



ORS Research Section 2022 Award Finalists

We are excited to announce those identified as ORS Research Section Award finalists based on their accepted presentations at the [ORS 2022 Annual Meeting](#) in Tampa, Florida. Research Section Award finalists were identified by each Research Section. Finalists are primary authors and members of ORS and the ORS Research Section.

Recipients will be announced during the [ORS Closing Session](#) to be held in-person Tuesday, February 8 from 1:30 PM – 2:15 PM.

Names appear in alphabetical order under each Research Section award category.

ORS International Section of Fracture Repair (ISFR)

Podium

Presentation #: 243

Critical Role of IGF1/CXCR4 Signaling in Regulating HIF1α And HIF2α Expression in Fracture Repair Total

Alessandra Esposito, PhD, Rush University Medical Center

Presentation #: 245

Molecular Signatures Distinguish Callus Senescent Cells from Inflammatory Cells

Jiatong Liu, University of Rochester Medical Center

Presentation #: 176

Microrna-181a/b-1 Enhances Bone Fracture Repair, In Part, By Suppression of Pyruvate Dehydrogenase Kinase-4

Hongjun Zheng, PhD, Washington University in St. Louis

Poster

Presentation #: 492

Reambulation Protects Against Extended Disuse Induced Impairments in Murine Fracture Healing

Evan Buettmann, PhD, Virginia Commonwealth University

All 2022 abstracts accepted for presentation can be found: <https://www.ors.org/abstract-search/> or via the ORS 2022 Annual Meeting Mobile App.

Presentation #: 1342

Fast-tracking Aged Fracture Repair Research with A Progeria Mouse Model and Accumulation of Cellular Senescence

Victoria Duke, Steadman Philippon Research Institute, Center for Regenerative and Personalized Medicine

Presentation #: 364

Immunomodulatory Hydrogels for Bone Regeneration in Response to Bisphosphonate-related Osteonecrosis of The Jaw

Katherine Griffin, UC Davis

Presentation #: 465

Large-scale Optimization to Determine the Soft-hard Mechanical Properties of Ovine Fracture Callus

Brendan Inglis, Lehigh University

Presentation #: 449

Diversity of Prx1 Stem/progenitor Cells and Their Regulation for Bone Regeneration

Yu Liu, DMD, Boston University

Presentation #: 466

CGAS Inhibitor - RU.521 Improves Fracture Healing in A Polytrauma Rat Model

Preeti Muire, MSc, PhD, US Army Institute of Surgical Research (USAISR)

Presentation #: 1252

Injectable Mineral Coated Microparticles Platform to Enhance Mrna Delivery for Fracture Repair

Anna-Laura Nelson, MS, Steadman Philippon Research Institute

Presentation #: 503

Estrogen Receptor α (ER α) In Osteoblasts Is Crucial for Mediating Vibration-induced Effects on Bone Fracture Healing

Lena Steppe. MS, Institute of Orthopaedic Research and Biomechanics

Presentation #: 1644

Chronic Opioid Use Following Geriatric Hip Fracture Surgery-- Risk Factors, Trends, And Outcomes

Julia Stone, California University of Science and Medicine

Presentation #: 488

Chronic Psychosocial Stress Disturbs Fracture Healing Via Catecholamines Produced by Myeloid Bone Marrow Cells

Miriam Tschaffon, M.Sc., Institute of Orthopaedic Research and Biomechanics, Ulm university

ORS Meniscus Research Section

Podium

Presentation #: 135

Cartilage Progenitor Cell Line Stimulates Meniscus Repair and Protects Cartilage from Degeneration, In-vivo

Salomi Desai, MS, Brown University/Rhode Island Hospital

Presentation #: 134

In-vivo Identification of Constitutive Material Parameters of Healthy and Osteoarthritic Lateral Menisci Based on Magnetic Resonance Imaging And Inverse Finite Element Analysis

Jonas Schwe, MS, Institute of Orthopaedic Research and Biomechanics

Presentation #: 136

CD44-Incorporated Bioactive Glue to Promote Healing of Lubricin-Infiltrated Avascular Meniscus Tears

