



Monthly Newsletter



February 2024

From the Desk of the Section Chair



Simon Tang, PhD, MSCI

It is with great excitement that I start this service term as the Spine Section Chair. We are grateful to **Dr. Lisbet Haglund**, Spine Section Past chair, for her dynamic leadership throughout the past year, and we are thrilled that she will continue to lead as the ORS Section Council Chair.

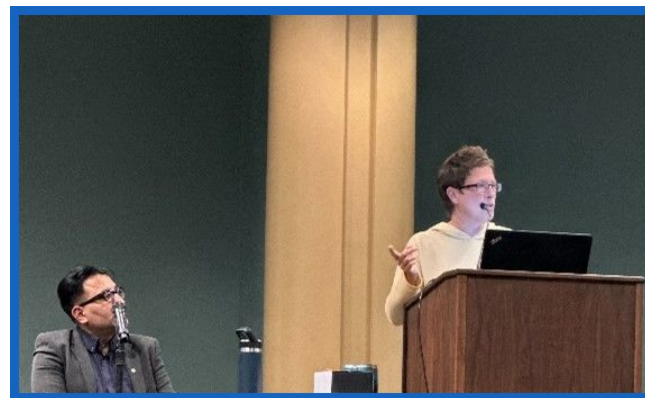
Thank you for attending the 2024 ORS Annual Meeting! With 195 attendees, the ORS Spine Section Symposium was the largest ever and an incredible success! I extend my congratulations to the award nominees and winners! It is my hope that we will continue to grow, engage, and foster this wonderful research community that we've all worked so hard to build. I encourage you to reach out to me, the Spine Section Officers, and the membership committee with ideas or to get involved with the section. Please enjoy the recap of the meeting and feel free to reach out to any of the Section Officers to share your thoughts on the past symposium and future programming.

ORS Annual Meeting Highlights

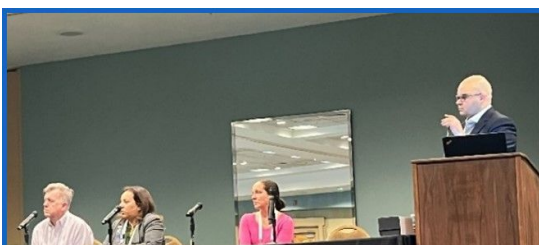
The Spine Section successfully hosted yet another Symposium during the 2024 ORS Annual Meeting. The theme this year was **Promoting Cross Talk and Inclusiveness in Spine Research**.



Dr. Kelly Cross, PhD (Georgia Tech-Engineering Education) delivered a thought-provoking seminar entitled “An Honest Conversation About DEI In STEM Post-COVID.” The seminar was directed at how to increase inclusivity in research teams.



[Molly Grisham](#) presented a workshop entitled “Developing a High-Performing Workplace Culture.” The workshop engaged the attendees with a presentation and interactive activities to help them develop effective and high-performing work dynamics within a diverse team.



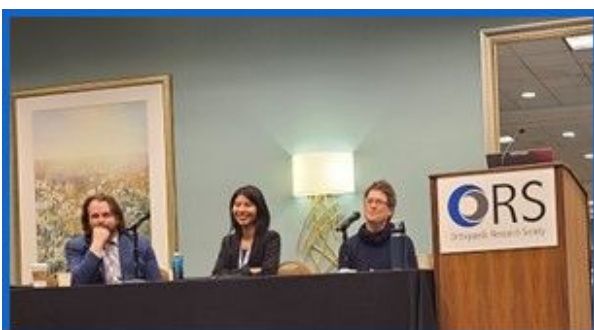
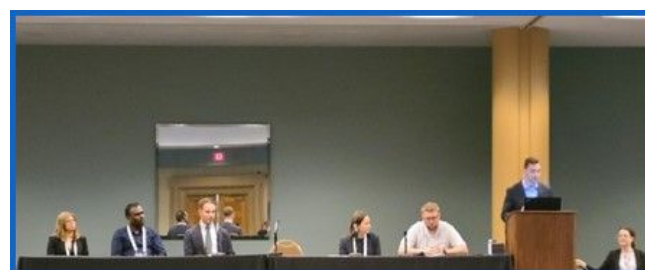
Research section talks were moderated by **Dr. Dino Samartzis** and **Dr. Sarah Gullbrand**.

