

COLIC

Grayson-Jockey Club Research Archives

Equine colic is an unfortunately common condition that affects horses of all ages, breeds, and disciplines. This condition refers to any sort of abdominal pain in horses, and while in some cases it may be so mild that you don't even notice, a severe case could be deadly. In fact, it's one of the leading causes of equine death, after old age.



Grayson is proud to have funded the following projects to find better treatment for this dangerous malady.

Effect of NSAIDs on Anion Transport in the Equine Colon

University of Florida, *Principal Investigator: David Freeman*

CO-PIs: Anje Bauck, Sadavisan Vidyasagar, Guy D. Lester, Ruethaiwan Vinijkumthorn, Jami Claire

This proposal was designed to improve management of horses with right dorsal colitis, an insidious life-threatening form of colic for which all horses on phenylbutazone are at risk.

Year:2020 TOTAL - \$25,149

Non-Invasive Evaluation of Host-Microbiota Interactions

Texas A&M University, *Principal Investigator: Canaan Whitfield-Cargile*

CO-PIs: Michelle Coleman, Noah Cohen, Ivan Ivanov, Ana Chamoun Emanuelli, Robert Chapkin

The aim of this study was to develop a non-invasive platform to serve as a diagnostic test for gastrointestinal inflammation prior to severe disease and to reveal how bacteria in the gut influence horse health.

Years: 2019-2020 TOTAL - \$92,570

Ethyl Pyruvate Improves Survival In Large Colon Volvulus

Michigan State University, *Principal Investigator: Susan J. Holcombe*

Co-PIs: Lorraine Sordillo; Eric Schroeder (OH State); Peter Morreseay (Rood & Riddle);

Callie A. Fogle (NC State); Carrie Jacobs & Louise Southwood Parente (U of PA)

This study proposed to demonstrate the effectiveness of ethyl pyruvate to decrease intestinal damage and improve survival in horses with large colon volvulus.

Year: 2017 TOTAL - \$66,184

Flunixin or Firocoxib in Postoperative Colic Patients

North Carolina State University

Principal Investigator: Anthony Blikslager

Co-PIs: Jennifer Davis; Callie Fogle; Leandi Kruger; Ashwini Poopal; Vanessa Cook (MI State UN);

Louise Southwood (UN of PA); Bettina Wagner (Cornell)

The purpose of this project was to provide an evidence-based approach to the optimal treatment of horses with small intestinal strangulating obstruction in order to reduce endotoxemia and increase survival.

Years: 2015-2016 TOTAL - \$122,601

Colonic Pathophysiology in Horses Administered Phenylbutazone

Louisiana State University

Principal Investigator: Rebecca S. McConnico

Co-PI: Rustin Moore

Years: 2002-2003 TOTAL - \$68,261

The Role of Volatile Fatty Acids and Calcium in Gastric Ulcer Disease

University of Tennessee

Principal Investigator: Frank M. Andrews

Co-PIs: Jennifer Nadeau; Steve Patton

Years: 2001-2002 TOTAL - \$68,825

Excitatory & Inhibitory Neuromuscular Transmission in the Horse Cecum

Washington State University

Principal Investigator: David A. Schneider

Co-PI: Gilbert Burnes

Years: 2001-2002 TOTAL - \$52,203

Effect of Diet and Fluid Administration on Colonic Ingesta

Marion duPont Scott Equine Medical Center Virginia-Tech

Principal Investigator: Nathaniel A White II

Co-PIs: Marco Lopes; Mark Crisman

Year: 2000 TOTAL - \$35,037

Pathogenesis of Acid Injury in the Non-Glandular Region of the Equine Stomach

University of Tennessee

Principal Investigator: Frank M. Andrews

Co-PI: Steve Patton

Years: 1999-2000 TOTAL - \$37,110

INFECTIOUS DISEASE

Grayson-Jockey Club Research Archives



All the types of infectious diseases that affect horses are too numerous to name. Through research proper treatments are found, as well as determining how they are transmitted and how to contain outbreaks in the horse population.

