

***Grayson-Jockey Club Research Foundation appreciates the generous support of these projects by the United States Eventing Association.***



**Non Invasive Evaluation of Host Micro-biota Interaction (2019)**

*Dr. Cannan Whitfield-Cargile, University of Georgia*

This proof-of-principle work has had broad implications in the field of equine gastroenterology and increases our ability to identify specific metabolites and/or bacterial probiotics that impact equine GI health. This is used to indicate a variety of GI conditions, diseases and inflammatory agents to ulcer detection. It has proven accurate in detecting these through analysis of gene expression in the feces.

**Enhancing the efficacy of Mesenchymal Stromal Cells (MSCs) for Tendon Healing (2020)**

*Dr. Lauren Schnabel, North Carolina State University*

This study improved our knowledge of the temporal tendon cytokine microenvironment following injury, which can be beneficial for the development and determining optimal timing of administration of regenerative therapies.

MSCs licensed in vitro with 33 IL-1, but not IL-6, at a concentration identified from the in vivo study induced upregulation of multiple genes beneficial to tendon healing as identified by RNA-sequencing. Specifically, vascular development, ECM synthesis and remodeling, chemokine and growth factor function alteration, and immunomodulation and tissue reparative genes were significantly upregulated. The data from this supports the need to further study the benefit of MSCs administered within the inflamed tendon (48 hrs) of exogenously licensed MSC, with IL-1 in vitro prior to treatment as licensed MSCs could enhance their therapeutic benefit in the healing tendon.



## **Predicting Exercising Arrhythmias with Resting Electrocardiograms (ECGs) (2021)**

*Mollie McCue, Sian Durward-Akhurst, University of Minnesota*

The data collected from this project demonstrated that complexity analysis can be used to differentiate between horses that have cardiac arrhythmia at exercise and those that don't, using one-minute segments of normal sinus rhythm ECGs at submaximal heart rates. Also demonstrated was the feasibility of using non-linear analysis as a predictor of cardiac arrhythmias in the horse. This suggests that this could be a useful tool for screening pre-exercise ECGs to identify horses at risk of arrhythmias in exercise.



## **PET/MRI of the Sport Horse Fetlock (2023)**

*Mathieu Spriet, University of California- Davis*

This project was designed to take PET scans of injuries of the fetlock and compare with MRI images of the same injury. This was then altered to also include CT scans. The project expanded in numbers and included images taken at several private practices and institutions. The results of examining and comparing these different modalities have led to a much higher level of understanding of the diagnostic capabilities of PET. Furthermore, PET has proven to be an accurate indicator of the healing process of these injuries.

## **Treatment of Meniscal Injuries with MSCs-(2023)**

*Aimee Colbath, Cornell University*

This project is still in progress with final histological analysis of the joint tissues and menisci after treatment with MSCs. The study was very successful in the proof of a meniscal injury model. This model has been adopted as an excellent soft tissue related osteo- arthritis model as well.



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