Conor O’Neill, MD, University of California San Francisco, entitled “BACPAC and Chronic Pain Phenotyping.”

Morgan Giers, PhD, Oregon State University, entitled “Crosstalk in the Human Intervertebral Disc: Inflammation, Nutrient Availability, and Pain.”

Nadeen Chahine, PhD, Columbia University, entitled “Interaction between Local and System Inflammation in Intervertebral Disc Degeneration.”

Three minute abstracts (moderated by **Dr. Cheryle Seguin**) were presented in a Speed Posters Session by: Emma Coltoff, Irina Heggli, Karthikeyan Rajagopal, Jordy Schol, Neharika Bhadouria, and Taylor Bader.



Dr. John Martin, PhD (Rush University) presented the ORS Spine Section initiated study entitled “**Bullying, Harassment, and Discrimination of Musculoskeletal Researchers and the Impact of the COVID-19 Pandemic**” during the ORS Diversity, Equity, and Inclusion Committee Workshop “**From Bystander to Upstander: How to Resolve Conflict and Advocate for Others,**” organized by DEI Committee’s **Dr. Feini (Sylvia) Qu** and **Dr. Megan Oest**. The workshop was conducted by [Molly Grisham](#).

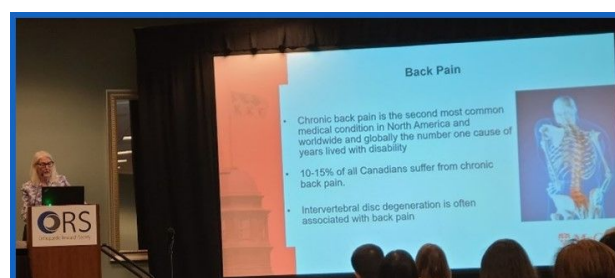


Dr. Lachlan Smith, PhD (University of Pennsylvania) held a spotlight talk titled “Preclinical Translation of Injectable Therapeutics for Intervertebral Disc Degeneration.”



Dr. Cheryle Seguin, PhD (University of Western Ontario) held a spotlight talk titled “Mouse Models to Study Intervertebral Disc Biology: Identifying Key Regulators of Development and Disease.”

Dr. Lisbet Haglund, PhD (McGill University) featured a talk titled “Mechanisms Underlying Low Back Pain in Animal Models and Human Patients” in the Understanding Pain in Musculoskeletal Disease: Molecular and Clinical Insights session.



In collaboration with the ORS Spine Section, Guest Clinical Society – North American Spine Society (NASS), ORS Innovation Committee, and the ORS Industry Alliance Committee, **Dino Samartzis, DSc, Neharika Bhadouria, MS, PhD, and Gabriela Graziani, MEng, PhD** successfully organized a workshop entitled “Thinking Outside the Box: Exploring Innovative Solutions to Unmet Clinical Needs in Spine.” A big note of thanks from the organizers to everyone who responded to the pre-workshop questionnaire that drove this workshop and the engaging conversations that followed!

The Spine Section Networking Event at Cafe Sevilla allowed new and old members to connect or re-connect with their peers. Paella, music, and good company - it was the perfect setting to wrap up the Spine Section Symposium!



Memorable Spine Section Moments from the 2024 ORS Annual Meeting



Call for Spine Section Interns!

Want to get involved with the Spine Section? Apply to the ORS Spine Section Internship Program! (Must be an ORS trainee member in good standing and commit to attending monthly membership committee meeting calls, ORS Annual Meeting, and Section Symposium.) To apply, submit the following:

- Resume/CV
- A one paragraph (no more than 500 words) personal statement
- For graduate student and postdoctoral fellow applicants: Mentor acknowledgment is required (a brief letter on the letterhead will suffice).