Grayson is proud to have funded the following infectious disease projects:

[Development of a Vectored Vaccine to Equine Rotavirus A](#)

Louisiana State University, *Principal Investigator: Mariano Carossino*

CO-PIs: Udeni B. R. Balasuriya, Konstantin G. Kousoulas, Frank M. Andrews, Come Thieulent, M. Vissani & V. Parreño (Natl de Tecn Agro), M.Barrandeguy (U Salvadore)

A novel viral vectored vaccine against equine rotavirus A G3 and G14, the leading cause of foal diarrhea, will be designed and evaluated in mares and a neonatal mouse model as proof-of-concept.

Year: 2022 TOTAL -\$ 86,948

[Novel Strangles Vaccine Using CD40-Targeted Delivery](#)

Texas A&M University, *Principal Investigator: Luc Berghman*

CO-PIs: Jill Wright Skrobarczyk, Noah Cohen, Angela Bordin

This project will be targeting bacterial components of *Streptococcus equi* spp. *equi* to the horse's immune surveillance cells (the APCs) that will result in a fast and strong immune response that will protect against strangles.

Year: 2022 TOTAL -\$ 69,630

[Immunogenicity in Foals of an mRNA Vaccine For R. Equi](#)

Texas A&M University, *Principal Investigator: Noah Cohen*

CO-PIs: Angela I. Bordin, Rebecca Legere, Jeroen Pollet (Baylor), Christina Poveda (Baylor)

This study proposes to develop an mRNA vaccine delivered by inhalation to protect foals against pneumonia caused by *Rhodococcus equi*.

Year: 2022 TOTAL \$75,807

[Environmental Origins of Equine Antimicrobial Resistance](#)

University of Georgia, *Principal Investigator: Brandy Burgess*

CO-PIs: Erin M. Beasley, Paul S. Morley, Noelle R. Noyes

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.

Years: 2021-2022 TOTAL - \$ 50,694

New Generation Equine Influenza Bivalent VLP Vaccine

University of Kentucky, *Principal Investigator: Thomas Chambers*

CO-PIs: David W. Horohov, Stephanie Reedy, J Daly - University of Nottingham UK, A Cullinane - Irish Equine Center, Ireland, Celia Abolnik, University of Pretoria - South Africa, M O'Kennedy -CSIR Bioscience South Africa, A Mabetha - CSIR Bioscience South Africa

We propose 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.

Years: 2021-2022 TOTAL - \$ 115,358

Passive Immunization of Foals With RNA-Ab Against R equi

Baylor College of Medicine, *Principal Investigator: Jeroen Pollet*

Co-PIs: Angela Bordin, Ellen Ruth Morris, Philip Felgner, UC DAVIS

With the use of inhalation therapy, this project 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.

Year: 2021 TOTAL - \$88,616

Developing an Improved Serological Test for Strangles

Texas A&M University, *Principal Investigator: Noah Cohen*

Co-PIs: Angela Bordin, Ellen Ruth Morris, Philip Felgner, UC DAVIS

The purpose of this project is to develop a more accurate blood test to identify horses infected with the bacterium that causes strangles to improve control and prevention of strangles.

Year: 2021 TOTAL - \$95,369

Expanding Knowledge of the Micro-Biome in Mares & Foals

University of Kentucky

This project is to provide sampling and analysis including PCR, genomic and microbiology of the micro-biome in mares and foals.

Year 2021 TOTAL - \$10,000

Improving Fungal Diagnosis In Horses

Cornell University, *Principal Investigator: Soon Cheong*

Co-PIs: Craig Altier, Mariana Diel de Amorim, Laura Goodman, Patrick Craine

The goal of this project is development of 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.

Years: 2020-2021 TOTAL - \$118,651

Dynamics of Vitamin D in Hospital Foals

The Ohio State University, *Principal Investigator: Ramiro Toribio*

Co-PIs: Teresa Burns, Laura Dunbar, Katarzyna Dembek (IA State), Stephen Reed (Rood & Riddle), Nathan Slovis (Hagyard), Ahmed Kamr

Critically ill foals often have low blood levels of vitamin D; the goal is to investigate if their levels over time are associated with the severity of their disease and mortality.

Years: 2020-2021 TOTAL - \$133,076

Inhibiting EHV-1 with Anti-Inflammatory Drugs

University of North Carolina Wilmington, *Principal Investigator: Arthur Frampton*

Co-PIs: Jacob Kazenelson, Jeanette Black

This study uses 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).

