of Toronto, followed by postdoctoral research at Stanford University and Harvard Medical School, specializing in microfluidics and organ-on-a-chip technologies. His contributions have been widely recognized through prestigious awards and substantial funding from agencies such as NSERC, CIHR, Alberta Innovates, and the Canada Foundation for Innovation. Passionate about mentoring the next generation of researchers, Dr. Kim continues to drive advancements in personalized medicine and regenerative therapies.

### Dr. László Kiss

Orthopaedic Spine Surgeon
National Center for Spinal Disorders
Budapest, Hungary

László Kiss, MD, PhD, CIPS is a board-certified orthopaedic spine surgeon and clinical researcher at the National Center for Spinal Disorders in Budapest, Hungary. After completing his training at Semmelweis University, he advanced his expertise through international fellowships and comprehensive pain management programs. His work, highlighted by publications, reflects his commitment to enhancing minimally invasive spine surgery and innovative biomechanical research.

### Dr. Roman Krawetz, PhD

Professor
Mc Caig Institute for Bone and Joint Health
University of Calgary

Dr. Roman Krawetz leads a research program at the University of Calgary, focusing on stem cell biology and regenerative medicine, particularly in the context of osteoarthritis (OA) and joint repair. His lab investigates tissue-resident mesenchymal stem cells (MSCs) and their role in cartilage regeneration, using transgenic mouse models to study OA progression and stem cell-based therapies. A major aspect of his work involves identifying novel cellular and molecular mechanisms that contribute to joint degeneration and developing strategies to enhance cartilage repair.

Dr. Krawetz collaborates with multiple research groups to integrate biomechanics, multi-omics analysis, and stem cell bioprocess engineering into his studies. His lab is actively involved in transdisciplinary projects, such as using human dermal MSCs for cartilage repair and evaluating the therapeutic potential of bioreactor-expanded stem cells. Additionally, his research explores the impact of joint injury on endogenous stem cell populations and the potential for cell free-mediated cell signaling in regeneration.
By combining basic science with translational research, Dr. Krawetz's program aims to develop innovative treatments for OA, ultimately improving patient outcomes. His work is supported by partnerships with industry and clinical researchers, ensuring a direct path from laboratory discoveries to real-world applications in regenerative medicine.

### Professor William Weijia Lu

Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences and EX Ng Chun-Man Endowed Professor in Orthopaedic Bioengineering, the University of Hong Kong, PRC

Prof. Lu was the Professor in Orthopaedic Bioengineering, the Univesity of Hong Kong. He obtained his PhD degree and the "Distinguished Graduate Award" from the University of Waterloo, Canada, in 1994. He joined the Department of Orthopaedics & Traumatology, The University of Hong Kong (HKU) in 1995 as an Assistant Professor and was promoted to Associate Professor in 2001, and full Professor in 2009. He was established Orthopaedic Research Centre in 1995 and has served as director. Professor Lu has specific experience in the areas of Orthopaedic Biomechanics, Biomaterials, 3-D Bioprinting-technology as well as Clinical AI related research.

He has achieved substantial international recognition in the area of bioengineering and is widely acknowledged as top 1% scholars (2009-2018) according to ISI's Essential Science Indicators. Professor Lu has consistently secured a significant proportion of the research funding from Hong Kong and He held a number of patents for his innovations and has published more than 290 papers in international Peer Reviewed Journals, with more than 15,000 citations and H-index 70.Prof. Lu has spinoff three companies as co-founder with his PhD students, and he has supervised more than 50 Ph.D students.

