

December 2025

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Recap of NASS Research-ORS Symposium



"Joint NASS Research-ORS Symposium: Decoding Disc Degeneration and Patient Management: The Value of Team Science-Based Approaches"

2025 NASS Annual Meeting

Low back and neck pain continue to rank among the most disabling conditions globally, with intervertebral disc degeneration playing a central role. This year's co-branded NASS–ORS Symposium brought together leading clinicians and scientists to highlight how multidisciplinary, team-science approaches are shaping the future of spine care.

The program featured **Morgan B. Giers, PhD**, who discussed *Regenerative Medicine in the Intervertebral Disc*, focusing on IVD phenotype assessment, microenvironmental factors, and identifying candidates for emerging biologic therapies. **Dmitriy Sheyn, PhD** presented *Pain Generating Regions*, offering insights into pain mechanisms and evolving diagnostic imaging strategies. The session was **moderated by Simon Tang, PhD**, who guided a dynamic discussion on integrating research discoveries into patient-centered management.

Together, the speakers underscored the value of collaborative science in advancing disc degeneration research and improving clinical decision-making across the spine community.

Join Us at the Annual Meeting for Spine in Motion



The Spine Section Symposium will take place at the 2026 ORS Annual Meeting—an annual gathering that brings together global leaders, innovators, and emerging voices in spine research, clinical translation, and interdisciplinary collaboration.

This year's program features **high-impact scientific sessions, celebration of excellence, and strategic conversations shaping the next era of spine discovery.**

This year's Spine Symposium will spotlight the Section's remarkable growth, achievements and future direction — reflecting on our past while looking boldly ahead.

The Symposium will be chaired by **Rahul Gawri, MD, PhD** and **Gabriela Graziani, PhD** — two exceptional international leaders whose energy and commitment continue to drive our mission forward.

Program Highlights

- Overview of the Spine Section and Past Year Activities by ORS Spine Section Chair, Dino Samartzis, DSc
- **Founders Chat**, revisiting the vision that launched ORS Spine Section: Fackson Mwale, PhD, James Iatridis, PhD, Makarand Risbud, PhD, Jeffrey C. Lotz, PhD, Nam Vo, PhD, Sibylle Grad, PhD, Lisbet Haglund, PhD introduced and moderated by Neharika Bhadouria, PhD.
- **Forward-Looking** presentations from international invited speakers:
 - Gabriela Graziani, PhD (Guest Nation): Infections of the Spine and Future Therapeutics
 - Ashish Diwan, MD, PhD: Translational Challenges: Why You Need and Do Not Need a Clinician
 - Daisuke Sakai, MD, PhD: The Global Disc Lab: What We Learned by Sharing People, Protocols, and Proofs
 - Gianluca Vadalà, PhD (Guest Nation): Clinical Perspectives – From Spine Research to Regeneration: The Power of International Collaboration
 - Fabio Galbusera, PhD (Guest Nation): Intelligence-Based Spine Care – The Impact of AI in Precision Medicine for Spine Disorders
- **Spine Awards Session:** Honoring Excellence in Research
- **Insights from JOR Spine's editorial board:** Highlighting the Journal's Vital Role in Advancing the Field

Register for the Symposium

“Decoding Musculoskeletal Pain: Advances in Imaging and Translational Tools for the IVD, TMJ, and Knee”

[2026 ORS Annual Meeting Spine Symposium](#)

Friday, March 27, 2025

Time TBD

Charlotte Convention Center, North Carolina

The Spine Symposium includes these presentations from Spine Section members:

Dino Samartzis, DSc, Rush University

Intro to Pain and Spine Research

Dmitriy Sheyn, PhD, Cedars-Sinai Medical Center

Pain Outcomes in Discogenic Pain

Candance Floyd, PhD, Emory University

Large Animal Models for Neuroinflammation and Central Sensitization in MSK Pain

Alejandro Almarza, PhD, University of Pittsburgh

Imaging of Innervation in 3D of the Rat Knee and TMJ

Hai Yao, PhD, Clemson University

Multiscale and Multimodal Joint Mapping: Bridging Structure, Function, and Pain

Kyle Allen, PhD, University of Florida

Linking Biological Outcomes to Pain Outcomes

Hang Lin, PhD, University of Pittsburgh

Micro-Physiological Systems to Study MSK Pain Ex Vivo

The celebration continues with the ORS Spine Section’s Reception immediately following the Symposium — a not-to-miss evening of connection, collaboration and inspiration.

