



February 2023



#ORS2023 Wrap-Up

If you were registered for the 2023 event, you still have access to view all recordings until **April 14th, 2023**. Just log on to the [virtual platform](#) with the unique credentials you received for the virtual platform. If you do not remember your password, email orsprograms@ors.org.

Spine Sessions of interest:

- Spine Section Scientific Symposium
- Spine - Pathophysiology and Mechanisms
- Spotlight - Mechanical and Biological Evaluation of Spine Function featuring **Grace O'Connell, PhD**
- And [more!](#)

Were you unable to attend the meeting in person? No problem! Recordings of Podium, Plenary and other Sessions, Workshops and Symposia are available to you on the virtual platform at the following rates:

Members: \$229

Emeritus: \$55

Congratulations 2023 Spine Section Award Winners!

Dr. Peter Roughley Award:



The ORS Spine Section established the [Dr. Peter Roughley Award](#), named after the late Dr. Roughley, who was well known for his seminal contributions to proteoglycan research and their role in intervertebral disc and cartilage structure and function. Peter was particularly gifted in teaching and mentoring individuals and was always willing to instruct and advise his fellow scientists. This award will preserve his legacy in training future generations of scientists by sponsoring a trainee and mentor exchange to enhance a trainee's knowledge in spine, disc, and cartilage biology. The award will recognize a team (mentor and trainee) and provide \$2,000 to support the travel of the trainee.

Jennifer Gansau, PhD



The 2023 Peter Roughley Award winner is **Jennifer Gansau** (**Dr. James Iatridis'** Lab, Mount Sinai School of Medicine, New York, USA) and her mentor-host **Dr. Mauro Alini** (AO Research Institute, Davos, Switzerland).

Congratulations **Jennifer Gansau**!! A brief description of her proposed project is below.

*My studies at the ORL in **James Iatridis** Lab at Mount Sinai, involve the identification of TNF receptors and their respective roles in human IVDD using a human AF cell culture model with IVDD conditioned media (CM) derived from specimens of surgical patients. I am also very interested in looking at the transition from IVDD to a painful phenotype to better understand the disease and its mechanism, which will help find new*

*treatment strategies. This award provides me with the opportunity to work with **Drs. Mauro Alini**, Tiziano Serra, and **Junxuan Ma** at the ARI in Davos to better understand this IVDD pain mechanism by applying the surgical IVDD CM to Dr. Ma's innovative DRG organ culture model system and this way connect IVDD with the peripheral nervous system in a highly controllable fashion.*

Spine Section Travel Fellowship:

The ORS Spine Section leadership has continued to develop ideas for initiatives that bring value to its Section members, particularly junior investigators. This fellowship promotes research collaboration and the acceleration of the spine field. This fellowship is designed to advance an ongoing study or establish new collaborations by providing a mechanism to promote the exchange of research methodologies and/or the development of pilot data to support larger-scale funding.

The 2023 Spine Section Travel Fellowship winner is **Jenna Wahbeh (Dr. Sophia Sangiorgio)**, JVL Orthopaedic Biomechanics Laboratory at the Luskin Orthopaedic Institute for Children, Los Angeles, USA) and will be host-mentored by **Dr. Stewart McLachlin** (University of Waterloo, Waterloo, Canada).

Congratulations **Jenna Wahbeh!!** A brief description of her proposed project is below.



*My research with **Dr. Sophia Sangiorgio** at the JVL Orthopaedic Biomechanics Laboratory at the Luskin Orthopaedic Institute for Children, in alliance with UCLA, focuses on the evaluation and performance of total joint replacements, specifically in the cervical spine. Robust preclinical evaluation for cervical disc replacements are paramount to achieving clinical success; however, current preclinical testing methods and materials are lacking and need improvement to better assess and improve current patient outcome. Therefore, my research is centered around the creation of a reproducible biofidelic cervical spine model for cost-effective preclinical testing. Rather than targeting a proprietary design, this composite model is meant to be versatile and easily translatable to other*

research centers, such as the lab I will be visiting for this travel award. This award will provide me with the opportunity to collaborate in person with the University of Waterloo and work with **Dr. Stewart McLachlin** and his research team to further refine my model. This emerging collaboration will advance the ongoing research efforts of both laboratories and ultimately improve the performance of cervical disc replacements.

2023 Spine Section Diversity Stipend Award Winners:



Left to right: **Dr. Lachlan Smith, Christian Gonzalez, Hosni Cherif, and Kashaf Zaheer**

This year, the Spine Section offered the 2023 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:

Alex Villegas
Dagoberto Pina
Hosni Cherif
Christian Gonzalez
Kashaf Zaheer
Sabrina Delva
Obinna Fidelis

ORS 2023 Spine Section Best Podium Award Winners:



1. Kyle Kuchynsky [@PurmessurLab](#)
2. Jasmin Mertens [@scrippsresearch](#)
3. Denise Iliff [@iatriidislabb](#)

Left to right: **Dr. Simon Tang, Jasmin Mertens, Denise Iliff, and Dr. Nilsson Holguin**

