2022 ANNUAL MEETING

ACCELERATING MUSCULOSKELETAL DISCOVERY

February 4–8, 2022 • Tampa, Florida

ORS
Orthopaedic Research Society

2022 ANNUAL MEETING

CALL FOR ABSTRACTS

Deadline for Abstract Submission:
Monday, August 30, 2021

Abstracts accepted for presentation will be considered for podium, moderated poster presentations, and posters.

The ORS Program Committee seeks abstracts from the following interests:

- Arthroplasty
- Biomaterials
- Bone
- Bone Biology
- Bone Fracture
- Cancer, Tumors
- Cartilage, Synovium and Osteoarthritis
- Clinical Research/Studies
- Diagnostic Imaging
- Education/Outreach **New!**
- Foot and Ankle
- Fracture
- Hand and Wrist
- Hip
- Hip and Knee Arthroplasty
- Infection
- Inflammatory Arthritis
- Knee
- Meniscus
- Muscle
- Nerve and Spinal Cord Injury
- Intervertebral Disc
- Regenerative Medicine
- Shoulder and Elbow
- Spine
- Spine Therapeutics
- Tendon/Ligament
- Tissue Engineering
- Trauma

The themes and sessions in the Annual Meeting scientific program directly represent abstract submissions.

ORS 2022 GUEST NATION

It is our honor and privilege to invite the British Orthopaedic Research Society (BORS) to represent the United Kingdom as our ORS 2022 Guest Nation. BORS members have contributed significantly to the field of orthopaedic research and to the ORS as an organization.

ORS 2022 GUEST CLINICAL SOCIETY

The Orthopaedic Trauma Association has been selected to be our ORS 2022 Guest Clinical Society. OTA members have contributed significantly to the field of orthopaedic research. Bringing our organizations together in our new Guest Clinical Society program will only strengthen those bonds and improve collaboration toward our common goals.

ORTHOPAEDIC TRAUMA ASSOCIATION

AWARDS AND GRANTS AVAILABLE!

ORS provides awards and grants based on high-quality abstracts submitted by the August 30 deadline.

To be considered for an award or grant, the **presenting author** must be an ORS Member by the time of the abstract submission deadline.

Not a member? Visit **ors.org/join-the-ors** to join the ORS community.

SPOTLIGHT SPEAKERS

Spotlight Sessions are a dynamic part of the ORS Annual Meeting every year. Each session includes a featured speaker presenting state-of-the-field talks, followed by several relevant shorter talks derived from peer-reviewed accepted abstracts.

Chelsea Bahney, PhD
Steadman Philippon Research Institute
Transforming Fracture Healing: Engineering Accelerated Endochondral Repair

Michelle Ghert, MD
McMaster University
The Prophylactic Antibiotic Regimens in Tumor Surgery (PARITY) International Randomized Controlled Trial

Brian Johnstone, PhD
Oregon Health and Sciences University
Chondrogenic Cells for Cellular Therapies

Daniel Kelly, PhD
Trinity College Dublin
Can Bioprinting Help Us Engineer Functional Cartilaginous Tissues?

Mariana Kersh, PhD
University of Illinois at Urbana-Champaign
From in Silicon to in Vivo: Opportunities for Building Better Bone

Todd McKinley, MD
Guest Clinical Society–Orthopaedic Trauma Association–(OTA)
Indiana University
Precision Approaches for Polytrauma: Measuring Patient-Specific Injury Signatures to Optimize Outcomes in Multiple Injured Patients with Fractures

Amy McNulty, PhD
Duke University
Combining Biology and Mechanics to Enhance Meniscus Healing

Jess Snedeker, PhD
Balgrist University Hospital and ETH Zurich
The Role of Mechanics in Tendon Biology: A Few Landmarks and a Rough Map

Simon Tang, PhD
Washington University
High-resolution Monitoring of the Intervertebral Disc During Injury, Degeneration and Recovery in Preclinical Models

Caroline Thirukumaran, PhD
University of Rochester
Two Decades since the Unequal Treatment Report: The State of Racial/Ethnic and Income-based Disparities in the Use of Joint Replacements

Stephen Trippel, MD
Indiana University
Growth Factor Interactions for Articular Cartilage Repair

Mark Wilkinson, PhD, FRCS (Tr&Orth)
Guest Nation–United Kingdom, British Orthopaedic Research Society (BORS)
University of Sheffield
The Molecular Landscape of OA and Prospects for Disease Modifying Drugs

THE ART OF GRANTSMANSHIP (Part II)

Organized by: Hicham Drissi, PhD

Friday, February 4, 2022

Part II of our popular **LearnORS** Art of Grantsmanship online course. Part II is the interactive portion of the course that includes a Specific Page Aims Lab providing participants with the opportunity to prepare and revise a specific aims page, the most important page of the grant application, with expert faculty. A subset of grants submitted by registrants will be reviewed during a LIVE Mock NIH Study Section. Don't miss out on the networking and mentoring opportunities and the real time feedback you will receive from faculty and NIH officers.

