Colorado State University ($19,925)
“Impact of Rice Bran on the Equine Fecal Microbiome and Metabolome following Exposure to Antimicrobials”
The large intestine of the horse is uniquely adapted to process the high fiber content of the normal equine diet. In a healthy state, the fermentation by beneficial bacteria provides energy and other nutrients, but the delicate ecosystem of microbes in the gastrointestinal tract is vulnerable to disturbance. Rice bran, an inexpensive source of fiber and fat for animal feed has been shown to provide significant health benefits. This project will evaluate the benefits of rice bran products on the GI microbial population in horses treated with or without antibiotics.
Principal Investigator: Rosemary Bayless DVM, Young Investigator Award

Iowa State University ($17,400)
“Establishing an ex vivo Model of Corneal Wound Healing in the Horse”
Corneal ulcers are very common in horses and with a lack of appropriate treatment they present an imminent risk for the eye and for vision. If not identified early or if secondary infection occurs, this condition may lead to perforation of the eye. Typically, corneal injuries, such as ulcers, or epithelial defects, are associated with inflammation. As the injured eye runs the risk of permanent, vision altering consequences, it is not surprising that prompt and aggressive treatment is of paramount importance. The goal of this study is to establish an equine ex vivo model of corneal wound healing. This study is at the heart of improved animal welfare and represents a logical stepping stone between laboratory models and clinical studies.
Principal Investigator: Rita Wehrman DVM, Young Investigator Award

North Carolina State University ($20,000)
“The Use of Platelet-Rich Plasma (PRP) to Combat Infectious Arthritis in vitro”
Joint infections in horses are considered an emergency and treatment can be long and unsuccessful. Even when horses are treated quickly arthritis is a common side effect and about 6 to 10% of horses will lose their life to this disease. Recent research found that platelet-rich plasma, a therapeutic commonly used to help recovery from athletic injuries, is useful in fighting bacterial infections. This study will investigate different methods of collection and processing of PRP to produce the most effective formulation.
Principal Investigator: Jessica Gilbertie DVM, Young Investigator Award
**Oregon State University ($11,300)**

*“Investigation into Lumbosacral Spinal Anatomy and Growth Plate Closure in Quarter Horses”*

Back pain affects horses of all breeds and disciplines. Sacroiliac and lumbosacral region pain has been a non-specific diagnosis in many sport horses and racehorses. One recent study identified that lumbar vertebral fractures occur more commonly in Quarter Horses than Thoroughbreds. This study will collect lumbosacral specimens from racing and sport performance Quarter Horses humanely euthanized for reasons unrelated to this study, and characterize normal anatomical variation and growth plate closure using computed tomography diagnostic imaging, and visual and microscopic examinations. Results of the proposed study will provide valuable information and insight about the normal Quarter Horse lumbosacral anatomy and growth plate closure.

Principal Investigator: Elizabeth Collar DVM, Young Investigator Award

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**University of California, Davis ($58,913)**

*“Mitochondrial Oxidative Function of Stallion Sperm is a Novel Indicator of Aging and Cryopreservation Success in Stallions”*

Semen cryopreservation success is known to decline with advanced age in stallions. This project will evaluate mitochondrial oxygen consumption and the relationship to sperm motility to determine if this is a fundamental response to stallion aging and whether it is affected by cryopreservation. Establishing the relationship of mitochondrial function to sperm function, stallion aging, and stallion fertility will provide design of treatments to optimize stallion utilization in breeding programs.

Principal Investigator: Stuart Meyers DVM, PhD

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**University of Florida ($53,247)**

*“Genetics of Anhidrosis in the American Quarter Horse”*

Anhidrosis in horses is a poorly understood condition characterized by a persistent reduction or complete lack of sweat. Although there are many medical treatments suggested for anhidrosis, none passes even the lowest empirical standard. A 2010 study conducted at the University of Florida noted that the chances of anhidrosis are 21.67 times higher in horses with family history than those without, indicating a strong genetic component to this disease. The overall goal is to find locations within the genome contributing to anhidrosis in the American Quarter Horse.

Principal Investigator: Samantha Brooks PhD

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**University of Illinois ($7,233)**

*“Effects of Urine Contamination on Semen Freezing Ability of Stallions”*

Contamination of the semen with urine, also known as urospermia, is a common problem affecting breeding stallions. Current standard practices suggest that semen presenting with urine contamination be discarded and not used for semen cryopreservation. Therefore, there is a critical need to evaluate effects of urospermia on semen cryopreservation. It is expected that these results will have a positive effect by establishing new evidence based practices for cryopreservation of stallion semen contaminated with urine.

Principal Investigator: Igor Canisso DVM, PhD
University of Kentucky ($20,000)
“MicroRNAs as Markers of Placental Health in the Mare”
Placentitis is the most common cause of abortion in late pregnant mares and can also be associated with the delivery of under-developed or still-born foals. Early detection and treatment of placentitis is necessary for a successful outcome. MicroRNAs hold a great deal of potential as biomarkers to detect placentitis in the early stages of disease. It is becoming increasingly apparent that these small molecules have implications in the future of both diagnostics and therapeutics, and play a crucial role in pregnancy regulation and maintenance. The potential of microRNAs is phenomenal and the data generated from this project can aid in early detection and treatment.
Principal Investigator: Shavahn Loux PhD, Young Investigator Award

University of Minnesota ($77,556)
“Metabolomics in Equine Metabolic Syndrome: Molecular Pathophysiology and Biomarker Discovery”
Equine Metabolic Syndrome (EMS) is a challenge due to its undefined pathogenesis, clinical heterogeneity and complexity. Objective one will identify 3,000 or more metabolites in serum samples before and after an oral sugar test in a population of 300 horses. Objective two will use the global metabolomic data to identify the minimal set of metabolites. These results will expand our understanding of the molecular and genetic factors that contribute to the pathophysiology of EMS.
Principal Investigator: Molly McCue DVM, PhD

Additional information related to ongoing industry research in these fields may be obtained through the equine medical research database at www.equineresearch.net. Participating organizations include the American Association of Equine Practitioners Foundation, American Quarter Horse Foundation, Morris Animal Foundation and the Grayson Jockey Club Research Foundation.

For more information on the American Quarter Horse Foundation’s equine research program, please contact us at:

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