Solaiman Tarafder, PhD, Columbia University

Poster

Presentation #: 1888

A Tale of Two Loads: Regional Variation and Inflammation in Meniscus Mechanoresponsive Pathways Using Two Models of Mechanical Loading

Benjamin Andress, Duke University

Presentation #: 1021

Medial and Lateral Meniscal T2 Within Elite Basketball Players and Swimmers*

Erin Argentieri, Hospital for Special Surgery

Presentation #: 1890

Mononuclear Leukocytes Induce Catabolism of Meniscus Tissue

Kevin Betsch, Duke University

Presentation #: 1024

The In-vitro Test Conditions Influence the Biomechanical Properties of Degenerated Lateral Menisci - A Comparative Study at Two Laboratories

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Luisa de Roy, PhD, Institute of Orthopaedic Research and Biomechanics, Ulm University

Presentation #: 1028

Imaging with Synchrotron Light Reveals Collagen Crimp Patterns of Ex Vivo Human Meniscus

Martin Englund, MD, PhD, Lund University

Presentation #: 1019

Advanced Glycation End-product Accumulation Differs by Location and Sex in Aged Human Menisci

Austin Gouldin, Virginia Commonwealth University

Presentation #: 1020

Cyclic Tensile Stretch Modulates Inflammatory Effects for Both Inner and Outer Zone Porcine Meniscal Cells

Rebecca Irwin, PhD, Duke University School of Medicine

Presentation #: 1897

Effect of Solute Size on Partition Coefficient in Porcine Meniscus

Alicia Jackson, PhD, University of Miami

Presentation #: 1290

Partially Demineralized Bone Plugs Improve Collagen Fiber Organization and Mechanical Performance Within Tissue Engineered Entheses

Jongkil Kim, MS, Cornell University

Presentation #: 1030

RNA Sequencing Reveals Donor Variability in Sex- And Age-matched Human Meniscal Fibrochondrocyte Response to Estrogen

Kelsey Knewtson, PhD, University of Kansas

Presentation #: 1895

Removal of GAGs Improves Mechanical Properties and Increases Resistance to Failure in Tissue Engineered Meniscal Enthesis

Serafina Lopez, Cornell University

Presentation #: 1022

Meniscus Allograft Augmentation Combining Meniscus and Mesenchymal Stromal Cells

Caroline Struijk, MD, Mayo Clinic

Presentation #: 1023

Influence of Menisci on Tibiofemoral Contact Mechanics in Human Knees: A Systematic Review
Matthias Sukopp, MS, Institute of Orthopaedic Research and Biomechanics, Centre of Trauma Research, Medical Centre

Presentation #: 1033

Interference Screw Vs Transosseous Suture Fixation of The Posterior Horn of Medial Meniscus Allograft
Rae Tarapore, Rutgers Robert Wood Johnson Medical School

Presentation #: 1034

Differential Regulation of Sdf1/cxcr4 Signaling Arms in Progenitor Cell-mediated Meniscus Repair
Jay Trivedi, PhD, Brown University/Rhode Island Hospital

Presentation #: 1899

Combination of Cartilage Progenitors and Kartogenin in A Collagen I Laden Matrix For Application In Meniscus Tissue Repair
Daniel Yang, Alpert Medical School of Brown University

ORS Orthopaedic Implants Research Section

Podium

Presentation #: 206

A Comparison of The Fixation Stability of Augmented Implant And Bone Graft-based Reverse Shoulder Arthroplasty Techniques To Treat Patients With Glenoid Erosion
Joshua Giles, PhD, University of Victoria

Presentation #: 350

Mri-based Radiomic Analysis of Soft Tissue Reactions Near Total Hip Arthroplasty
Kevin Koch, PhD, Medical College of Wisconsin

Presentation #: 32

Multi-layered Mechanically Robust Composite Scaffolds for Osteochondral Defect Repair
Mark Lemoine, MSc PhD, Royal College of Surgeons in Ireland

Presentation #: 1317

Evaluating Tka Implant and Soft-tissue Interaction Using Multi-patient Forward Dynamics Modeling Approach
Amitkumar Mane, MS, PhD, DePuy Synthes