Interns will assist with programming and outreach, will receive mentoring from ORS section officers, and will be more involved with the broader spine research community. Send the items detailed above to both Dr. Dmitriy Sheyn (dmitriy.sheyn@csmc.edu) and Dr. Jeannie Bailey (jeannie.bailey@ucsf.edu).

Meet your 2024 ORS Spine Section Leadership and Section Officers



Section Chair



Simon Tang, PhD, MSCI

Past Chair



Lisbet Haglund, PhD

Chair Elect



Dino Samartzis, DSc

Treasurer



David Nuckley, PhD

Secretary



Rahul Gawri, MD, PhD

Education Co-Chairs



Morgan Giers, PhD



Svenja Illien-Junger, PhD

Research Co-Chairs



Nilsson Holguin, PhD



Cheryle Seguin, PhD

Task Force (Grants)



Lachlan Smith, PhD

Funding Agency Liaison



Anthony Kirilusha, PhD

Members-At-Large



Karin Wuertz-Kozak, PhD



Ana Chee, PhD



Dennis Anderson, PhD





Section Membership Committee

Co-Chairs



Dmitriy Sheyn, PhD



Jeannie Bailey, PhD

Members



Neharika Bhadouria, PhD



Nina Tang, PhD



Luca Ambrosio, MD



Andres Bonilla, DVM



Daniele Zuncheddu, MS

Member Spotlight



Graciosa Teixeira, PhD

Current Title and Department: Post-doctoral researcher at [Institute of Orthopedic Research and Biomechanics, Ulm University Clinic, Ulm, Germany](#)

Undergraduate Degree: BSc in Bioengineering, *Universidade Católica Portuguesa*, Porto, Portugal

Graduate Degree: MSc in Biomedical Engineering, *Universidade Católica Portuguesa*, Porto, Portugal

Who do you consider your mentors?

Prof. Dr. Raquel Gonçalves (University of Porto), Dr. Cornelia Neidlinger-Wilke (Ulm University), and Prof. Dr. Mário Barbosa (University of Porto) were fantastic mentors during my PhD in the intervertebral disc and tissue engineering fields and I continue to value their input in my research and career pursuits. Prof. Dr. Anita Ignatius (Ulm University) has also been an extraordinary scientific mentor and role model.

What is your specific area of interest in research?

My main focus is on elucidating the crosstalk between intervertebral disc degeneration, inflammation and complement activation, and on understanding whether disc regeneration may be promoted via immunomodulation.

What are you currently working on?

I am currently working on the development of molecular-based therapeutic approaches to counteract disc degeneration. Our previous work has shown that complement plays a role in disc degeneration, therefore, we investigate whether molecular factors produced by primed mesenchymal stem cells can modulate inflammation and complement activation, promoting disc tissue repair. Another project is focused on the effect of estrogen and low-magnitude high-frequency vibration on disc degeneration, which may be beneficial, for instance, for post-menopausal women, a group particularly at risk of developing painful disc degeneration.

What has been the biggest challenge for you lately in your research?

As a Postdoc, I believe project writing and funding acquisition are the most creative, exciting and challenging parts of the job. However, finding time to actively develop ideas between managing projects, working on projects, supervising students and lecturing can be overwhelming at times.

What projects are you looking forward to?

I am looking forward to more multidisciplinary collaborations and projects in which we can test our therapeutic approaches in vivo, hopefully becoming closer to translating our work into our main research goal: improving patient healthcare quality.

What do you like to do outside of your work?

Whenever possible, I love to travel. I find particularly the opportunity to visit historically meaningful places an extraordinary connection with culture and society, hopefully enhancing my understanding of the world. It also provides the opportunity to create lasting memories with friends and family I am traveling with.



Combining Adhesive and Non-adhesive Injectable Hydrogels for Intervertebral Disc Repair in an Ovine Discectomy Model

JOR Spine, 6(4), e1293

<https://doi.org/10.1002/jsp2.1293>

Panebianco, C.J., Constant, C., Vernengo, A.J., Nehrbass, D., Gehweiler, D., DiStefano, T.J., Martin, J., Alpert, D.J., Chaudhary, S.B., Hecht, A.C., Seifert, A.C., Nicoll, S.B., Grad, S., Zeiter, S., & Iatridis, J.C.

