



September 2023

ORS Spine Section Award Reminders



(Pictured: 2020 ORS Spine Section Award Recipients)

2024 ORS Spine Section Travel Fellowships

The [ORS Spine Section](#) leadership has continued to develop ideas for initiatives that bring value to its Section members, particularly junior investigators. The Spine Section Travel Fellowship is designed to advance an ongoing study or establish new collaborations in the spine field by providing a mechanism to promote the exchange of research methodologies and/or development of pilot data to support larger scale funding.

Funding

- The award will recognize an applicant and a host PI and provide **\$1,500** to support the travel of the applicant for research exchange with the host PI.

- Award funds should be used to cover the costs of furthering an ongoing piece of research or act as a pilot project fostering new collaborations.

Extended Deadline for submission is October 31, 2023.

[Apply Now](#)



2024 Dr. Peter Roughley Award

The late Dr. Peter Roughley was well known for his seminal contributions to proteoglycan research and their role in both disc and cartilage structure and function. Peter was particularly gifted in teaching and mentoring individuals, and always willing to instruct and advise his fellow scientists.

This award will preserve his legacy in training the 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 student or trainee.

Deadline for submission is October 16, 2023.

[Learn More](#)

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](#)



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 from industry partners about the latest innovations in orthopaedics.

Abstract submissions are now closed. Thank you to those who submitted their abstracts for consideration. We had the highest number of abstracts in the last three years, with 2,406 submissions. Those abstracts are now under review, and we will let everyone know who was accepted on November 8. There will be an additional call for late breaking abstracts opening on October 16 and closing on November 13.



The **ORS Business Innovation Competition** will take place at the Annual Meeting. The event provides the opportunity for early-stage companies, clinicians, researchers, and students who have a great idea or technology to present their concepts to benefit the field of musculoskeletal research. The winner will participate in a program with mentors who will help them bring their idea "from bench to market" by validating the market potential of their idea, and then developing a commercialization plan. For more information or to submit your application, please see the link below. **The summary deadline is October 6.**

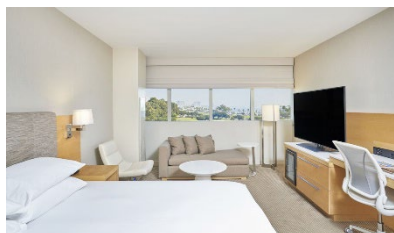
[Apply for the Business Innovation Competition](#)

Exhibitor Opportunities

If you or someone you know is a member of an organization that could benefit from showcasing its products, resources, or services in front of 2,500 highly engaged orthopaedic researchers and professionals, there is a great opportunity to exhibit at the 2024 ORS Annual Meeting. The exhibit hall will have regular heavy traffic of researchers, biologists, and engineers who are attending the event. For more information or to book a booth space, please click the link below. Booth selection is on a first come basis.



[Exhibit at the 2024 ORS Annual Meeting](#)



Hotel reservations for the Annual Meeting are open now. Event registration will open on October 10.

[Book Your Hotel](#)

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



Eleane C.B. Hamburger

Current Title and Department:

Ph.D. candidate, Division of Surgical and Interventional Sciences, Department of Surgery, Faculty of Medicine and Health Sciences, McGill University

Undergraduate Degree:

[B.Sc.](#) Hons., Biology, Queen's University

Graduate Degree:

[M.Sc.](#) Fast-track to Ph.D., Surgical and Interventional Sciences, McGill University

Who do you consider your mentors?

Throughout my time at McGill University, I have been inspired by my Supervisors, Dr. Haglund and Dr. Rosenzweig. Both of whom have guided and influenced me greatly throughout my master's and now Ph.D. program. They have taught me always to run experiments that inspire me while having a plan B and C to keep spirits high no matter the experiment's outcome. They have helped explore deeper insights into orthopaedic and oncological research that has helped inspire collaborations within the laboratory with other researchers from varied backgrounds.

What is your specific area of interest in research?

Biological and biomedical applications to manage metastatic spine disease. With patients now living longer with a diagnosis of metastatic disease, we are looking to enhance the quality of life for those undergoing surgery and/or chemotherapeutic treatment and prevent disease recurrence.

What are you currently working on?