Years: 2020-2021 TOTAL - \$79,200

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Passive Immunization of Foals with RNA-Ab Against R equi

Baylor College of Medicine, *Principal Investigator: Jeroen Pollet*

CO-PIs: Amadeo Biter, Cristina Poveda, Texas A & M: Noah Cohen, Luc Berghman, Angela Bordin, Raquel Rubia Rech

This project reviewed delivery of the genetic code for a protective antibody against *Rhodococcus equi* into the lung cells of newborn foals by inhalation therapy to rapidly protect them against infection.

Year: 2020 TOTAL - \$77,022

Anti-PNAG Plasma for Preventing R. equi Foal Pneumonia

Texas A&M University, *Principal Investigator: Noah Cohen*

CO-PIs: Angela Bordin, Susanne Kahn

Transfusion of plasma is the only licensed product for preventing *Rhodococcus equi* pneumonia, and this study was designed to demonstrate development of a plasma product superior to that available currently.

Year: 2020 TOTAL - \$90,268

Uncovering The Blood B Cell Immune Response To EHV-1

Cornell University, *Principal Investigator: Tracy Stokol*

Co-PIs: John Parker, Charles Danko, Iwijn De Vlaeminck, Maria Julia Felipe, Mridusmita Saikia

The purpose of this study was to identify changes in B cell immunity after EHV-1 vaccination by sequencing individual blood B cells and generate a sequencing database to uncover new antibodies against EHV-1.

Year: 2019 TOTAL - \$101,462

Investigating Metabolic Stress And Viral Hepatitis

Cornell University, *Principal Investigator: Sabine Mann*

Co-PIs: Thomas Divers, Joseph Wakshlag, Tracy Stokol, Josh Ramsay (WA ST), Stephen Reed (Rood and Riddle), Drs. Yarbrough/Nordberg (McGaughey & Pletcher), Dr. Cheney (Northrop)

This project studied metabolic pathways and hepatic viral infection to find a relationship with maladaptation to training syndrome/high Gamma-glutamyl transferase to help improve the health and performance of race horses.

Year: 2018-2019 TOTAL - \$117,333

Host Factors Involved In EHM Pathogenesis And Latency

Michigan State University, *Principal Investigator: Gisela Soboll Hussey*

Co-PIs: Lutz Goehring, Patty Weber, Dr. Luyendyk, Lila Zarski, Jessica Prenni (CSU)

This study was for the development of tools to protect horses from EHV-1 infection, compare the immune responses in old and young horses to identify the mechanisms causing clinical EHM.

Year: 2018-2019 TOTAL - \$125,998

AMPK Agonists And Insulin Dysregulation In Horses

The Ohio State University, *Principal Investigator: Teresa Burns*

Co-PIs: James Belknap, Laura Dunbar, Mauria Watts

This project directly impacts the treatment of equine metabolic syndrome by assessing the efficacy of two drugs, metformin and acetylsalicylic acid, in the treatment of equine insulin dysregulation.

Year: 2018-2019 TOTAL – \$112,034

Host-Directed Control Of R. Equi Foal Pneumonia Part II

Texas A & M University, *Principal Investigator: Angela Bordin*

Co-PIs: Londa Berghaus, Courtney Brake, Magnus Hook, Kelsey Hart and Glennon Mays (U of GA),

This was the second phase of a 4 year project that began in 2016, and proposed the use an inhaled product applied directly into the lungs to increase immune responses to protect foals against *Rhodococcus equi*, a bacterium that causes severe pneumonia in foals.

Year: 2018-2019 TOTAL - \$229,034

Epidemiology Of Drug-Resistant R. Equi At Horse Farms

University of Georgia, *Principal Investigator: Kelsey Hart*

Co-PIs: Laura Huber, Noah Cohen (Texas A&M), Nathan Slovis (Hagyard Equine Medical)

This study was set up to determine if isolates of *Rhodococcus equi* highly resistant to antibiotics are widespread at horse breeding farms in Kentucky.

Year: 2018-2019 TOTAL - \$117,990

Cytotoxic T-Cell Immunity to Equine Herpesvirus Type 1

Cornell University, *Principal Investigator: Doug Antczak*

Co-PIs: Rebecca T. Ingram; Julia Kydd; Brian Rudd; Donald Miller;

Nikolaus Osterrieder, (Freie U Berlin); Gisela Sobel Hussey, (MI ST)

The goal of this research was to develop critically needed knowledge about how the horse immune system responds to equine herpesvirus type1 vaccination and infection.