Current conservative or surgical interventions against intervertebral disc disorders often do not target their underlying cause. Taking this into consideration, bioengineering strategies making use of novel biomaterials are emerging as promising alternatives to limit the progression of intervertebral disc disorders including degeneration. The potential of biomaterial-based tissue engineering strategies to repair or regenerate the degenerated intervertebral disc has been largely explored. Aspects such as adequate cell-material interactions, maintenance of the native phenotype of disc cells, biochemical homeostasis, tissue remodeling/repair and functional mechanical stability, among others, should be considered in preclinical investigations of novel biomaterials. The work of Panebianco and colleagues tested in vivo the effect of adhesive annulus fibrosus (AF) sealants including poly (ethylene glycol) diacrylate (PEGDA) and genipin-crosslinked fibrin (FibGen), as well as of a nonadhesive injectable hydrogel for the replacement of the nucleus pulposus (NP), carboxymethylcellulose–methylcellulose (C-MC), alone or in combination with FibGen (FibGen + C-MC).

For the investigations, L1–L2, L2–L3, and L3–L4 lumbar discs of $n = 10$ female Swiss Alpine Sheep (age, 4–5.5 years old) were injured by partial discectomy with an AF cruciate defect and 0.1 g NP removal. The injured levels were randomly assigned to (1) the injury group, or injected with (2) PEGDA, (3) FibGen, (4) C-MC, or (5) FibGen + C-MC. L4–L5 were collected as intact controls for the evaluations. Clinical computed tomography (CT) was performed before, immediately postoperatively, 4-, 8- and 12-weeks post-injury for the determination of the disc height index at the different timepoints. Postmortem analyses at 12-weeks included magnetic resonance (MR) imaging and histopathological scoring of the discs using a detailed and well described scoring system. MR images were also qualitatively assessed using a comprehensive radiographic scoring system.

At 12-weeks after intervention, disc height loss and increased Pfirrmann grade were similar for injured discs and for all groups additionally treated with biomaterials. Nevertheless, all biomaterial-treated discs retained over 90% of their preoperative height. Particularly C-MC and FibGen + C-MC presented the best outcomes in MR and histopathological scorings, whereas AF sealants alone (i.e., PEGDA and FibGen) contributed to endplate damage and inflammation. The data demonstrate the potential of a combinatory approach (e.g., using FibGen + C-MC) to delay disc degeneration. In futures, these materials may be further investigated in combination with cells and/or molecular factors. Lastly, this work also shows the importance of modulating inflammation to improve disc repair/regeneration.

2024 Award Winners

Peter Roughley Award

Congratulations to the 2024 Peter Roughley Award winner **Janitri Venkatachala Babu** (**Dr. Karin Wuertz-Kozak**'s Lab, Rochester Institute of Technology, Rochester, NY, USA) and her mentor-host **Dr. Laura Stone** (University of Minnesota, Minneapolis, MN, USA). Read about her proposed project below:

"Existing treatments for back pain fall short in addressing the underlying molecular mechanism, necessitating novel therapeutic targets. Led by **Dr. Wuertz-Kozak** at RIT, the overall project aims to explore TRPC6 as a potential therapeutic target for discogenic chronic back pain. This award will enable the PhD student Janitri Babu to collaborate with the exchange mentor **Dr. Laura Stone** at the University of Minnesota, where she will conduct in vivo studies on SPARC-null mice to provide preliminary evidence for the therapeutic potential of TRPC6."



Janitri Venkatachala Babu

Spine Section Travel Fellowship Winner



Emma Coltoff

Congratulations to the 2024 Spine Section Travel Fellowship winner is **Emma Coltoff** (**Dr. Philip Jayson Brown**, Wake Forest University School of Medicine, Winston-Salem, NC, USA) and will be host-mentored by **Dr. Mark Driscoll** (McGill University, Montreal, QC, Canada).

