ORS Spine Section
Orthopaedic Research Society
Monthly Newsletter

# Spinal Column

## December 2022

*Did you register for the ORS 2023 Annual Meeting yet?*
*Be sure to book your room ASAP before the January 18 Deadline!*

*Pictured:* ***Andres Bonilla, DVM, MSc***

*PhD Student in Clinical Sciences - Research Assistant*
*Preclinical Surgical Research Laboratory*
*Colorado State University*

## Research Section Member Spotlight

This issue features **Andres Bonilla, DVM, MSc** - PhD Student in Clinical Sciences - Research Assistant, Preclinical Surgical Research Laboratory, Colorado State University.

***Undergraduate Degree:*** *DVM, University of Tolima (Colombia)*

***Graduate Degree:*** *MSc Veterinary Sciences, University of Caldas (Colombia)*
*PhD Student in Clinical Sciences, Colorado State University*

***Who do you consider your mentors?***

*Currently,* ***Dr. Jeremiah Easley*** *who took the risk to invite me to CSU with my Fulbright scholarship. Before in Colombia, I got into the research career because* ***Dr. Jorge Carmona*** *and* ***Dr. Iang Rondón.***

***What is your specific area of interest in research?***

*The development and refinement of preclinical animal models.*

***What are you currently working on?***

*Besides my PhD projects in animal models of Intervertebral disc degeneration I work with different preclinical models for*

*other orthopedic conditions such as spine fusion, bone fracture/healing, tendon injuries, osteoarthritis, osteoporosis, TMJ replacement, among others.*

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

*Everything different to the surgical or clinical aspect, such as lab bench work becomes in an enjoyable challenge for me.*

***What are projects are you looking forward to?***

*Development of novel therapies or medical devices for Intervertebral disc degeneration.*

***What do you like to do outside of your work?***

*I like riding horses, running, and snowboarding.*

***What is the last book you read?***

***El Mundo Amarillo (The yellow world)*** *by Albert Espinosa*

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

*A complete rabbit spine, and a vertebra of a Moose.*

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## Register for the ORS Spine Section Scientific Symposium & Reception!

Registration rates increase on **January 10,** be sure to register before then!

The 2023 ORS Spine Section Symposium will be held on Friday, February 10th from 3 to 9pm. Join us for an expanded, half-day program with the overall theme of “Enhancing Spine Research through Diversity, Mentoring and Collaboration”. The symposium will feature keynote speakers on each of these three topics, in addition to scientific presentations from leading researchers on the topic of “Leveraging Developmental Biology and Stem Cells for Disc Regeneration”. The program will also include trainee poster teasers, a networking speed-dating event, boxed dinners and a networking reception.

View the full schedule here.

**Gather with your section**

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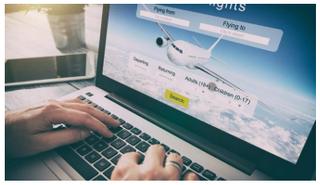

## 2023 Spine Section Diversity Stipend Awards

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.

***Applications are now closed, thank you to all who applied!***

Award notifications will be sent before the January 10th early registration deadline.

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## Paper Review

***Andres also contributed to this research article...***

Homing of vertebral-delivered mesenchymal stromal cells for degenerative intervertebral discs repair–an in vivo proof-of-concept study.

**Jordy Schol**, **Daisuke Sakai**, Takayuki Warita, Tadashi Nukaga, Kosuke Sako, **Sebastian Wangler**, Shota Tamagawa, **Stephan Zeiter**, **Mauro Alini**, **Sibylle Grad**

Received: 4 July 2022
Revised: 4 September 2022
Accepted: 30 September 2022
First published: 14 November 2022
DOI: 10.1002/jsp2.1228

Mesenchymal stromal cells (MSC) show a strong homing affinity towards damaged or diseased tissues. In the case of Intervertebral disc degeneration (IDD), MSC have been shown to their therapeutic potential. For instance, in vitro studies showed active migration of MSC seeded on top of their cartilaginous endplates; or in some clinical studies alleviating discogenic pain. In this study, the authors conducted an in vivo study using a coccygeal disc degeneration rat model to evaluate the homing and

survival of MSC delivered  at close proximity to the intervertebral disc as a as a potential therapy for IDD.

This study was divided in 2 parts.  In part one, MSC or saline were transplanted into the vertebrae neighboring healthy or degenerative Intervertebral disc. Disc heigh index and histology were used to evaluate the ability of the MSC to maintain the integrity of the disc for 2 and 4 weeks. In the second part of the study, MSC expressing GFP were transplanted either intradiscally or vertebrally using the same coccygeal disc degeneration rat model.  Histology, immunohistochemistry, and GFP tracing by immunohistochemistry were used to evaluated regenerative outcomes at days 1, 5, and 14 post-transplantations.

The results of the first part showed that MSCs were able to home to the site of injection and survive for at least four weeks after injection. In addition, the MSCs were found to integrate into the disc tissue and stimulate the production of extracellular matrix components, which are important for maintaining the structural integrity of the disc. The second part highlighted the enhanced DHI and matrix integrity for discs receiving MSC vertebrally compared with intradiscal injection. Overall, the results of this study suggest that MSCs may have potential as a therapy for DDD considering the beneficial effects on the their neighboring Intervertebral disc. It will be important for future studies to evaluate the safety and efficacy of MSC therapy in large animal models and humans.

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