We encourage you to take The Art of Grantsmanship Part I (online lectures) prior to participating in Part II to ensure maximum success! Full grant proposals will be accepted for review only from registrants who have participated in Part I of this course.

Visit **ors.org/learnors-grantsmanship** to register for part one.

RESEARCH SECTION SCIENTIFIC MEETINGS AND SESSIONS

Friday, February 4, 2022

- ORS International Section of Fracture Repair (ISFR) Scientific Meeting
- ORS Orthopaedic Implants Section Session: Model Credibility
- ORS Preclinical Models Section Session: Bench to Bedside: How Appropriate Preclinical Models Are Imperative to Translation

Saturday, February 5, 2022

- ORS Strategies in Clinical Research Section Scientific Meeting
- ORS Meniscus Section Scientific Meeting
- ORS Spine Section Scientific Meeting

Sunday, February 6, 2022

- ORS Tendon Section Scientific Meeting
- ORS Preclinical Models Section Scientific Meeting
- ORS Orthopaedic Implants Section Scientific Meeting

SCIENTIFIC PROGRAM

Biomaterials for Tendon and Ligament Regeneration: From Bench to Commercialization

ORS Tendon Section

Organizers: Alayna Loiselle, PhD, Hani Awad, PhD
Kathleen Derwin, PhD

Recent advances in biomaterial design, coupled with an increased understanding of the cellular and molecular basis of tendon and ligament healing have resulted in a tremendous opportunity to advance clinical translation and success of biomaterials approaches to enhance healing. In this session we discuss the current state of the art for tendon/ligament biomaterial design and preclinical success criteria, as well as examine the translational pipeline from basic science idea to commercialization from the industry and academic perspective.

Temporal Implants in Orthopaedics: Current Concepts, Limitations, and Future Directions

ORS Orthopaedic Implants Section

Organizers: Michael Hast, PhD, Markus Wimmer, PhD

Orthopaedic implants are currently undergoing a transformation from permanent, relatively inert devices, towards transient tools that are engineered to change behavior or even disappear over time. The purpose of this symposium is threefold:

1. to provide an update on state-of-the-art temporal implants,
2. to identify the shortcomings of current technologies, and
3. to predict the short- and long-term future for implants in this realm.

Energy Metabolism in Bone and Cartilage

Organizers: Audrey McAlinden, PhD
Roman Eliseev, MD, PhD

The goal of this workshop is to educate the participants on current research investigating different metabolic/bioenergetic pathways and systems in the context of cartilage and bone biology. Presenters will also provide some important historical background information on the bioenergetic system of interest and why they pursued this line of research in cartilage or bone.

Single Cell Transcriptomics Approaches to Analyze Musculoskeletal Tissues

Organizers: Ling Qin, PhD, Farshid Guilak, PhD

This workshop aims to present the most recent discoveries in the musculoskeletal field based on scRNA-seq approaches, to educate the audience about how to apply this advanced technique to their own research, and to introduce the next generation of single cell spatial transcriptomics approach.

Unraveling Role of Cell Metabolism and Senescence in Intervertebral Disc Health and Disease

Organizers: Makarand Risbud, PhD, Nam Vo, PhD

Very recent work showed an interesting contribution of key signaling molecules and metabolic pathways in maintenance of disc health as well as in models of disc degeneration. Likewise, role of cell senesce is now being explored as a possible contributor to disc degeneration. These are evolving fields and many important questions still remain unanswered. The goal of the workshop is to discuss what is known and highlight areas of investigation that require further work.

Genome Editing for Mechanistic Insight and Treatment of Musculoskeletal Disorders

Organizers: Brian Diekman, PhD, Chris Nelson, PhD

Investigators who desire to use genome editing as a therapeutic strategy will benefit from an in-depth discussion on the advantages and disadvantages of different methods for delivering genome editing tools in vivo, as well as considerations with regard to the potential immune response.

Preclinical Models of Impaired Fracture Healing (Crosstalk Workshop)

ORS International Section of Fracture Repair (ISFR), ORS Preclinical Models Section, and British Orthopaedic Research Society (ORS Guest Nation)

Organizers: Chelsea Bahney, PhD, Uma Sankar, PhD

The gap between discovery and improving human health typically requires efficacy testing in preclinical models. In this proposed workshop ISFR and the preclinical models section co-jointly organize a workshop that aims to help researchers decide which preclinical model will best address their fracture and/or bone regeneration research goals.