"The **Brown Lab** at Wake Forest University School of Medicine has created a novel biomechanical testing methodology that enables improved characterization of the spine's naturally multidimensional and transient behavior through systematic six-degree-of-freedom loading trajectories. In partnership with the **Driscoll Lab** at McGill University, which specializes in spinal finite element model development, this testing methodology will be translated into a computational simulation to facilitate rapid iterative improvements to the loading trajectories and increased test subject variety through spinal finite element models."

Spine Section Diversity Award Stipend Winners

This year, the Spine Section offered the 2024 Spine Section Diversity Stipend Awards. The goal of these awards is to increase diversity and equitable access to spine research.

Congratulations to the following winners:

- **Tarek Klaylat**, McGill University
- **Duby Okonkwo**, Vanderbilt University
- **Daniel Garcia**, Rutgers University
- **Mikkael Jozsef Lamoca**, Rochester Institute of Technology
- **Zakiy Alfikri**, University of Pittsburgh
- **Christian Gonzalez**, Washington University at St. Louis
- **Shea Middleton**, Duke University
- **David Barreto**, University of Pennsylvania
- **Leonardo Campos**, Columbia University



- **Maria Astudillo Potes**, Mayo Clinic
- **Andy Ton**, University of Southern California

(Left to right): Tarek Klaylat, Daniel Garcia, Christian Gonzalez, Shea Middleton, Leonardo Campos, Dr. Simon Tang, Dr. Lisbet Haglund.

Spine Section Best Podium Presentation Award Winners

Lauren Lisiewski
Levon Rodriguez
Nick Herger

Spine Section Best Poster Presentation Award Winners

Emily Sharp
Neharika Bhadouria
Janai Augustin
Emma Coltoff
Giselle Kaneda
Jordy Schol

Upcoming Events

ISSLS-ORS Spine Section Joint Symposium



The ORS Spine Section is happy to announce that we will co-organize a symposium with the [International Society for the Study of the Lumbar Spine \(ISSLS\)](#) at their [50th Annual Meeting](#) in Milan, Italy, from **May 27 - May 31, 2024**. The symposium is titled “**ISSLS-ORS Low Back Pain Symposium – Understanding Mechanisms, Animal Models and Patient Management**” and is co-chaired by **Dr. Lisbet Haglund** and **Dr. Dino Samartzis**. It will be held on **May 28, 2024**, from **11:30 am to 12:15 pm**.

ISSLS is the world’s oldest, international, and multidisciplinary spine society that shares a similar vision with the ORS and the ORS Spine Section. The co-branded symposium will provide an excellent opportunity to showcase ORS and the ORS Spine Section and motivate crosstalk to foster international research, collaborations, and partnerships. The symposia will present the latest development of accurate and specific markers to detect and follow disease, how pharmacological and non-pharmacological treatment methods can be evaluated in preclinical animal models, and current clinical phenotyping and treatment options.

The symposium has an exciting lineup of internationally renowned speakers:

- **Lars Arendt-Nilsen**, Professor at Aalborg University Hospital in Denmark. He will discuss molecular, quantitative, and mechanistic pain biomarkers developed to measure pain in human patients.
- **Laura S. Stone**, Professor in the Department of Anesthesiology at the University of Minnesota. She will discuss how to measure pain behavior and response to treatment in animal models.
- **Jaro Karppinen**, Professor and Physician at Oulu University in Finland. He will discuss clinical phenotyping and current treatment options and discuss how trends have changed.

The speakers will each give a 15-minute presentation, followed by a panel discussion about how pain markers, animal models, and the treatment of patients can be better aligned to provide novel treatment and better care for patients with low back pain.

[Register Now](#)

ORS PSRS Spine Research Symposium

The ORS PSRS 7th International Spine Research Symposium will be held at Skytop Lodge located in the picturesque Pocono Mountains, Pennsylvania, from November 10-14, 2024. [CLICK HERE](#) for more information including important dates for abstract submission and registration.



Orthopaedic Research Society

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