Join us for a Special Celebration of “10 Years” of Spine Science, Mentorship, and Community at Nuvole Rooftop TwentyTwo



Enjoy an evening of food, drinks, and panoramic views as we celebrate a decade of Spine Section excellence with friends and colleagues. Space is limited, and tickets are available on a first-come, first-served basis - so make plans to attend!

Friday, March 27, 2026

4:00 – 6:30 PM EST

Nuvole Rooftop TwentyTwo, 220 E. Trade St. Suite 2200, Charlotte, NC 28202

[Registration](#) is now open, secure your spot!

Call for *JOR Spine* Reviewers



Calling *JOR Spine* Reviewers, this is a great opportunity for you to help guide content, and your contribution will keep the journal at the forefront of spine research.

If you are interested in representing the Spine Section in reviewing for the journal, please fill out the brief form below. Consider providing your expertise to review articles submitted to the *Journal of Orthopaedic Research Spine (JORS)* for possible publication.

[Fill Out Form](#)

ORS Spine Section Special Award Highlight



**2026 Women's Leadership
Forum Award Recipient**



Congrats

Lisbet Haglund, PhD
*Professor in the Department of Surgery
McGill University*

A banner with a blue background and a city skyline. On the left is a portrait of Lisbet Haglund, PhD, a woman with short grey hair wearing a white lab coat over a dark patterned top. To the right of the portrait is the word 'Congrats' in a large, white, cursive font. Above the portrait is the text '2026 Women's Leadership Forum Award Recipient' in white. In the top right corner is a gold circular award logo with 'ORS Orthopaedic Research Society AWARDS' and a blue ribbon graphic.

We are thrilled to announce **Lisbet Haglund, PhD**, McGill University as the [2026 Women's Leadership Forum Award](#) Recipient!

A professor in the Department of Surgery, Division of Orthopaedic Surgery at McGill University, Dr. Haglund also serves as Associate Chair for Mentorship and Co-Director of the Orthopaedic Research Laboratory. Her groundbreaking work has advanced understanding of the cellular and molecular mechanisms of intervertebral disc degeneration, leading to new diagnostic tools and therapeutic strategies for spine-related conditions.

A dedicated leader and mentor, Dr. Haglund has held multiple leadership roles within the ORS, including Chair of the ORS Spine Research Section. She currently serves on the ORS Board of Directors as Section Council Chair.

ORS Spine Section Trainee Highlight



[Meet Tori](#)

Tori Kroon, MSc
*PhD Candidate, Department of Orthopaedics,
Ichan School of Medicine at Mount Sinai, New York*
Master of Science
Biomedical Engineering
Purdue University, Indiana

"My specific area of research is modulation of Wnt/ β -catenin signaling in the intervertebral disc. My goal is to understand how this pathway can be manipulated to serve as a potential therapeutic for intervertebral disc degeneration."

The following paper has been reviewed by Tori.

Paper Review

Injury Induces More Severe Biomechanical Changes in Middle-Aged and Geriatric Lumbar Spines in a Mouse Ex Vivo Mode

Neharika Bhadouria, PhD, Justin Tiao, Angelica Baburova, Charu Jain, Bowen Wang, MS, Antonia Demopoulos, Philip Nasser, MS, Andrew P. Hallmark, Veeraj Shah, MD, PhD, Jennifer R. Weiser, PhD, Deepak Vashishth, PhD, **Chitra L. Dahia, PhD**, Yunsoo Lee, MD, Andrew C. Heecht, MD, **James C. Iatridis, PhD**.