Human Cell-derived Microphysiological Systems: An Emerging Model for Orthopaedic Research

Organizers: Stuart Goodman, MD, PhD
Bruce Bunnell, PhD

This workshop aims to provide an educational opportunity to introduce the basic concepts of microphysiological systems (MPSs) and their applications.

Human Cell-derived Microphysiological Systems: An Emerging Model for Orthopaedic Research (continued)

The speakers will also give examples of how the use of MPS can further our understanding of specific aspects of musculoskeletal diseases and provide a tool for the assessment of different treatments and interventions.

Education in Orthopedics–Course Design

Organizer: Sonia Bansal, PhD

Many trainees who wish to continue in academia choose to pursue education as a primary responsibility or pursue faculty positions at universities that require a nominal teaching load. However, many trainees and faculty are not exposed to pedagogical training. This workshop will bridge that gap and provide hands-on opportunities to trainees so they may learn about career opportunities and innovative methods in education.

Antidepressants for Osteoarthritis?

ORS Meniscus Section and ORS Women's Leadership Forum

Organizers: Fadia Kamal, PharmD, PhD
Reyad Elbarbary, PharmD, PhD

There is anecdotal evidence for the therapeutic benefits of antidepressants as disease modifying agents for osteoarthritis and for pain management. In addition, this is a recent topic with knowledge that is not widespread yet. Therefore, having both basic scientists and clinicians learn and discuss this topic is of great benefit and interest in the field of translational research.

Advancing Orthopaedic Science Globally Through Digital Learning (Crosstalk Workshop)

International Federation of Musculoskeletal Research Societies (IFMRS)

Organizer: Jonathan Gustafson, PhD

It has never been more important to make research knowledge easily accessible to the current and next generation of musculoskeletal researchers, in a way that brings together basic and clinical research and enables the application of knowledge and data in practice. Digital platforms and databases today make this both easy and imperative, insofar as digital communications have changed the way that information is accessed and shared.

The Evolution of Functional Tissue Engineering for Soft Tissue Repair *(Back to Basics)*

Organizers: Hani Awad, PhD, Nat Dyment, PhD

Treatment of tendon and ligament injuries continues to be challenging despite active research since the 1970's, in part due to the inability of repaired or reconstructed tissues to meet functional demands (e.g. in vivo forces). The evolution of tendon repair and ligament replacement procedures will be highlighted, supported by the efforts of researchers to measure in vivo forces in corresponding preclinical models, to discover structure-function relationships for these complex structures, and to develop criteria for the selection and use of autografts and allografts to sustain expected activities of daily living (ADLs). It is hoped that this review of 5 decades of research and clinical treatment might favorably influence not only fundamental research going forward but the future clinical treatment of tendon and ligament injuries.

Speaker: David Butler, PhD, University of Cincinnati

SCIENTIFIC PROGRAM

Interfaces in Orthopaedic Research

United Kingdom, British Orthopaedic Research Society (BORS)

Organizers: Deborah Mason, PhD
Catherine Pendegrass, PhD

Interfaces occur between tissue types with differing material properties, and cell and matrix components. Age, disease or trauma influences interactions between interfaces. This workshop will describe research on interfaces between different biological tissues within joints, and between biological tissues and artificial implant materials to improve understanding of which tissues and cells drive joint degeneration, where treatments should be targeted, and how tissues/implants/prostheses can be engineered, augmented.

Wearable Technology and Smart Implants: Perspectives on the "Smart" Path to Market

Organizers: Eric H. Ledet, PhD, Jeffrey E. Bischoff, PhD

The purpose of this session is to provide current perspectives on wearable technology and smart implants from the researcher, clinician, industry professional, and FDA. The roles of each stakeholder and current challenges to bringing these technologies to market will be discussed.

CAREER AND PERSONAL DEVELOPMENT PROGRAMS

How to Write a High-Impact Biosketch

Organizers: Pallavi Bhattaram, PhD, Josh R. Baxter, PhD

Your biosketch is the critically important document that allows you to speak directly to your reviewers. It is a window into who you are as a scientist and why you are the best person to perform your exciting science! This program will cover some key aspects of a high-impact NIH biosketch.

Meet the Funding Agency Program Officers

Organizers: Richard Debski, PhD, Robert Nims, PhD

This session will target orthopedic researchers at various stages of training (trainees, early-career, mid-career, and established investigators) and offer an opportunity for one-on-one and small group networking and discussions with program officers and other officials from various funding agencies.