Our project works to increase the efficacy of chemotherapeutics to reduce the incidence of breast-to-bone metastasis 1) By combining a standard chemotherapeutic with senolytic drugs (i.e., drugs that target senescent cancer and stromal cells), we can reduce the cell's Senescent Associated Secretory Phenotype that influences metastatic disease by way of inflammation and cancerous growth/spread. 2) For patients with metastases present in the spine receiving a surgical intervention, we can add treatment systemically with the combined chemotherapeutic and senolytics that work to remove chemo-resistant cancer cells to avoid disease recurrence. 3) Further work will approach the concept of using

local implants that can slow-release the combination therapy at the site of the primary tumor or metastases to move away from systemic treatment and the usually encountered systemic negative side effects.

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

Translating and preparing laboratory and analysis work for publication.

What are projects are you looking forward to?

Testing the senolytic drugs combined with a standard chemotherapeutic in vivo based on our promising *in vitro* 3D tumor microenvironment model. With the upcoming *in vivo* pilot study, we can further and more closely assess the possible effects of this combination therapy within a full-body system.

What do you like to do outside of your work?

I am a published poet, analog film photographer, and painter, and some of my paintings have been used as cover art for various music albums. I enjoy playing the acoustic guitar, attending boxing classes, and playing on a co-ed soccer team.

What is the last book you read?

I am currently reading '*Medicine Walk*' a novel by Richard Wagamese and '*I Contain Multitudes The Microbes Within Us and a Grander View of Life*' by Ed Young. I recently finished a copy of Short Stories by F. Scott Fitzgerald. Notably, my favorite short was '*The Ice Palace*'.

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

Crafted wooden tulips from Amsterdam, the city where I was born.

Paper Review

Injectable biomaterial induces regeneration of the intervertebral disc in a caprine loaded disc culture mode

Snuggs JW, Emanuel KS, Rustenburg CCME, Janani R, Partridge S, Sammon C, Smit TH, Le Maitre C.

Biomaterials Science 2023.

This study investigates intervertebral disc degeneration in a caprine model using lumbar spines (T12-L5) from skeletally mature female goats (3-5 years old, n = 4). Disc degeneration is the cause in half of all patients suffering from lower back pain. Of note, typically available clinical strategies are aimed at symptom relief. Consequently, there is a clear need to find a strategy that would allow for actual treatment of this sometimes debilitating condition.

To investigate the possible curative strategies of using a hydrogel injection directly into the disc, the authors used a synthetic Laponite(R) crosslinked poly-N-isopropylacrylamide-co-o-N, N'-dimethylacrylamide hydrogel (pNIPAM-co-DMAc (NPGel)). The process of NPGel injection through small-bore needles, categorized as a loaded disc culture system (LDCS), was used to determine the reduction in disc degeneration and catabolism, increased regenerative processes and, possibly, a reduction of overall disease burden whilst avoiding added tissue damage.

The authors loaded NPGel with or without human bone marrow progenitor cells (BMPCs) within the nucleus pulposus (NP) of degenerate discs compared to non-injected degenerative discs as a control. The NPGel aids in the differentiation of the BMPCs into NP cells *in vitro* to mimic the NP environment without additional manipulation. The authors found that native cell migration within the NP was higher in the injected NPGel cohort, with or without the seeded BMPCs.

The injected discs (with or without BMPCs) showed significantly higher amounts of healthy matrix markers (collagen type II and aggrecan), whilst there was a significant reduction in catabolic proteins (MMP3 and ADAMTS4) as well as cytokines (IL-1Beta and IL-8). Their findings also indicated that the injected discs were lower on the degenerative scale than the controls after being cultured for 21 days post-injection.

In the current study, the addition of BMPCs did not clarify whether using stem cells adds to the long-term efficacy of this treatment. Further investigation is warranted to assess whether the additional use of BMPCs improves long-term outcomes.

The authors propose that this method of injection using the NPGel can lead to possible halting of degeneration in the intervertebral disc while increasing regenerative potential as seen in their caprine model. If additional animal testing corroborates the authors' current findings that NPGel injection is indeed safe and effective, then we can anticipate that this strategy may prove to be a viable option for human application.

Overall, this study highlights the potential advantages of using NPGel for its' significant anti-catabolic effects and increased matrix production, all the while reducing degeneration. As for the difference between the NPGel with or without progenitor cells, there is room for future studies to find plausible ways to track the cells to measure increased cellularity according to loaded gel type.



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- [Orthopaedic Basic Science](#)
- [Principles of Clinical Research](#)

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Growing Our Network

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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