Years: 2017- 2018 TOTAL - \$133,103

Anticoagulants As Thromboprophylaxis For EHV-1 Infection

Cornell University, *Principal Investigator: Tracy Stokol*

Co-PIs: Priscila Serpa; Marjory Brooks; Thomas Divers; SallyAnne Ness; Gail Babcock;

Mark Papich (NC State) This study was set up to block blood clotting with drug to attempt to prevent abortion and neurological disease from occurring in horses infected with EHV-1.

Year: 2017 TOTAL - \$116,818

EHV-1 And Latency

Ludwig Maximilians University, *Principal Investigator: Lutz S. Goehring*

Co-PIs: Carlos E Medina Torres; Kaspar Matiasek; Josh Slater; Ana Maria Ulloa; Gisela Soboll-Hussey (MSU)

Years: 2016-2017 TOTAL - \$107,862

This project studied about EHV–1 latency locations; about prevalence in horse populations, and if different latency stages exist in hopes of finding 'stages' which would allow interventional strategies.

A Novel Vaccine Against Equine Strangles

Texas A & M University, *Principal Investigator: Noah Cohen*

Co-PIs: Angela I. Bordin; Michelle C. Coleman; Courtney Brake (U of GA); Gerald B. Pier & Colette Cywes–Bentley (Harvard)

Years: 2016-2017 TOTAL - \$119,155

A study of a concept for a vaccine to protect horses against the disease known as Strangles with good preliminary data suggesting this vaccine will be safe and effective.

Host-Directed Control Of R. Equi Foal Pneumonia Part I

Texas A & M University, *Principal Investigator: Angela Bordin*

Co-PIs: Noah Cohen; Steve Giguere; Londa Berghaus; Magnus Hook; Courtney Brake & Glennon Mays (U of GA)

This project is a 4 year grant completed in two phases which preposed the use an inhaled product applied directly into the lungs to increase immune responses to protect foals against Rhodococcus equi, a bacterium that causes severe pneumonia in foals.

Years: 2016-2017 TOTAL - \$189,189

Fitness And Persistence And Of Drug Resistant R. Equi

University of Georgia, *Principal Investigator: Steeve Giguere*

Co-PIs: Noah Cohen (Texas A&M); Jose Vazquez–Boland (U of Edinburgh)

The purpose of this study was to determine if drug-resistant Rhodococcus equi can persist in the environment and if resistant strains were more likely to cause disease than susceptible strains.

Years: 2016-2017 TOTAL - \$95,498

IGGS(T) Antibodies Identify Foals at Risk for R. Equi

University of Kentucky, *Principal Investigator: David Horohov*

This project involves the validation of a new test for Rhodococcus equi infections in foal.

Year: 2016 TOTAL - \$62,407

Validation of Stall-Side Strangles Diagnosis Using Lamp

University of Pennsylvania, *Principal Investigator: Ashley Boyle*

The aim was to validate a stall–side test that could be used for fast, sensitive, accurate, and cost efficient diagnosis of strangles (*S. equi*) carriers (a highly infectious equine respiratory disease).

[LAMP means loop– mediated isothermal nucleic acid amplification.]

Year: 2016 TOTAL - \$22,330

Steroid / Neurosteroid Dynamics in Critically Ill Foals

The Ohio State University, *Principal Investigator: Ramiro Toribio*

Co-PIs: Katarzyna Dembek; Stephen Reed (Rood & Riddle); Nathan Slovis (Hagyard); Kelsey Hart (UN of GA)

This study proposed to elucidate the importance of stress hormones as well as hormones that affect neurological function in the development and progression of diseases of newborn foals.

Years: 2015-2016 TOTAL - \$ 101,518

A Guinea Pig Model of Rhodococcus equi Pneumonia

Texas A&M University, *Principal Investigator: Angela Bordin*

Co-PIs: Noah Cohen; David McMurray; Jeffrey Cirillo; Canaan Whitfield-Cargile; Courtney Brake; Ellen Alexander

This novel studied was to determine is a guinea pig model of R. equi pneumonia would help to better understand the disease in foals, and evaluate novel approaches for controlling and preventing R. equi pneumonia.