ORS 2023 Spine Section Best Poster Award Winners:



Left to right: **Dr. Simon Tang, Tori Kroon, Fei San Lee, and Dr. Nilsson Holguin**



Left to right: **Dr. Nilsson Holguin, Kevin Burt, Lauren Lisiewski, and Dr. Simon Tang**

1. Tori Kroon [@torikroon](#)
2. Fei San Lee [@Becky_Wachs](#)
3. Andres Bonilla [@AFBonilla10](#)
4. Karthikeyan Rajagopal [@karthik04707037](#)
5. Kevin Burt [@kevin_gburt](#)
6. Lauren Lisiewski [@Lauren_Lisie](#)



Pictured: **Olivia Ottone, MS**

Research Section Member Spotlight

This issue features **Olivia Ottone ([they/them](#)), MS** - Ph.D. Candidate, Risbud Lab, Department of Orthopaedic Surgery, Thomas Jefferson University

Undergraduate Degree: BS Chemical Engineering (Rose-Hulman Institute of Technology)

Graduate Degree: MS Engineering Management (Rose-Hulman Institute of Technology)

Who do you consider your mentors?

My PhD training is with **Dr. Makarand Risbud**, and **Drs. Veda Madhu, Emanuel Novais**, and Liz Silagi have also been important in shaping this experience. From my Rose-Hulman days, there are too many people to list, but the shortlist includes Dr. Emma Dosmar, Erik Hayes, and Dr. Craig Downing. Everything is a collective effort. 😊

What is your specific area of interest in research?

My research is largely focused on senescence, aging, and senotherapeutic interventions for intervertebral disc degeneration.

What are you currently working on?

Currently, I am studying the abilities of different senotherapeutic compounds to mediate multiple manifestations of intervertebral disc degeneration.

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

I really value and respect animals. It is an ongoing challenge to reconcile that fact with how I participate in their use as research tools. Research animals live brutal lives, and I do not think there is enough acknowledgment of that.

What are projects are you looking forward to?

I currently have a project in the pipeline looking at mineralization in the disc and prevention strategies, which is an exciting new area of exploration!

What do you like to do outside of your work?

I love cooking, reading, and spending time outdoors – especially if it involves a body of water!

What is the last book you read?

How We Show Up: Reclaiming Family, Friendship, and Community by Mia Birdsong

This was a really grounding read. Birdsong uses research, interviews, and stories of lived experience to explore ways of connecting on the bases of vulnerability, accountability, generosity, and asking for help, and challenge normalized social patterns which steer us away from connectedness.

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

People give me a lot of rainbow-themed items. Notably, my desk houses a snow globe that encases a narwhal leaping out of a cloud in front of a rainbow.

Paper Review

Olivia also contributed to this research article...

[Raloxifene Stimulates Estrogen Signaling to Protect Against Age- and Sex-Related Intervertebral Disc Degeneration in Mice](#)

Neharika Bhadouria, Alycia G Berman, Joseph M Wallace, **Nilsson Holguin**.

Intervertebral disc degeneration and discogenic back pain are pervasive and burdensome conditions to which no FDA-approved pharmacological interventions exist. Moreover, when considering treatments to mediate or prevent these pathologies, systemic delivery is a high priority because intradiscal injection can injure the tissue and propagate pain or degeneration. Evidence supports a possible relationship between osteoporosis and disc degeneration, and it is known that female individuals experience both at greater rates. Unlike disc degeneration, drugs to mediate osteoporosis exist. One such FDA-approved drug is Raloxifene hydrochloride, a selective estrogen receptor modulator that binds osteoclast estrogen receptors to suppress bone resorption and has been shown to reduce vertebral fracture incidence by 50%, a mechanical improvement hypothesized to be the result of biophysical binding of water to collagen.

Considering this, the authors hypothesized that 1) reduced estrogen signaling is a contributing factor to age- and sex-related disc degeneration and 2) systemic raloxifene treatment could stimulate estrogen signaling to protect against disc degeneration in these contexts. These hypotheses were evaluated using 4-month-old (young , adult) female and male mice that received a 6-week (5 injections/week) raloxifene treatment, 24-month old female mice that received the same treatment course, and 6-month-old female mice that were ovariectomized at 4 months. Impacts of sex, age, estrogen signaling, and raloxifene in these mice were evaluated by analyzing disc tissue morphology, mechanical properties, and the expression of: ER- α (estrogen receptor α), Substance P (pain-associated neurotransmitter), b-catenin, and a panel of other ECM and pain-related markers. Further, vertebral bone properties were assessed using mCT, and substance P-expressing osteocytes were evaluated.

From these studies, the authors report disc structure and strength are reduced by aging, ovariectomy, and in females relative to males (at a young age). These observed changes coincided with lower ER- α and higher substance P expression. Notably, the authors saw that subcutaneous injection with raloxifene mediated

these degenerative changes in young and old mice. This study indicates that raloxifene, a drug which is already FDA-approved, may have therapeutic potential in the contexts of intervertebral disc degeneration and back pain.



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