RECORD FUNDING FOR EQUINE RESEARCH

The board of directors of Grayson-Jockey Club Research Foundation announced today that it has authorized expenditure of $1,638,434, the most that the foundation has ever allocated in a year, to fund 12 new projects at 12 universities, 12 continuing projects, and two career development awards worth $20,000 each. This marks the seventh straight year that more than $1 million has been approved. The 2021 slate of research brings Grayson-Jockey Club Research Foundation's totals since 1983 to more than $30.6 million to underwrite 396 projects at 45 universities.

$30.6 Million
396 Projects
45 Universities

"We are heartened by the continued commitment of universities to supporting equine veterinary research throughout these difficult times and that we are able to distribute more funding than ever before, enabling us to help horses of all breeds and disciplines," said Dell Hancock, chair of Grayson.

"Despite a challenging year, Grayson-Jockey Club was excited to receive 51 grant applications from a variety of veterinary institutions in North America as well as five other countries," said Dr. Stephen M. Reed, chair of Grayson's research advisory committee. "The subject matter is diverse and ranges from identifying new methods to treat and prevent infectious disease to development of computational models using big data to investigation of novel imaging techniques to prevent orthopedic injuries. As in previous years, we have funded two career development awards for young investigators. As ever, we are excited about the quality of the grants and the ability to continue to make important contributions to equine health."

NEW YEAR PROJECTS IN 2021

Passive Immunization of Foals with RNA-Ab Against R Equi
Jeroen Pollet, Baylor College of Medicine
By inhalation therapy, the intent is to deliver the genetic code for a protective antibody against Rhodococcus equi into the lung cells of newborn foals, to rapidly protect them against infection.

Hyperthermia and Acidosis in Exertional Muscle Damage
Michael Davis, Oklahoma State University
This project will identify an underlying cause of exercise-associated muscle fatigue and soreness and allow trainers to more precisely condition horses with fewer training days lost to muscle soreness.

Developing an Improved Serological Test for Strangles
Noah Cohen, Texas A&M University
This project proposes to develop a more accurate blood test to identify horses infected with the bacterium that causes strangles to improve control and prevention of strangles.

Mitigation of Equine Recurrent Uveitis Through SOCS

Joseph Larkin, University of Florida

This project seeks to design a topical eye drop, using a natural protein, which helps to prevent pain and blindness associated with equine recurrent uveitis.

Environmental Origins of Equine Antimicrobial Resistance

Brandy Burgess, University of Georgia

This study will elucidate how antimicrobial resistance and virulence determinants are shared among horses and hospital environment, as well as the role antimicrobial exposure plays at this interface.

Treatment of Joint Injury with Mesenchymal Stromal Cells

Thomas Koch, University of Guelph

This project will be evaluating of equine umbilical cord blood-derived mesenchymal stromal cells to treat joint injuries in horses.

Optimizing Bone Growth to Reduce Equine Fracture

Mariana Kersh, University of Illinois Urbana-Champaign

The aim is to reduce distal limb fractures through exercise in young horses having a significant positive impact on horse welfare as well as, the economics and public perception of the horse industry.

New Generation Equine Influenza Bivalent VIP Vaccine

Thomas Chambers, University of Kentucky

The study proposes to create a novel, safe and effective vaccine for equine influenza based on the 21st-century technology of noninfectious virus-like particles produced in plants.

Injury Prediction from Stride Derived Racing Load

Chris Whitton, University of Melbourne

The aim of this study is to identify horses at risk of limb injury by studying patterns in bone fatigue accrual over time in racehorses, facilitating timely evidence-based preventative strategies.

Predicting Exercising Arrhythmias with Resting Electrocardiograms

Molly McCue, University of Minnesota

Using at rest electrocardiograms to identify horses with irregular heart rhythms at exercise that can cause sudden cardiac death, to allow increased monitoring and improved understanding of sudden cardiac death.

Understanding and Preventing Supporting Limb Laminitis

Andrew Van Eps, University of Pennsylvania

We aim to make supporting limb laminitis preventable through analysis of archived model tissues, a multi-center limb motion study of horses at risk, and development of a prototype therapeutic device.

VET CHATS

Visit our website to view our VET CHATS series webinars.
Watch for new Vet Chats in 2021. Recent Vet Chats that are available online include:

TREATING RHODOCOCCUS EQUI BY INHALATION THERAPY
Dr. Noah D. Cohen, *Texas A&M University*
Dr. Jeroen Pollet, *Baylor College of Medicine*

EQUINE HERPES VIRUS
Dr. Arthur Frampton, *University of North Carolina-Wilmington*

THERAPEUTIC USE OF STEM CELLS FOR TENDON AND LIGAMENT INJURIES
Dr. Lauren Schnabel, *North Carolina State University*

EQUINE GASTRIC ULCER SYNDROME
Dr. Ben Sykes, *Massey University*

COLIC
Dr. Anthony Blikslager & Dr. Amanda Ziegler
North Carolina State College of Veterinary Medicine

EPM & WOBBLERS
Dr. Stephen Reed, *The Ohio State University*
& Partner of Rood and Riddle Equine Hospital

Diagnosis of Incipient Condylar Stress Fracture
Peter Muir, University of Wisconsin–Madison
This study will save the lives of horses by establishing screening using fetlock computed tomography for diagnosis of horses with a high risk of imminent serious injury for personalized clinical care.

SECOND YEAR PROJECTS IN 2021

Improving Fungal Diagnosis in Horses
Soon Hon Cheong, Cornell University
Developing a diagnostic test that can rapidly detect, identify, and determine the antifungal susceptibility profile of clinical equine samples to improve treatment outcomes of fungal infection in horses.

