ORS Spine Section Orthopaedic Research Society

Monthly Newsletter

Spinal Column

December 2023

Mark Your Calendars for the Spine Section Research Symposium

The 2024 ORS Spine Section Research Symposium, 'Focusing on the Research Environment,' will take place on February 2, 2024, from 2:00 pm to 7:00 pm. Join us for a panel discussion, speed posters, award presentations, and more. This will be followed by our section's networking event at Cafe Sevilla in Long Beach, California, from 7:30 pm onwards. The venue transforms into a vibrant Latin-themed nightclub at 9:30 pm. Click the link below to see the full program agenda.

Program Agenda

Section Newsletter Survey

Your feedback is crucial in helping us tailor the ORS Spinal Column to better meet your preferences and needs. We value your input and want to ensure that the newsletter's frequency aligns with your expectations. Please take a moment to fill out our survey and cast your vote on how often you would like to receive this newsletter by answering this survey, which will take 30 seconds or less.

Vote Now

Save the Date

ISSLS-ORS Spine Section Joint Symposium

Lisbet Haglund, PhD
McGill University

Dino Samartzis, DSc
RUSH University

The ORS Spine Section is happy to announce that we will be co-organizing a joint 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.

ISSLS is the world's oldest, international, and multidisciplinary spine society that shares a similar vision with the ORS Spine Section. The co-branded symposium will provide an excellent opportunity, to not only showcase ORS and the Spine Section, but also motivate crosstalk to foster international research

collaborations and partnerships. The symposium will have an exciting lineup of internationally renowned speakers. Further information and symposium date will be provided in January 2024.

Member Spotlight

Jordy Schol MSc

Current Title and Department: Research Fellow Department of Orthopedic Surgery, Tokai University, Japan

Undergraduate Degree: Biomedical Sciences, Utrecht University, The Netherlands

Graduate Degree: Regenerative Medicine & Technology, Utrecht University and Technical University Eindhoven, The Netherlands

Who do you consider your mentors?

Throughout my career, I've had the privilege of crossing paths with numerous inspiring and motivating individuals who have significantly influenced my research journey. It all started with Prof. Laura Creemers, whose passion for the spine ignited my interest in these still largely understudied tissue structures. She also introduced me to Dr. Prof. Daisuke Sakai, my current professor and mentor, who stands out as the most influential figure in shaping my thinking. Together, we share a commitment to approaching research from a "bench to clinic" perspective, emphasizing from the outset how our developments and insights could lead to new products or therapies for the benefit of patients — a perspective I deeply value.

I've also had the exciting opportunity to work closely with remarkable individuals and giants in the field such as Prof. Sibylle Grad, Prof. Mauro Alini, and Prof. Marianna Tryfonidou. Their passion for their work not only inspired me but also highlighted how science can be incredibly enjoyable. Additionally, some of the most impactful experiences have come from collaborations with peers, including Dr. Luca Ambrosio, and Dr. Kieran Joyce, and Clara Ruiz Fernández, whose minds and ambitions have consistently fueled my scope and energy. I'm excited, knowing some of them are planning to return to our lab very soon.

What is your specific area of interest in research?

I've always been captivated by the concept of regenerative medicine and the potential of harnessing the body's intrinsic capabilities to alleviate symptoms and restore tissues to their original organization and function. My experience has particularly centered on translational science; developing methods

to generate potent and high-quality cells, aiming to create cellular products, and gene therapy strategies, always with the potential of developing therapeutic products in mind.

What are you currently working on?

I'm currently engaged in various spine-related projects, spanning from basic science to clinical and surgical topics. A common thread across these projects involves assessing and developing regenerative therapeutics targeting disc degeneration and back pain. Through innovative culture conditions and genetic manipulation, we are exploring novel methods to address and assess their potential.

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

Lately, my biggest challenge in research has been effective time management, juggling multiple interesting projects simultaneously without losing track of projects temporarily on the back burner.

What projects are you looking forward to?

Our group is currently in the process of initiating a clinical trial for one of our specialized cellular therapeutics. I am genuinely excited to witness and participate in this crucial phase, particularly eager to see how the years of dedicated effort in preclinical trials and product development will unfold in this translational aspect. Plus, it will be an incredibly informative time to learn more about these final stages of with regard to legislative and clinical aspects of our biomedical research.

What do you like to do outside of your work?

As a Dutch immigrant living in Japan, I find joy in exploring the rich nature and culture Japan has to offer. I love to travel, discover new restaurants and bars in Japan, and meet new people. On the flip side, I also cherish the connections with friends and family back home, spending time on Zoom or playing board and video games on the net. Additionally, I watch an unhealthy amount of news and politics, but I would not recommend others taking on that hobby…

What is the last book you read?

Honestly, I'm not a devoted book reader, but at the moment, I'm reading “How Migration *Really* Works” by Hein de Haas. This book explores migration through the lens of science and data, debunking many assertions made by political parties across the spectrum. It intriguingly highlights the lack of factual basis behind numerous political claims about migration. Given the frequent weaponization of migration by political parties, I believe it's a definite must-read.

What is the most unusual/unexpected item sitting on your desk right now?

I make an effort to keep my desk clean and organized, so you'll mostly find post-it notes and organizers. However, there's one item that stands out; namely my black Donald Duck mug with the text "Mad Scientist." I purchased it as a souvenir from my first ORS conference in Orlando back in 2016. I use it daily to fuel my coffee addiction.