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Poster

Presentation #: 383

3D Printed PEEK Has Lower High-Cycle Fatigue Life Than Injection Molded PEEK

Leandra Bowsman, Case Western Reserve University

Presentation #: 1794

Immunofluorescent Techniques as A Tool For Rapid And Quantifiable Detection Of Bacterial Biofilms And Bioburden On Surgical Explants, Tissue, And Synovial Fluid

Dioscaris Garcia, PhD, Brown University/Rhode Island Hospital

Presentation #: 1717

Fretting and Corrosion Of Dual Mobility Hip Metal Liners: Role Of Design, Microstructure, And Malseating

Deborah Hall, Rush University Medical Center

Presentation #: 1736

Correlation of The Chemical Signature Of Periprosthetic Macrophages With The CoCr Head Wear Rate In Hip Resurfacing

Songyun Liu, MS, Rush University Medical Center

Presentation #: 1249

Is Fretting Corrosion Damage A Concern in Titanium-backed Ceramic-on-Ceramic Liners?

Daniel MacDonald, MS, Drexel University

Presentation #: 1483

Differences in The Superficial Zone Behavior Between Human And Bovine Cartilage - A Finite Element Analysis

Steven Mell, PhD, Rush University

Presentation #: 1643

Spinopelvic Mobility In THA And Lumbar Fusion Patients Across A Range Of Common Functional X-ray Positions

Casey Myers, PhD, MBA, Center for Orthopaedic Biomechanics - University of Denver

Presentation #: 802

Effects Of Reverse PAO On Acetabular Retroversion And Hip Capsular Mechanics

Geoffrey Ng, PhD, Western University

Presentation #: 1745

Geometrical Accuracy Of Ct-based Virtual Implantation For Computational Modeling

Fernando Quevedo Gonzalez, PhD, Hospital for Special Surgery

Presentation #: 1048

Fairness Assessment Of Predictions In Total Shoulder Arthroplasty Outcomes

Christopher Roche. MSE, MBA, Exactech, Inc.

Presentation #: 1253

Serum Cytokine Profile In Women And Men With A Total Joint Replacement

Lauryn Samelko, PhD, Rush University Medical Center

Presentation #: 1876

Assessment of Kinematic Uncertainty During Knee Joint Loading In A Dynamic Gait Simulator

Brett Steineman, PhD, Hospital for Special Surgery

Presentation #: 1714

Quantitative Susceptibility Mapping of Brain Regions To Assess Metal Deposition Following Total Hip Arthroplasty And Hip Resurfacing Arthroplasty

Matthew Teeter, PhD, Western University

Presentation #: 1907

Central Fixation Element Type and Length Affect Glenoid Baseplate Micromotion In Reverse Shoulder Arthroplasty

Lawrence Torkan, M.A.Sc., Queen's University

ORS Preclinical Models Research Section

3Rs

Presentation #: 1537

Prediction of Human Disease Status From Murine Osteoarthritis Models

Deva Chan, PhD, Purdue University

Presentation #: 644

Treatment with An Extracellular Matrix-blood Composite Impacts Animal Gait Without Damaging Joint Structure In A Dunkin Hartley Guinea Pig Model

Braden Fleming, PhD, Rhode Island Hospital/Warren Alpert Medical School of Brown University

Presentation #: 654

Pharmacokinetics of An Intra-articular Extended Release Flavopiridol-PLGA Formulation In Small And Large Animal Models

Dominik Haudenschild, PhD, University of California Davis

Presentation #: 1764

High-Throughput Semi-Automated Segmentation of Murine Hindpaw Micro-CT Datasets Identifies The Cuboid As A Reliable Longitudinal Biomarker Of Arthritic Progression In TNF-Tg Mice

H. Mark Kenney

Podium

Presentation #: 144

Complement Factor D/Adipsin Knockout Mice Demonstrate Disparate Pain and Structural Damage Phenotypes In Obesity-induced Post Traumatic Osteoarthritis