Bisphosphonates and Fatal Musculoskeletal Injury
Heidi Reesink, Cornell University
Determining the prevalence of bisphosphonate use in racehorses and whether bisphosphonates are associated with fatal musculoskeletal injury is essential to equine welfare and the future of racing.

Enhancing the Efficacy Of Mesenchymal Stem Cells for Tendon Healing
Lauren Schnabel, North Carolina State University
This proposal examines the tendon inflammatory environment following acute injury and the effect of such an environment on mesenchymal stem cells (MSCs), with the goal of improving MSC treatment efficacy.

AMPK (5' AMP-activated protein kinase enzyme) Agonist Combination Therapy and ID in Horses
Teresa Burns,The Ohio State University
By completing this work, we hope to characterize a combination therapy to improve equine insulin resistance that is administered orally and well tolerated.

Superficial Digital Flexor Tendinitis Adaptation in Thoroughbred Racehorses
Sushmitha Durgam, The Ohio State University
The impact of training and racing on (mal)adaptations in superficial digital flexor tendon hierarchical structure will be evaluated to delineate the pathophysiology of this common injury in racehorses.

Dynamics of Vitamin D in Hospital Foals
Ramiro Toribio, The Ohio State University
Critically ill foals often have low blood levels of vitamin D; our goal is to investigate if their levels over time are associated with the severity of their disease and mortality.

Asthma, Performance and Omega-3s in Racing Thoroughbreds
Laurent Couetil, Purdue University
Investigating the variability of asthma severity in horses racing across the United States, its effect on performance and determine if omega-3 pufa supplementation is beneficial.

Effect of Nebulized Lidocaine in Treating Equine Asthma
Melissa Mazan, Tufts University
Evaluating the efficacy of inhaled lidocaine in equine asthma in reducing airway inflammation and hyper-responsiveness by promoting an anti-inflammatory lung environment.

Bisphosphonate Effects on Biomarkers and Bone Metabolism
Heather Knych, University of California- Davis
funded by
This study will allow for development of sensitive and alternate methods for detection of bisphosphonates.

Novel Delivery of Antimicrobials into Equine Joint
Simon Bailey, University of Melbourne
The development and testing of a novel (gel) carrier formulation for the antibiotic Cefuroxime, as an injection into horses' joints for application as a treatment of joint infections.

Diagnostic Assay for Recurrent Exertional Rhabdomyolysis
Molly McCue, University of Minnesota
sponsored by WINSTAR
Identify a comprehensive set of genetic markers that allow RER risk prediction before horses tie-up and preemptive management to decrease the frequency and severity of clinical disease.

Inhibiting EHV-1 (Equine Herpesvirus 1) with Anti-Inflammatory Drugs
Arthur Frampton, University of N.Carolina Wilmington
Using a tissue culture model system to test the ability of specific drugs to reduce the damaging hyper-inflammatory response that is observed in EHV-1 infected horses suffering from equine herpesvirus myeloencephalopathy (EHM).

photo by Anne Eberhardt

2021 Career Development Awards

Callum G. Donnelly
University of California-Davis
**Storm Cat Career
Development Award**

Dr. Donnelly has completed his residency program and is in a research training position under the mentorship of Dr. Carrie Finno. His project, Proteomic investigation of equine spinal ataxia, offers him an excellent opportunity to improve his research skills and put him at the forefront of precision medicine for the horse.

The key training areas for this proposal will serve as fundamental career development opportunities, in addition to building the skills necessary for completion of the proposed study. For this project, the principal skill area will be proficiency in computational biology, with particular emphasis on the handling of large data-sets. Additionally, this project has already realized the need for collaboration and will offer further opportunities in networking, scientific writing, communication and presentation skills. These are the major areas of focus for the proposed year of the project.

The project is expected to identify novel protein biomarkers that differentiate normal horses from those with spinal ataxia, with high sensitivity and specificity. Further, we expect to demonstrate that the proteome will differ depending on the prevailing spinal ataxia etiology, thereby allowing for the discovery of biomarkers unique to each disease. The impact of this work will be profound, enabling the rapid screening of proteins that can readily be transitioned into diagnostic tests. Ultimately, it will propel equine neurologic disease diagnosis into the precision medicine age.

Aileen Rowland
Texas A & M University
**Elaine & Bertram Klein
Career Development Award**
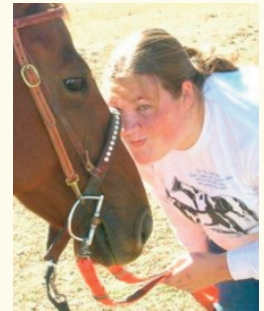
Dr. Rowland's year of research focuses on "Efficacy of Xenogen Free MSC's for Osteoarthritis"- Dr. Rowland's project will be under the mentorship of Dr. Ashlee Watts. She presented a very detailed year in her research with a goal of obtaining a position as a clinical researcher in academia with the aim of advancing regenerative medicine for equine athletes and humans alike.

Her training toward this goal is directed in two foundational areas: first, a solid understanding of the scientific process and research design, knowledge of molecular and cellular biology, and advancement of skills needed to be an effective researcher; second, to enhance her communication skills in regard to interactions with other veterinarians, medical professionals and scientists, as well as the public. Both of these are supported by her current position as a graduate student and member of the Comparative Orthopedics and Regenerative Medicine Laboratory at Texas A&M University.

The objective of this study is to use a randomized clinical trial, for the treatment of naturally occurring osteoarthritis, to test the effectiveness of mesenchymal stem cells prepared with autologous xenogen-free culture media against industry -standard, fetal bovine serum supplemented mesenchymal stem cells as the control treatment. The expected outcome of this clinical trial will have extreme value to the equine sports medicine community, and will also be directly applicable to human regenerative medicine.