### Dr. Gianluca Maestretti

Professeur Titulaire Clinique
FMH en Orthopédie, Spécialiste en chirurgie spinale
Médecin-chef orthopédie
Responsable Unité Neuro- spinale HFR
Centre de formation en chirurgie spinale
HFR Fribourg – Hôpital cantonal

Bio forthcoming

## Dr. Luigi Manfre

Secretary General of the European Society of Neuroradiology ESNR
European School Of Neuroradiology ESONR
Spine Council of the American Society of Neuroradiology ASNR
European Radiology Scientific Editorial Board - European Society of Radiology ESR
Director of Minimal Invasive Spine Therapy dept - Mediterranean Institute for Oncology I.O.M., Catania - Italy

Luigi Manfre' is the Secretary General of the European Society of Neuroradiology ESNR (2023) and past Chairperson for Spine Committee and member of the Executive Committee of the European Society of Neuroradiology-ESNR (2017-2023). He is part of the European Board of Neuroradiology EBNR for the European School of Neuroradiology ESONR (2017), inaugural Member of the Interventional Spine Council of the American Society of Neuroradiology (ASNR, 2019), and Member of the Scientific Editorial Board of the European Radiology Journal, official journal of the European Society of Radiology ESR (2021). He is paper Reviewer of "Neuroradiology" journal, "Interventional Neuroradiology Journal INJ" and "Journal of Vascular and Interventional Radiology JVIR". He is a Scientific Member of the ASSR Research and Education Committee (2023-2024).

## Dr. Stefano Marcia

Direttore UOC Radiologia Ospedaliera
Direttore Dipartimento dei Servizi
P. O. SS Trinità, Cagliari, Italy

Dr. Marcia received his graduate degree in medicine and surgery in 1990 and his board in Radiology in 1995 from the Cagliari University. He also received a Master's Degree in advanced endovascular techniques from the University of Rome in 2005, a Master's Degree in management of health organizations from Luiss Business school of Rome in 2011, and a Masters in health management from University of Sassari in 2023.

Dr. Marcia is currently the chief of Radiology at SS. Trinità Hospital in Cagliari, Italy.
His primary field is spine interventional radiology, and performs treatments for trauma (vertebral fractures), degenerative diseases (disk, facet joint, spinal canal) and tumor ablation. He has also been involved in the development of new devices for the treatment of spinal canal stenosis and tumor ablation.

He is considered as a Key Opinion Leader in spine interventional procedures, and is part of the Interventional Spine Council of American Society of Spine Radiology. Dr. Marcia has published many scientific papers as the first author and contributed his expertise to eight textbooks.

Louis-Paul Marin Eng., LL.B., LL.M.
President and Founder
Laval, Quebec

Dual-qualified professional with a unique blend of expertise in engineering and law. With this robust technical and legal foundation, Me Marin possesses an in-depth understanding of product design, manufacturing processes, and quality assurance, complemented by extensive knowledge of the compliance standards as well as the ever-increasing number of laws and regulations governing the medical industry.

Currently, Me Marin specializes in regulatory affairs for the medical device industry, navigating complex international standards and in drafting contracts useful and essential for building commercial links between the different players in the industry (e.g., quality agreements, distribution agreements, manufacturing agreements, collaboration agreements, contract research agreements, etc.). He excels in ensuring that products meet safety, efficacy, and compliance standards, facilitating seamless market entry and maintaining regulatory approval across multiple jurisdictions.

With a strong commitment to ethical practices and patient safety, Louis-Paul drives innovation and related contracts in the regulatory landscape, ensuring that life-saving technologies reach those who need them most.

Professor Kieran Murphy MB BAO BCH FRCPC FSIR

Professor Kieran Murphy MB BAO BCH FRCPC FSIR graduated in 1986 from the Royal College of Surgeons in Ireland. He completed his Radiology residency and Neuroradiology fellowship at the University of Michigan, and Interventional Neuroradiology fellowship at University of Geneva. From 1998-2008 he was Division Head of Interventional Neuroradiology at Johns Hopkins. Since 2008 he has been Prof. of Radiology at University of Toronto. He holds 81 patents including vertebroplasty systems, bone cements, biopsy systems, and other medical devices to treat spine, neurovascular and disc pathologies.

He is a competitive race car drive in modern and vintage race cars, driving for teams in Europe at Spa, Silverstone, and across the US and Canada. His essays have been published in The Toronto Star, The National Post and the Christian Science monitor.  His book “The Essence of Invention and the Joy of medical Creativity” is published by Dundurn Press, and is available in books stores and online. H-Index 50. Citations 8015.