<https://onlinelibrary.wiley.com/doi/10.1002/jsp2.70127>

The following study looks at the interaction between different intervertebral disc (IVD) injuries and age and their influence on the biomechanics of the lumbar spine. Aging increases the incidence of IVD degeneration, and this can be exacerbated by injury. It is hypothesized that aged mice will have disproportionately greater biomechanical dysfunction following injury compared to younger mice and that greater injury severity would induce higher biomechanical changes. This study is key to understanding the age-related risk of spinal degeneration and consequential functional decline.

This study uses an ex vivo lumbar spine injury in a mouse model to determine the effects of age, injury, and their interaction. Male and female (n=3-4/group, n=4-5/group respectively) of 3 different ages, 4, 12, and 24 months, were subjected to 2 different lumbar injury models: full disc puncture (DP), mimicking advanced IVD degeneration, and an annulus fibrosus and endplate (AF+EP) injury mimicking an endplate junction failure. Motion segments were tested using axial cyclic loading (tension-compression), axial creep, and torsion. Motion segments were also tested for IVD structural properties (via Xray), Fourier Transform Infrared Spectroscopy (FTIR), histology and tinctorial staining for biochemical content.

Key takeaways are that injury induces more severe biomechanical changes in middle-age (12 months) and geriatric (24 months) IVDs than young (4 months). Specifically, older spines exhibit a greater loss in stiffness, larger increase in range of motion, and reduced failure threshold post injury. This indicates the synergistic effect that aging may lead to greater spinal dysfunction following injury. Clinically, this suggests that treatments for spinal injuries may have to be age-dependent.

ORS Spine Section Members Publications Highlights

Genetics and Age-Driven Neuroimmune and Disc Changes Underscore Herniation Susceptibility and Pain-Associated Behaviors in SM/J Mice

Novais EJ, MD, PhD, Ottone OK, MS, Brown E, Madhu V, PhD, Tran V, PhD, Ramteke P, PhD, Solga MD, MS, SCYM, Dighe A, PhD, Manchel A, PhD, Lepore A, PhD, Risbud MV, PhD, **Science Advances**, 2025;11(17):eado6847.

<https://www.science.org/doi/10.1126/sciadv.ado6847>

In this latest work, the authors demonstrate that SM/J mice exhibit age-associated lumbar disc herniations with neurovascular innervations. Aged SM/J mice showed increased pain sensitization and neuroinflammation with altered ECM regulation in the DRG and spinal cord. CyTOF analysis showed increased splenic CD8+ T cells, nonspecific activation of CD8+ memory T cells, and enhanced interferon- γ production in the myeloid compartment. scRNAseq of PBMC showed more B cells, with lower proportions of T cells, monocytes, and granulocytes. This study highlights the contribution of

genetic background and aging to increased susceptibility of spontaneous intervertebral disc herniations in a clinically relevant murine model.

The Loss of OPA1 Accelerates Intervertebral Disc Degeneration and Osteoarthritis in Aged Mice

Madhu V, PhD, Hernandez-Meadows M, MS, Coleman A, MD, Sao K, Inguito K, Haslam O, Boneski PK, MS, Sesaki H, PhD, Barve RA, PhD, Collins JA, PhD, Risbud MV, PhD. **Nature Communications**, 2025;16(1):5996.

<https://www.nature.com/articles/s41467-025-60933-9>

In this latest study, Risbud et al. reveal the essential role of OPA1, a mitochondrial fusion protein, in preserving spine and joint integrity during aging. OPA1 governed the morphology of multiple organelles, including peroxisomes, early endosomes, and cis-Golgi, and loss resulted in the dysregulation of autophagy. Metabolic profiling and 13C-flux analyses revealed TCA cycle anaplerosis and altered metabolism in OPA1-deficient NP cells. *Opa1AcanCreERT2* mice showed age-dependent disc degeneration and osteoarthritis. RNA-Sequencing revealed dysregulation of metabolism, autophagy and cytoskeletal reorganization and similarities with human pathology. These findings underscore that maintenance of mitochondrial dynamics is critical in preserving disc and cartilage during aging.

Your publication can be highlighted here as well! Please send [Dmitriy Sheyn, PhD](#) or [Derek Rosenzweig, PhD](#) a Word document including the following:

- Full reference
- Link to the original paper
- 100-word digest of the study
- Graphical abstract, (optional but encouraged)



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