Years: 2015-2016 TOTAL - \$21,221

Inhibition Of Type-I Interferon Response By EHV-1

University of Kentucky, *Principal Investigator: Thomas Chambers*

Co-PIS: David Horohov; Udeni Balasuriya; Fatai Oladunni; Stephanie Reedy

This project explored the mechanism of equine herpesvirus-1 blockage of an immune defense pathway and its relationship to equine herpesviral myeloencephalopathy, a serious condition affecting horses.

Years: 2015-2016 TOTAL - \$133,931

MicroRNAs as Novel Biomarkers or Insulin Resistance

Colorado State University, *Principal Investigator: Tanja Hess*

Co-PIs: Jason Bruemmer; Bridget McIntosh; Rebecca Splan (VA Tech)

In an effort to improve the diagnosis, management and treatment of the many horses and ponies who suffer from metabolic disorders related to insulin dysregulation, an investigation of the ability of novel, small, gene-regulating molecules called microRNAs were used as convenient and accurate biomarkers for equine insulin resistance.

Years: 2015 TOTAL - \$35,008

Role of Biofilm in Infectious Endometritis in the Horse

Colorado State University, *Principal Investigator: Ryan Ferris*

Co-PIs: Brad Borlee; Grace Borlee

This project was designed to obtain a better understanding of the role of bacterial biofilm in conferring protection to the host immune system and antibiotics is crucial to development of therapeutic protocols for treatment of endometritis in mares. (Biofilm: A matrix which provides a 'protective' blanket' for the wall of the uterus.)

Years: 2015 TOTAL - \$22,485

Etiology of IAD and Performance in Racehorses

Purdue University, *Principal Investigator: Laurent L. Couetil*

Co-PIs: Kathleen Ivester; Sandra Taylor; George Moore; Rose Raskin; Gena Hammac; Jyothi Thimmapuram; Donna Griffey; Anisa Dunham

Years: 2014-2015 TOTAL - \$98,811

Anhidrosis in Foals Treated With Macrolides

University of Florida, *Principal Investigator: Robert MacKay*

Co-PIs: Chris Sanchez, Martha Mallicote, Amy Stieler, James Burrow, Julia Conway

This project was set up to do a simple test to show that impaired sweating is the cause of overheating not only in foals given erythromycin but also in some foals treated with azithromycin, clarithromycin, and even the exciting new antibiotic, gamithromycin.

Years: 2014-2015 TOTAL - \$142,533

Platelet Inhibitors Potential Antithrombotics for E

Cornell University, *Principal Investigator: Tracy Stokol*

Co-PIs: Marjory Brooks; Bettina Wagner; Gerlinde Van de Walle; Thomas Divers; Sally Ness; Christine DeLeonardis

This study researched for evidence of platelet and coagulation activation during the acute phase of EHV1 infection and that horses demonstrating more profound activation response would have more severe fever. Part of the study was to compare the inhibitory effects of 4 antiplatelet drugs on EHV1 induced platelet activation.

Year: 2014 TOTAL - \$63,368

R. equi Pneumonia: Can a Novel Vaccine Protect Foals?

Texas A&M University, *Principal Investigator: Noah Cohen*

Co-PIs: Suresh Pillai; Michelle Coleman; Joana Rocha; Courtney Brake; Waithaka Mwangi; Robert Alaniz; Steeve Giguère (UN of GA)

This proposal was set up to evaluate the ability of a vaccine to protect foals against infection with R. equi as an essential next step in our efforts to develop a vaccine against R. equi. and subsequently other infections such as Strep equi, the causative agent of strangles.

Year: 2014 TOTAL - \$74,067

Assessment of a Rhodococcus Equi Vaccine in Foals.

University of Edinburgh, *Principal Investigator: Jose Vazquez-Boland*

Co-PIs: Mariela Scotti; Iain MacArthur; Macarena Sanz; & David Horohov (UN of KY); John Prescott (UN of Guelph)

This study was to determine if protection against this bacterium Rhodococcus equi could be achieved by targeting it with a vaccine to prevent infection when still at its initial "colonization" stages in the airways before the bacteria become established in the lung.