Dr. Dan Nguyen MD
Past President of American Society of Spine Radiology (ASSR)
Comprehensive Specialty Care
Neuroradiology & Pain Solutions of Oklahoma
Interventional Neurological & Musculoskeletal Pain Specialist

Dan T.D. Nguyen, M.D., President of the American Society of Spine Radiology (ASSR), specializes in Minimally Invasive Pain Management treatments.

After serving over twenty-five years in Academic Medicine as the Chief of Diagnostic and Interventional Neuroradiology at Georgetown University Medical Center and Penn State University Medical Center, Dr. Nguyen was consistently awarded the highest recognition in Patient Satisfaction by national metrics. Throughout his career, Dr. Nguyen not only ran advanced clinical trials for pain but also published numerous papers detailing Pain Management treatments. Dr. Nguyen is currently practicing at the Oklahoma Spine Hospital, providing advanced Pain Management treatments.

Dr. Nguyen trained at The University of California at Berkeley and The University of Illinois Chicago. He completed his Fellowship at Georgetown University Medical Center and the National Institute of Health (NIH), and he earned his Medical degree at The University of Pittsburgh School of Medicine.

Dr. Malin Nilsson, PhD
CEO, Inossia
Stockholm, Sweden

Malin Nilsson is an entrepreneur, co-founder of Inossia, material scientist and engineer with a PhD in Orthopedics (Lund University, Sweden) and has co-invented the orthobiologic material Cerament[TM] manufactured by BoneSupport.

Professor Haobo Pan
Shenzhen Institute of Advanced Technology
Chinese Academy of Sciences

Prof. Haobo Pan, Vice Director of the Institute of Biomedicine and Biotechnology at the Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Fellow of the International Society for Advanced Materials, Director of the Center for Human Tissue and Organ Degeneration Research, Director of the Guangdong Biomedical Materials International Joint Research Center, Director of the Guangdong Marine Biomedical Materials Engineering

Technology Center, Director of the Shenzhen Key Laboratory of Marine Biomedical Materials. He is engaged in long-term research on orthopedic biomedical materials, published more than 200 papers in qualified journals, including Prog. Mater. Sci., Adv. Mater., Adv. Funct. Mater., Bioact Mater., Nat. Commun., Chem. Eng. J, Adv. Healthc. Mater., and proposed a scientific viewpoint on alkaline regulation of bone metabolism, and provided an important theoretical basis for the design of new orthopedic biomaterials.

### Dr. Samuel Peter PhD

Beam Medical, Simulation Specialist

Samuel Peter is a researcher in the field of emerging medical device technologies, involved in the design and development of diagnostic and treatment tools. He is deeply interested in the application of fundamental physics, receiving his PhD in Engineering Physics from McMaster University in 2022 with a focus on improving the optical properties of fluorescent nanomaterials. He is currently working as a Simulation Specialist at Beam Medical, using finite element modelling to explore the local heating of biological tissues through the use of radiofrequency ablation (RFA) for the purposes of pain relief.

### Dr. Ana Mafalda Reis

Head of the Neuroradiology Department
Pedro Hispano Hospital, Portugal

Neuroradiologist with extensive experience in Diagnostic and Interventional Neuroradiology, specializing in minimally invasive spine interventions. Holds a PhD in Medical Sciences from the University of Porto and serves as Head of the Neuroradiology Department at Pedro Hispano Hospital. President of the Portuguese Neuroradiology Society and Vice-President of the Portuguese Brain Council. Visiting Professor at the University of Porto, coordinating academic courses in Neuroradiology and History of Medicine. Author of numerous indexed scientific publications and speaker at national and international conferences. Actively involved in advanced imaging research and functional studies. Member of various Portuguese and European scientific societies.