Kelsey Collins, PhD, Washington University in St. Louis

Presentation #: 247

Single-cell RNA Sequencing of The Synovium Reveals Distinct Joint Phenotypes In Aging-, Injury-, Or Obesity-induced Models Of Osteoarthritis

Natalia Harasymowicz, PhD, Washington University St Louis

Presentation #: 153

Pre-clinical Evaluation of A Nanoparticle Formulaton Of Mithramycin A For Treatment Of Ewing Sarcoma

Jason Horton, PhD, SUNY Upstate Medical University

Presentation #: 1387

Conditional Deletion of Camkk2 From Osteocytes Enhances Secretion Of Calpastatin To Modulate Osteoclasts And Regulate Bone Remodeling In A Sex-dependent Manner

Justin Williams, MS, Indiana University School of Medicine

Poster

Presentation #: 1455

Joint Restabilization Does Not Mitigate Early Inflammation Associated with ACL Injury In Mice

Blaine Christiansen, University of California Davis

Presentation #: 1611

Feasibility and Function Of A Muscle-driven Endoprosthesis In An In Vivo Rabbit Model

Katrina Easton, DVM, PhD, University of Tennessee

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Presentation #: 950

Correlation Between Mri T2-value And Standardized Histopathology Score of Rabbit Intervertebral Disc Degeneration Model Induced By Monosodium Iodoacetate

Koki Kawaguchi, MD, Mie University Graduate School of Medicine

Presentation #: 1305

Voluntary Wheel Running Promotes Sex-Dependent Changes in The Disease Progression Of TNF-Tg Mice With Inflammatory Erosive Arthritis

H. Mark Kenney, MS, University of Rochester Medical Center

Presentation #: 1339

Testing A New Microparticulate Depot Formulation of Buprenorphine For Sustained Post-surgical Analgesia In Mouse Femoral Fracture Models

Annemarie Lang, DVM, PhD, Charite-Universitaetsmedizin Berlin

Presentation #: 1315

Is Sex an Important A Biological Variable In Murine Radiotherapy Models?

Megan Oest, PhD, SUNY Upstate Medical University

Presentation #: 1457

Differences in Bony Bar Formation After Growth Plate Injury In Male And Female Rats

Karin Payne, University of Colorado Anschutz Medical Campus

Presentation #: 479

Effect of HoxA Genes On Bone Morphogenesis And Outgrowth During Murine Digit Tip Regeneration

Feini Qu, VMD, PhD, Washington University in St. Louis

Presentation #: 1966

Adaptation of An Experimental Model Of Bone Marrow Lesions Using The Rat Femoral Condyle

Holly Stewart, VMD, Colorado State University

Presentation #: 396

Development of Bisphosphonate-conjugated Antibiotics To Target Staphylococcus Aureus Biofilm Within The Osteocyte Lacuno-canalicular Network Of Infected Cortical Bone In Chronic Osteomyelitis

Chao Xie, MD, University of Rochester

ORS Spine Research Section

Podium

Presentation #: 266

Raloxifene Stimulates Estrogen Signaling to Protect Against Age- And Sex-related Intervertebral Disc Degeneration In Mice

Neharika Bhadouria, Purdue University-West Lafayette/IUPUI

Presentation #: 39

Deficits in Cartilage Endplate Composition Assessed By UTE MRI Associate With More Severe Disc Degeneration In Patients With Chronic Low Back Pain

Noah Bonnheim, PhD, University of California, San Francisco

Presentation #: 115

An In-vivo Model of Ligamentum Flavum Hypertrophy Capturing Early Stage Inflammation & Later Stage Hypertrophy

Kevin Burt, Columbia University

Presentation #: 23

Infectious and Autoinflammatory Etiologies Of Modic Type 1 Changes Have Different Cytokine Profiles

Irina Heggli, MS.c, Center of Experimental Rheumatology, University Hospital, University of Zurich, Switzerland

Presentation #: 37

Conditional Deletion of Hif-2 α In The Nucleus Pulposus Ameliorates Aging-dependent Early Degenerative Changes In The Mouse Intervertebral Disc