Year: 2014 TOTAL-\$62,106

Evaluation of a Rapid Test for Salmonella

Colorado State University, *Principal Investigator: Paul Morley*

Co-PIs: Nathan Slovis; Brandy Burgess; Kristy Pabilonia; Christina Weller; Justine Elam (Hagyard)

Years: 2013-2014 TOTAL - \$57,424

Development of Alternative Models to Study EHM

Michigan State University, *Principal Investigator: Gisela Soboll Hussey*

Co-PIs: Lutz Goehring; Andras Komaromy; Anthony Pease; Stephen Hussey; J. Prenni & C. Broccardo (CO State); Nik Osterrieder, Freihe (UN Berlin); Josh Slater (Royal Vet LONDON)

Years: 2013-2014 TOTAL - \$129,267

Molecular Determinants of EHV-1 Fusion and Spread

University of North Carolina Wilmington, *Principal Investigator: Arthur Frampton*

Co-PI: Jekaterina Barsova

Years: 2013-2014 TOTAL - \$78,500

Gallium: An Alternative to Macrolides Against R. equi EPM

Texas A&M University, *Principal Investigator: Noah Cohen*

Co-PIs: M. Keith Chaffin; Nathan Slovis- (Hagyard Equine Med.); Steeve Giguère (UN of GA)

Year: 2013 TOTAL - \$40,100

The Interaction Between Anthelmintic Treatment and Vacci EPM

University of Kentucky, *Principal Investigator: Martin Nielsen*

Co-PIs: Thomas Chambers; David Horohov; Stephanie Reedy; Holli Gravatte; Alejandra Betancourt; Jennifer Bellaw; Stine Jacobsen

Year: 2013 TOTAL - \$60,466

Liposomal Gentamicin for the Treatment of R. Equi

University of Georgia, *Principal Investigator: Steeve Giguère*

Co-PIs: Alexandra Burton; Robert Arnold

Years: 2012-2013 TOTAL - \$92,320

Vitamin D and Innate Immunity in the Horse

University of Georgia, *Principal Investigator: Mary Hondalus*

Co-PIs: Steeve Giguère; Kimberly Goldbach

Year: 2012 TOTAL - \$49,942

Do NSAIDs Affect the Immune Response of Horses to Vaccination?

University of Kentucky, *Principal Investigator: David Horohov*

Co-PIs: Thomas Chambers; Allen Page; Whitney Zoll

Year: 2012 TOTAL - \$54,776

Determinants of Immune Protection Against Babesia Equi

Washington State University, *Principal Investigator: Robert Mealey*

Co-PI: Donald Knowles

Years: 2011-2012 TOTAL - \$150,000

Molecular Characterization of EHV-1

University of Kentucky, *Principal Investigator: Udeni Balasuriya*

Co-PIs: R. Frank Cook; Yanqiu Li; Pamela Henney; Peter Timoney; Kathryn Smith

Years: 2010-2011 TOTAL - \$95,361

Rapid PCR Diagnosis of Equine Botulism

University of Pennsylvania, *Principal Investigator: Raymond Sweeney*

Co-PIs: Amy Johnson; Robert Whitlock; Susan McAdams

Years: 2010-2011 TOTAL - \$33,665

Toxins TCD A, B of C Difficile

University of Kentucky, *Principal Investigator: Sergey Artiushin*

Co-PIs: John Timoney; Sridhar Velineni; Sridhar Velineni

Year: 2010 TOTAL - \$45,855

Prevention of EHV-1 Myeloencephalitis

Oklahoma State University, *Principal Investigator: Lara Maxwell*

Co-PIs: Richard Eberle; Jerry Ritchey; Charles MacAllister; Dianne McFarlane

Years: 2009-2010 TOTAL - \$104,431

Cell Signaling/Receptor Molecules for EHV-1

University of North Carolina Wilmington, *Principal Investigator: Arthur Frampton*

Years: 2009-2010 TOTAL - \$77,578

Botulism, Real-Time PCR Test

University of Pennsylvania, *Principal Investigator: Robert Whitlock*

Co-PIs: Raymond Sweeney; Susan McAdams; Amy Johnson

Year: 2009 TOTAL - \$21,600

Development of an Equine In Vitro Respiratory Model to Study Virus-Host Interactions

Colorado State University, *Principal Investigator: Gisela Soboll*

Co-PIs: Gabriele Landolt; D. Paul Lunn

Years: 2008-2009 TOTAL - \$97,480

The Neurologic EHV-1 Marker: Correlation or Causation?