### Adam Rogers

Vice President of Regulatory and Engineering
Spinal Simplicity

Adam Rogers is Vice President of Regulatory and Engineering at Spinal Simplicity. Adam completed his BS and MEng degrees in Biomedical Engineering at the University of Virginia, graduating with high honors. He is an inventor on over 30 patents, has obtained 13

FDA 510(k) clearances, and is a co-author on peer-reviewed publications of Spinal Simplicity's Minuteman and Intralink technologies.

## Additional Acknowledgement:

**Tom Hedman, PhD.,** Spinal Simplicity's Senior Principal Scientist has been involved in orthopedic research and development since 1983, with a focus on soft-tissue biomechanics since 1985. Dr. Hedman is a recognized pioneer in the spine field with over 35 years of experience in both the academic and entrepreneurial realms. He has made over 100 presentations at national and international conferences and has over 65 peer-reviewed published articles. Tom has been a reviewer for U.S. NIH grants and various technical journals. His graduate bioengineering training was at MIT and the University of Strathclyde. Dr. Hedman is currently an Adjunct Associate Professor in the F. Joseph Halcomb III, M.D. Department of Biomedical Engineering at the University of Kentucky. Tom Hedman currently has more than 40 issued patents, beginning with the first of its kind "2nd generation" disc replacement device (total disc prosthesis) issued in 1988. Prior to joining Spinal Simplicity, Tom's previous roles were the Founder and Chief Science Officer of Intralink-Spine, as well as, the Founder and President of Orthopeutics, LP.

**Lu-Ning Wang, Ph.D. P.ENG**
Professor, Vice President
University of Science and Technology Beijing

Prof. WANG Lu-Ning is serving as Vice President (Strategy) of the University of Science and Technology Beijing. He obtained his BEng and MSc in Materials Science and Engineering from University of Science and Technology Beijing and Tsinghua University, respectively. He participated in an interdisciplinary program in the Medical School at University of Alberta and obtained MSc in Radiology and Diagnostic Imaging and Mechanical Engineering in 2007 and then a PhD degree in Materials Engineering in 2011. He was awarded Natural Science and Engineering Research Council (NSERC) Postdoctoral Fellowship and worked at University of Calgary from 2012-2013.

Dr. Wang joined University of Science and Technology Beijing as a professor in materials science supported by the 1000 Young Talent Plan. His research interests include metallic implant, surface modification and the degradation of metals in physiological culture. He has authored/co-authored over 100 peer-reviewed journal papers and has 50 patents. He also served as a committee member in the 'Thin Coating and its Application' session in TMS. Dr. Wang holds the membership in TMS and Society of Electrochemistry. Dr. Wang has served on the editorial boards of International Journal of Nanomedicine, Journal of Materials Science & Technology and Rare Metals.

Dr. Edward S. Yoon
Chief of Interventional Radiology, Dept. of Radiology
Associate Professor of Radiology, Hospital for Special Surgery
Associate Professor of Radiology, Weill Medical College of Cornell University

Dr. Edward Yoon is an interventional musculoskeletal radiologist who specializes in novel minimally invasive treatments of the joints and spine. Dr. Yoon is dual fellowship trained and dual board certified in Diagnostic Radiology and Interventional Pain Management. Dr. Yoon is an active member of North American Spine Society, Spine Intervention Society, American Society of Spine Radiology, Society of Skeletal Radiology, Radiological Society of North America, and Society of Interventional Radiology where he has presented at national meetings. He was a course instructor for the lumbar injection course for the North American Spine Society and is currently serving on the Radiology Section Committee.

Dr. Yoon completed his fellowship in musculoskeletal imaging at HSS after which he trained in interventional musculoskeletal/spine and pain management under Dr. Douglas P. Beall at the Oklahoma Spine Hospital and Summit Medical Center. During his fellowship, Dr. Yoon completed over 700 vertebral augmentation procedures and had extensive training involving intrathecal targeted drug delivery, neuromodulation, interspinous process devices, basivertebral nerve ablation, stem cell allograft augmentation, sacroplasty, axial skeletal osteoplasty, discography, and radiofrequency rhizotomy.

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