Shira Johnston, Thomas Jefferson University

Presentation #: 21

Spatial Distribution of Fat Within The Multifidus: Implications Relative To Spinal Biomechanics And Discogenic Pain

Karim Khattab, University of California, San Francisco

Poster

Presentation #: 1814

Hmgb1 Exhibits a Sustained Regional Activation Following Injury Of The Intervertebral Disc

Kevin Burt, Columbia University

Presentation #: 1108

Tgfb β Signaling Is Required for Sclerotome Resegmentation During Development Of The Spinal Column In Gallus Gallus

Sade Clayton, PhD, University of Alabama at Birmingham

Presentation #: 954

Effects Nucleus Pulposus Hydration on T1 ρ And T2 Relaxation Times

Megan Co, The Ohio State University

Presentation #: 1799

On the Effects Of Human Surgical Intervertebral Disc Tissue Promoting An Inflammatory Disc Degeneration Environment In Vitro

Jennifer Gansau, MS, Icahn School of Medicine at Mount Sinai

Presentation #: 1521

Link N Suppresses Periostin Expression in Osteoarthritic Cartilage

Michael Grant, PhD, Link N Suppresses Periostin Expression in Osteoarthritic Cartilage

Presentation #: 1831

Actomyosin Contractility Protects Elastic and Viscoelastic Material Properties Of The Nucleus Pulpous Against Inflammatory Stimulation

Timothy Jacobsen, Meng, Columbia University

Presentation #: 1988

Asymmetrical Lumbar Intervertebral Motion in Chronic Low Back Pain

Marit Johnson, PhD, University of Pittsburgh

Presentation #: 1822

Donor Sex Is a Significant Contributor To The Response Of The Intervertebral Disc To Injury In Vitro

Hagar Kenawy, Columbia University

Presentation #: 938

Comparison of Metabolic Responses Of Cervical And Lumbar Intervertebral Discs Recovered From Human Tissue Donor Spines

Jacob Kramer, University of Missouri-Columbia

Presentation #: 1825

Suppression of Sost/sclerostin And Dickkopf-1 Promote Intervertebral Disc Structure In Mice

Tori Kroon, MS, IUPUI

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Presentation #: 1833

Multiplex CRISPRa Upregulation of Pro-survival Genes Improves Cell Viability In ECM Producing Cells

Hunter Levis, University of Utah

Presentation #: 1827

Immunomodulation by Stimulated Mesenchymal Stem Cells In A Rat Intervertebral Disc Model

Lauren Lisiewski, MS, Columbia University

Presentation #: 945

Single-Cell RNA-Sequencing Atlas of Bovine Caudal Intervertebral Discs Reveals Heterogeneous Cell Populations

Christopher Panebianco, Icahn School of Medicine at Mount Sinai

Presentation #: 959

A Mechano-Responsive Annular Repair Device for Biologics Delivery In The Goat Cervical Spine

Ana Peredo, University of Pennsylvania

ORS Strategies in Clinical Research Section

Podium

Presentation #:271

Combination of Preoperative Proms Phenotype (Pain, Function And Mental Health) Predicts Outcome After Total Knee Arthroplasty

Nicolas Piuze, MD, Cleveland Clinic

Poster

Presentation #:1543

Outcomes of Total Knee Replacement Measured By Threshold And Minimum Clinically Important Difference Methods

Roy Aaron, MD, Brown University

Presentation #:734

ORS Open Door: Advocating for A World Without Musculoskeletal Limitations

Chelsea Bahney, PhD, The Steadman Clinic & Steadman Philippon Research Institute

Presentation #:1700

Ebjs Definition for Periprosthetic Joint Infection: Questionable Accuracy

Emanuele Chisari, MD, Rothman Orthopaedic Institute

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Presentation #:1926

Psychosocial Factors Play a Greater Role In Preoperative Symptoms For Patients With Atraumatic Shoulder Instability: Data From The MOON-Shoulder Group

Cale Jacobs, University of Kentucky

Presentation #:1714

Quantitative Susceptibility Mapping of Brain Regions To Assess Metal Deposition Following Total Hip Arthroplasty And Hip Resurfacing Arthroplasty