Future Faculty Poster Session and Meet-and-Greet

Organizers: Blaine Christiansen, PhD
Ben Freedman, PhD

The Future Faculty Poster Session will showcase senior post-docs, residents and fellows that are planning to apply for their first independent research faculty position in the upcoming year. The primary goal of this session is to provide an opportunity for these candidates to present the goals of their proposed independent research laboratory, and to showcase their research for Department Chairs, search committee chairs/members and senior faculty, in order to facilitate identification of strong candidates for research faculty positions.

Making Sense of Your Percents: A Guide to Developing and Managing Research Budgets

Organizers: Anne E.C. Nichols, PhD, R. Baxter, PhD

Developing budgets that appropriately reflect the scope of work we propose in our grants is full of challenges and questions. This Career Development program will answer these common problems that many of us have and will continue to experience throughout our careers.

JOR/JOR Spine Workshop: Publicizing Your Research: Post-publication Strategies for Dissemination of Research

Organizer: Linda Sandell, PhD, Editor in Chief
Journal of Orthopaedic Research®

The workshop will focus on use of key words in writing the title, abstract and headings of the manuscript, how to disseminate to your best readers and how to use social media to publicize your work. The goal is to increase discoverability, downloads and eventually recognition of our work in orthopaedic research.

Strategies for Negotiating Across the Career Spectrum

Organizers: Sarah Greising, PhD, Megan Killian, PhD

Research suggests that at least 20% of women never negotiate. This can translate to a pay gap, decreased job satisfaction, and a greater exit from positions. Over a person's career negotiations will span salary, start-up, resources, and position flexibility, among others. This session will provide tools and strategies for success and confidence in negotiations. Session speakers and panelists will provide examples from their career progression and their work in senior leadership positions.

Best Practices to Promote Institutional Diversity, Equity, and Inclusion

Organizers: Deva Chan, PhD, Spencer Szczesny, PhD

The purpose of this workshop is to educate the ORS community on best practices to promote DEI at their home institutions. During this workshop, the session leads will summarize key points from an earlier virtual session for new participants before interactive, panel-led discussions. The panelists have experience leading DEI change at their respective institutions and will briefly present scholarly work, evidence, and experience in institutional change before leading discussions among the participants.

INNOVATION NETWORK TRACK

Understanding Clinically Meaningful Benefit Versus Statistical Significance in Outcomes

Organizers: Vishal Deshmukh, PhD
Jennifer Woodell-May, PhD

The relationship (or lack thereof) between a statistically motivated conclusion from data and a true difference on patient care is not well understood. The goal of this workshop is to highlight ways to increase the clinical impact of preclinical and clinical research methodologies.

On the Way to Your Success–Let's Talk Quality

Organizers: Yifei Dai, PhD, Bob Hastings, PE

The purpose of this session is to provide education and insight into the role of Quality in successful translation of research to clinical application and continued delivery of efficacious medical devices and therapies.

Roundtable Networking on Innovation: Academia, Industry and Beyond

Organizer: Lara Silverman, PhD

Established experts with a diverse background (industry, academia, fundraising/legal, etc.) will host roundtable discussions on topics such as managing teams, navigating career growth, handling conflict and enabling diversity in the workplace. Participants can choose which table to join and participate in discussions related to the presenter's topic of choice.

Unmet Clinical Needs: Brainstorming Ideas to Address Clinical Shortcomings

Organizer: Chelsea Bahney, PhD

This session includes a presentation from an industry leader to explain the power and process of effective brainstorming followed by 3–4 short presentations by surgeons describing an unmet clinical need in their field of expertise. Attendees will then be divided according to their background into small groups and participate in guided brainstorming of solutions that could address one of the unmet clinical needs.

Nuts and Bolts of Funding and Running a Startup as a PI

Organizers: Ata Kiapour, PhD, MMSc
Lara Silverman, PhD

Established Principal Investigators who have started companies based on their research will share their triumphs, challenges and tips for starting your own company. Also, they will describe how to balance their academic pursuits with their corporate ones.

2022 Business Innovation Competition (BIC)

Organizers: Suzanne Tabbaa, PhD, Chair
ORS Innovation Network

The BIC will provide the resources and opportunity for both early-stage companies, as well as clinicians, researchers, students of all levels with a great idea in the field of musculoskeletal research to participate in a program to validate the market potential of their technology and develop a commercialization plan through expert mentorship and feedback to assist in translating their ideas from bench to market.

To participate in the Business Innovation competition please visit, **ors.org/2022-bic**

Stay Connected! **#ORS2022**

ORS
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9400 West Higgins Road, Suite 225
Rosemont, IL 60018-4975

847.823.5770 847.823.5772

ors@ors.org ors.org

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ORS CORE VALUES

- Excellence & Integrity
- Diversity, Equity & Inclusion
- Innovation & Impact
- Respect & Accountability
- Connection & Collaboration
- Education & Career Development