Colorado State University ($74,995)
“Evaluation of Suspensory Ligament Remodeling in Quarter Horses used for Cutting”
Proximal Suspensory Disease results from repetitive stress and injury to the suspensory ligament and or its surrounding structures. Diagnosis of this disease can be difficult since structures including the joints of the carpus or tarsus, splint bones, cannon bone and flexor tendons are associated with the suspensory ligament, and pain at these sites can also influence clinical lameness. The investigators propose to use ultrasound to characterize adaptive changes to the suspensory ligament during training in cutting horses. In addition, horses within this population that suffer proximal suspensory disease during their career will have the injury further characterized with MRI and nuclear scintigraphy (NS), providing a comparison between the gold standard and ultrasound.
Principal Investigator: Christopher Kawcak DVM, PhD

Cornell University ($60,394)
“The Equine Mesenchymal Stem Cell Secretome as a Potential Therapeutic for Neurologic Injury and Disease in Horses”
Recent studies in human medicine have suggested that stem cell therapy can improve brain and spinal cord repair and offer hope for debilitating neurological disorders. It is thought that stem cells exert their beneficial effects by secreting bioactive factors, collectively termed ‘the secretome’, into their environment. The proposed study aims to investigate similar stem cell therapies for equine neurologic injury. The results of this study will aid our understanding of how stem cells exert their beneficial effects, as well as provide foundational information from which clinical trials evaluating stem cell therapies in horses with neurologic injury can be developed.
Principal Investigator: Gerlinde Van de Walle DVM, PhD

Michigan State University ($62,535)
“Determination of Bone Loss Associated with Disuse in Yearling and Mature Horses”
Previous research has shown that stalled horses, when not afforded the opportunity to take any strides at high speed lose bone mass and accompanying skeletal strength. This study will provide answers as to how long horses can be stalled before bone loss occurs, how long it takes to regain bone mass when horses are returned to a pasture setting, and if the response differs between young and mature horses.
Principal Investigator: Brian Nielsen PhD
University of Illinois ($25,905)
“Pulmonary Disposition and Pharmacokinetics of Oral Minocycline in Adult Horses”
Bacterial pneumonia is a significant cause of illness in adult and juvenile horses. Oral administration of antibodies is frequently the mainstay of therapy due to the relative ease of administration and often reduced financial burden to the owner. This study proposes to evaluate the disposition and pharmacokinetics of minocycline in the pulmonary epithelial lining fluid (PELF) and lower airway cells of adult horses after oral administration at the current recommended dose. Knowledge of accurate minocycline activity in the lung fills an immediate need for our equine patients through improving effective treatment of bacterial pneumonia and expanding the options for affordable oral antibiotics.
Principal Investigator: Kara Lascola DVM

University of Illinois ($8,398)
“Exogenous L-Lactate Clearance in Sick Neonatal Foals”
L-lactate is a normal metabolite found in the blood of all horses, is increased normally in foals right after birth, and rapidly decreases by day three of life. It is also commonly increased in sick foals of any age due to increased production or decreased removal from the body by the liver and kidney. L-lactate concentration in the blood of foals, not in itself directly harmful, has been shown to be a good indicator or marker of illness severity, response to therapy and probability of survival. This study first investigated how the metabolite is handled in healthy one to three day old foals when given intravenously at a low dose, in order to understand how L-lactate is normally metabolized in the neonate. Understanding the normal handling of L-lactate by the neonatal foal will help identify the origins of increased L-lactate in the blood in this study in the sick foal.
Principal Investigator: Pamela Wilkins DVM, PhD

University of Kentucky ($44,957)
“Equine Interferon-Lambda”
Interferons are a group of biological regulatory proteins, or cytokines, which act as an early line of defense against viral infections. Three classes of interferons, type I, II, and III, have been identified. In the horse, types I and II have been much studied, but type III or lambda has not been studied at all. This proposal is a one-year project employing expertise in genomics and viral immunology to characterize the suspected lambda gene sequences, clone the genes, and measure lambda expression against the leading respiratory viruses of the horse, influenza and equine herpesvirus-1.
Principal Investigator: Thomas Chambers PhD

University of Kentucky ($19,121)
“Do Horses with Equine Metabolic Syndrome (EMS) have Reduced Immune Responses to Vaccination?”
Obesity in horses has been connected to more serious health concerns of insulin resistance and equine metabolic syndrome. Equine Metabolic Syndrome is defined as general obesity insulin resistance, and a history of or predisposition towards laminitis. It has been shown that obese humans and mice have decreased immune response to
vaccination. This study proposes to investigate the impact of Equine Metabolic Syndrome on immune responses to routine vaccination and will be the first to determine if horses with Equine Metabolic Syndrome have reduced immune response to vaccination.
Principal Investigator: Sarah Elzinga (Young Investigator)

**University of Wisconsin ($40,901)**

"Use of the Prostaglandin E1 Analog Misoprostol to Hasten Oviductal Transport of Equine Embryos"
In horses, the embryo secretes a hormone, prostaglandin E2, which acts locally into the oviduct inducing rapid onward movement and the entry of the embryo into the uterus. Misoprostol is a potent synthetic prostaglandin E analog and can be administered orally. This study proposes that the oral treatment of early pregnant mares with misoprostol will hasten oviductal transport of equine embryos and oviductal contents, thus increasing the recovery rate of small embryos suitable for cryopreservation.
Principal Investigator: Celina Checura PhD, DVM

**Virginia Tech ($58,028)**

"Novel Stem Cell Therapy to Treat Osteoarthritis in Horses"
Osteoarthritis is a degenerative, progressive and incurable disease of joints causing pain and wastage in horses. It is the most common orthopedic disease of older horses, affecting 83.5% age 15 years or older, has a high incidence in racing, reining, cutting, roping and western pleasure performance Quarter Horses. Investigators have demonstrated growth of mesenchymal stem cells in three-dimensional culture amplifies their anti-inflammatory effects. They propose to evaluate these optimized stem cells to treat osteoarthritis in horses, to establish their safety and efficacy. This study may be the next step to identifying a lasting treatment to halt the progression of osteoarthritis in horses.
Principal Investigator: Jennifer Barrett PhD, DVM

Additional information related to ongoing industry research in these fields may be obtained through the equine medical research database at [www.equineresearch.net](http://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:

**AMERICAN QUARTER HORSE FOUNDATION**

**EQUINE RESEARCH PROGRAM**

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