Matthew Teeter, PhD, Western University

Presentation #: 679

Orthopaedic Surgery Patients from Rural Areas Present With Worse PROMIS Scores For Physical And Mental Health

Elizabeth Yanik, PhD, ScM, Washington University in St. Louis

ORS Tendon Research Section

Podium

Presentation #:155

Non-muscle Myosins Are Critical Regulators of Skeletal And Connective Tissue Formation

Mary Evans, University of Pennsylvania

Presentation #: 225

Hedgehog Signaling Directs Cell Differentiation and Improves Enthesis Healing By A Cell-autonomous Mechanism

Fei Fang, PhD, Columbia University Medical Center

Presentation #: 52

Janus Tough Adhesives for Tendon Immunomodulation

Benjamin Freedman, PhD, Wyss Institute for Biologically Inspired Engineering at Harvard University

Presentation #: 160

Collagen XII Is a Critical Regulator Of Tendon Function: Development Of A Conditional Mouse Model

Ashley Fung, MEng, University of Pennsylvania

Presentation #: 230

Hedgehog Pathway Stimulation Improves Zonal Tendon-To-Bone Integration

Timur Kamalidinov, University of Pennsylvania

Presentation #: 1154

Targeted, Inducible Depletion of Scx^{Lin} Cells Disrupts Tendon Homeostasis And Accelerates Aging-associated Compositional And Structural Changes In The Extracellular Matrix

Antonion Korcari, MS

Presentation #: 229

Embryonic Tendon Exhibits Stage-specific Healing Responses to Injury In A Novel Explant Model

Phong Nguyen, MS, University of Rochester

Presentation #: 156

Recruitment of Perichondrial Hoxa11-expressing Stem/progenitor Cells Into Disrupted Mouse Tendons

Guak-Kim Tan, PhD, Shriners Hospitals for Children

Presentation #: 190

The Formation of Disulfide Hmgb1 (dshmgb1) In Tendon Matrix Mediates Tendinopathy Development Due To Mechanical Overloading

Jianying Zhang, PhD, University of Pittsburgh

Poster

Presentation #: 1165

Spatial Transcriptomics Defines Key Transcriptional Regulators Driving Fibrotic Tendon Healing

Jessica Ackerman, MS, University of Rochester Medical Center

Presentation #: 1283

Slow Continuous Stretch and Cyclic Loading Differentially Drive Ligament-to-Bone Enthesis Maturation

Michael Brown, PhD, Virginia Commonwealth University

Presentation #: 1154

Targeted, Inducible Depletion of Scx^{Lin} Cells Disrupts Tendon Homeostasis And Accelerates Aging-associated Compositional And Structural Changes In The Extracellular Matrix

Antonion Korcari, MS, University of Rochester

Presentation #: 1195

Interrogating Bursa-tendon Crosstalk in A Tissue Explant Platform

Brittany Marshall, Columbia University

Presentation #: 2070

Tendon Mechanical Properties Are Enhanced Via Upregulation of Lysyl Oxidase-mediated Collagen Crosslinking

Phong Nguyen, MS, University of Rochester

Presentation #: 1174

Conditional Deletion of Piezo1 in Scleraxis-lineage Cells During Healing Alters Cellular Activation And Impairs Tendon Function

Anne Nichols, PhD, University of Rochester Medical Center

Presentation #: 1537

Prediction of Human Disease Status from Murine Osteoarthritis Models

Kaichi Ozone, M.Sc., Saitama Prefectural University

Presentation #: 1163

Il-6 Signaling Mediates Progenitor-induced Tendon Core Breakdown and Is Inhibited by Extrinsic Macrophages

Tino Stauber, Balgrist University Hospital, University of Zurich & Institute for Biomechanics, ETH Zurich

Presentation #: 1188

Adaptive Response to Pregnancy and Lactation Optimizes the Balance Between Calcium Homeostasis And Mechanical Integrity Of The Maternal Humerus Bone And Supraspinatus Tendon Enthesis

Yilu Zhou, PhD, University of Pennsylvania