Paper Review

Mechanical Crosstalk Between the Intervertebral Disc, Facet Joints, and Vertebral Endplate Following Acute Disc Injury in a Rabbit Model

https://doi.org/10.1002/jsp2.1287

*Authors in bold indicate Spine Section Members
Matthew Fainor, Brianna S. Orozco, Victoria G. Muir, Sonal Mahindroo, Sachin Gupta, **Robert L. Mauck**, Jason A. Burdick, **Harvey E. Smith**, and **Sarah E. Gullbrand**

In the realm of spinal research, the prevalent concentration on individual tissue structures often obscures the intricate interplay among them. However, compelling evidence supports the idea that these spinal components function in tandem. This dynamic interplay extends beyond physical connections, involving complex (bio)chemical signaling and biomechanical dynamics. In the noteworthy study of Fainor *et al*., an exploration of the interconnectedness of spinal structures seeks to investigate the correlation of (induced) disc degeneration with promoting endplate sclerosis and facet joint osteoarthritis within a rabbit model.

The researchers induced disc degeneration in New Zealand rabbits by puncturing lumbar discs with 16G or 21G needles (four discs per rabbit) and meticulously assessed outcomes over 4 to 10 weeks, employing various methods such as histological observations, histological scoring (ORS Spine scheme for discs and OARSI for facet joints), μCT, MRI (T2 relaxation times), and biomechanical assessments. Finally, the authors correlated induced changes in disc properties to alterations recorded in facet joints and endplate features, through Pearson correlation assessments. Here, the larger needle gauge resulted in more severe disc degeneration, marked by enhanced histological scores, reduced T2 relaxation times, and more osteophyte development. Notably, μCT analysis revealed significantly enhanced sclerotic changes in bony endplates, with a trend of reduced gadodiamide diffusion near 16G-punctured discs. Surprisingly, facets associated with 21G-punctured discs exhibited greater deterioration, both histologically and biomechanically, compared to 16G-punctured discs. The correlation analysis uncovered significant associations, revealing intricate relationships between disc health, endplate properties, and facet outcomes. Notably, changes in intervertebral disc biomechanical properties correlated significantly with facet tensile modulus, endplate diffusion, and endplate bone volume. The study also hinted at a connection between endplate sclerosis and facet joint properties.

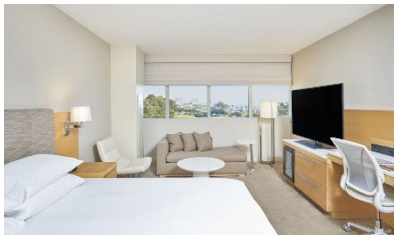
These findings highlight the comprehensive impact of disc degeneration on the entire spinal motion segment, influencing facet joint biomechanics, endplate sclerosis, and bone remodeling. Despite the lack of a linear correlation, i.e. no direct link between disc deterioration and proportional degradation of bony endplates or facets, the study suggests a more nuanced interplay. The study's intriguing aspect lies in its challenge to the scientific community's goal of minimizing animal usage and reducing suffering, advocating for a reconsideration of experimental animal analysis. It encourages adopting a

broader perspective, considering the disc as part of a functional unit comprising facets, vertebrae, and more. This approach offers a more comprehensive understanding of spinal health and pathology, paving the way for nuanced interventions and therapies.

Preparing for the ORS 2024 Annual Meeting

Be a part of history when ORS celebrates *70 Years of Advancing Research to Keep the World Moving* at the 2024 ORS Annual Meeting, February 2-6 in Long Beach, CA. The meeting brings the orthopaedic community together for five days of workshops, learning sessions, networking, and advocacy. Attendees from many disciplines and career levels will network and learn about the latest innovations in orthopaedics. **Registration for the 2024 Annual Meeting is open.**

Register Now



Hotel reservations are now being accepted. Reserve your room today to make sure you secure the right room for you. Each option is located near the event site. **Be sure to book your room soon to take advantage of the discounted ORS room block rate**. The deadline for hotel reservations is Friday, January 19, 2024, and rooms are subject to availability.

Please Note: Some members have reported receiving spam emails from sources unrelated to our hotel block or related partners. Please disregard these emails and make sure to only book your hotel using our preferred partners at Passkey via the link below. If there is any doubt about the hotel information you are receiving, please contact us at ors@ors.org before booking.

Book Your Hotel

New Investigator Toolkit from LearnORS

LearnORS has just launched the *New Investigator Toolkit*. The toolkit addresses common gaps in training that surface during the launch of an independent laboratory. These online sessions bring together early and mid-career investigators for panel discussions on the development of critical "soft-skills" such as cultivating mentoring skills, building your lab brand, and strategic planning through different career stages. In addition, sessions of budgeting and peer-review provide tangible tips for these important aspects of managing your lab and building your career. This course is available now, online, on demand, on your own schedule.

Learn More

Find or Post Spine Events on the Orthopaedic Events Calendar

An orthopaedic events calendar has been added to the ORS website. The events listed are of potential interest to those in the orthopaedic community. ORS Members are welcome to submit applicable events at no charge through the Submit Event button at the top of the calendar on the site. Institutions or sponsors interested in posting an event are welcome to do so in exchange for a donation to ORS. For information, please email ors@ors.org.

Find or Post Events

Growing the Spine Section

The ORS Spine Section was the first research section formed within the ORS. Over the past several years, the membership community has grown to over 300 Section members.

If you know someone who might be interested in representing the ORS Spine Section, spread the word! Your personal endorsement and enthusiasm can inspire potential members to be part of the advancement of spine research within our diverse community.

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