

**Colorado State University** (\$69,503.00)

*“Focal Adhesion Molecules as Regulators of Maternal Recognition of Pregnancy in the Mare”*

This study is focused on determining how a mare recognizes that she is pregnant and does not start cycling again. Although we know the embryo moves back and forth in the uterus between days 10 and 15 of pregnancy and this contact with the uterine lining appears to prevent recycling, we still don't know how during that movement the embryo transmits a signal to the uterine lining at the cellular and molecular level. This study is aimed at answering that question and the results may aid us in intervening and preventing early embryonic loss in mares.

Investigator(s): Jason Bruemmer PhD and Gerrit Bouma PhD

**Michigan State University** (\$23,495.00)

*“Navicular Syndrome: Demonstrable Changes within the Vascular Cushion of the Rostral Frog: Deterioration of the CPL's (Chondropulvinale Ligaments) and AVC's (Arteriovenous Complexes)”*

Navicular syndrome has long been a crippling lameness affecting many Quarter Horses. Most research has focused on the navicular bone and its associated ligaments. This research lab has found evidence that other regions of the foot in horses with navicular syndrome are underdeveloped do to a lack of stimulation. This study is aimed at examining the tissues within the heel beneath the navicular apparatus as certain support ligaments (chondropulvinale ligament-CPLs) and their blood supply between the deep digital flexor tendon and the lateral cartilage are damaged in the very early stages of the disease. They believe these changes occur prior to other changes of the navicular bone and associated ligaments. This study will examine this region histologically and begin to correlate the changes within the CPLs of normal and affected horses.

Investigator(s): Robert Bowker VMD, PhD, Diane Isbell DVM and Debra Taylor DVM

**Purdue University** (\$40,878.00)

*“Identification of Aeroallergens Associated with Recurrent Airway Obstruction using Immunoproteomics”*

Recurrent obstructive airway disease is a chronic respiratory disease similar to asthma in people. It is frequently occurs in adult horses and is believed to be an allergic reaction to inhaled particles in mold found in hay or barns. This study will use a new molecular method called immunoproteomics to measure the antibodies in lung mucus from

affected horses and dust samples to identify the specific fungi that are causing the disease.

Investigator(s): Laurent Couetil DVM, PhD, Catherine Aime PhD, Harm HogenEsch DVM, PhD and Frank Rosenthal PhD

**Texas A&M AgriLife Research (\$19,894.00)**

*“Age-Related Effects on Markers of Inflammation and Cartilage Metabolism in Response to an Intra-Articular Lipopolysaccharide Challenge”*

Repeated joint trauma and stress that young horses experience during training can result in excessive production of joint enzymes that breakdown cartilage and can eventually lead to the development of osteoarthritis that may lead to early retirement. This study will determine age-related effects of joint inflammation and cartilage damage by measuring specific enzyme markers found within joint synovial fluid of horses following induction of inflammation.

Investigator(s): Jessica Lucia – Young Investigator

**Texas A&M AgriLife Research (\$27,044.00)**

*“Discovery of Genomic Copy Number Variants in Equine Cryptorchidism”*

Cryptorchidism is a failure of one or both testicles to descend into the scrotum. It affects 2 to 8% of male foals with the highest incidence in QHs followed by Percherons, American Saddlebreds and ponies. The condition may affect fertility and is associated with increased costs and health risks due to the surgery needed to remove the undescended testicle. Cryptorchidism is a heritable condition in some mammals but has never been proven in horses. The proposed research builds upon recent discoveries in humans showing that genomic copy number variants (CNVs) are associated with Cryptorchidism. The researchers hypothesize that CNVs are also involved in equine Cryptorchidism. This study will examine 10 candidate genes in samples from 40 Cryptorchid horses to determine if the gene can be identified in horses.

Investigator(s): Terje Raudsepp PhD, Carolyn Arnold DVM, Bhanu Chowdhary PhD and Dickson Varner DVM

**University of Kentucky Research Foundation (\$37,679.00)**

*“Molecular Diagnostic Assays for the Detection and Control of Contagious Equine Metritis”*

Contagious Equine Metritis is a highly contagious venereal disease of horses that causes uterine inflammation, infertility and abortion in mares. Since there is no vaccine available, the disease is controlled by diagnostic testing, quarantine and antibiotic treatment of affected horses. The problem is that many positive horses are missed because current diagnostic protocols are cumbersome and therefore, some positive horses are missed. The goal of this study is to develop highly sensitive and easily conducted diagnostics assays to improve the identification of positive horses so they can be treated.

Investigator(s): Sergey Artiushin PhD and Udeni Balasuriya PhD

**University of Kentucky Research Foundation (\$44,847.00)**

*“Suppression of Equine Type-1 Interferon Response by Equine Herpesvirus-1”*

Recent research funded by the Foundation has found that one of the ways Equine Herpes Virus-1 overcomes a horse's immune system and gains entry into the horse's body is by suppressing the horse's interferon response which is one of the horse's first lines of defense against viral infections. This study will focus on determining which segment of the interferon response is suppressed and will aid us in finding ways to overcome that suppression and protect our horses against respiratory infection, abortion and neurological disease caused by EHV-1.

Investigator(s): Thomas Chambers PhD and David Horohov PhD

**University of Minnesota (\$34,640.00)**

*"Optimizing Diagnostic Testing for Immune Mediated Myositis in Quarter Horses"*

The Foundation's support of genetic research has resulted in the development of genetic tests for Polysaccharide Storage Myopathy (PSSM), Glycogen Branching Enzyme Deficiency (GBED), Malignant Hyperthermia (MH) and Hyperkalemic Periodic Paralysis (HYPP), yet we have not developed a test for Immune Mediated Myositis, which appears to be a heritable muscle inflammation disease that causes severe wasting of the topline muscles in QHs, especially cutting horses. This study is aimed at identifying the genes that predispose horses to this disease and to develop a diagnostic test to identify them.

Investigator(s): Stephanie Valberg DVM, PhD, James Mickelson PhD and Carrie Finno DVM, PhD

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

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