Cornell University, *Principal Investigator: Nikolaus Osterrieder*

Years: 2008-2009 TOTAL - \$97,534

Neuropathogenesis of EHV-1 Infection in Horses

Colorado State University, *Principal Investigator: Lutz S. Goehring*

Co-PIs: D. Paul Lunn; Alan Schenkel

Years: 2008-2009 TOTAL - \$92,231

R. Equi Pneumonia: Does the Magnitude of Airborne Exposure Predict Disease Development?

Texas A & M University, *Principal Investigator: Noah Cohen*

Co-PIs: Craig Carter (UN of KY); Morgan Scott; M. Keith Chaffin

Years: 2008-2009 TOTAL - \$137,798

Molecular Epidemiology of EAV: 2006 Occurrence in the United States

University of Kentucky, *Principal Investigator: Udeni Balasuriya*

Co-PI: Peter Timoney

Year: 2008 TOTAL - \$31,967

Efficacy of Valacyclovir Against Neuropathogenic EHV-1

Oklahoma State University, *Principal Investigator: Lara Maxwell*

Co-PIs: Brad Bentz; Charles MacAllister; Richard Eberle; Jerry Ritchey

Years: 2007-2008 TOTAL - \$74,375

Control of Rhodococcus equi pneumonia Using Gallium

Texas A & M University, *Principal Investigator: M. Keith Chaffin*

Co-PIs: Noah Cohen; Ronald J. Martens

Years: 2007-2008 TOTAL - \$153,286

Enhancing Interferon Gamma Expression in Foals

University of Kentucky, *Principal Investigator: David Horohov*

Co-PIs: C. Meranmt; C. Breathnach

Years: 2007-2008 TOTAL - \$154,821

Tetramers for Precise Measurement of Immunity to EHV-1

Colorado State University, *Principal Investigator: D. Paul Lunn*

Co-PIs: Gisela Soboll; Julia Kydd; Nick Davis-Poynter ; Klaus Osterreider

Years: 2006-2007 TOTAL - \$116,641

Biology of Neuropathogenic Strains of Equine Herpesvirus-1

University of Kentucky, *Principal Investigator: George Allen*

Co-PI: David Azbill

Years: 2006-2007 TOTAL - \$60,000

Rapid Diagnostic Assay for Streptococcus Equi

University of Kentucky, *Principal Investigator: John Timoney*

Years: 2006-2007 TOTAL - \$88,198

Detection of Antibodies to EAV by Microsphere Immunoassay

University of Kentucky, *Principal Investigator: Udeni B. R. Balasuriya*

Co-PI: Peter Timoney

Year: 2006 TOTAL - \$24,702

Sequencing the Rhodococcus Equi Genome

University of Bristol, *Principal Investigator: Jose Vazquez-Boland*

Co-PIs: John Prescott; Julian Parkhill; Wim Meijer; Julian Davies; Shinji Tkaj; Iain Sutcliffe

Years: 2005-2006 TOTAL - \$50,000

Evaluation of a Rapid MRSA Test for Horses

University of Guelph, *Principal Investigator: Scott Weese*

Years: 2005-2006 TOTAL - \$26,750

Immune Response of Young Foals Exposed to Rhodococcus

University of Kentucky, *Principal Investigator: David Horohov*

Co-PI: Duane Chappell

Years: 2005-2006 TOTAL - \$145,382

Gallium Therapy to Control Rhodococcus Equi Pneumonia

Texas A & M University, *Principal Investigator: Ronald Martens (Visiting Professor)*

Co-PIs: Noah Cohen; M. Keith Chaffin; Lawrence Bernstein

Year: 2005 TOTAL - \$49,796

New Tools for Detection of Leptospira in Horses

University of Kentucky, *Principal Investigator: Sergey Artiushin*

Co-PI: John Timoney,

Year: 2005 TOTAL - \$34,892

EHV-1 Vaccines for Generation of Cytotoxic Lymphocytes

Colorado State University, *Principal Investigator: D. Paul Lunn*

Co-PI: S. Marulasiddappa

Years: 2004-2005 TOTAL - \$95,650

Vaccine Potential of a Riboflavin-Requiring Strain of R. Equi

Harvard School, *Principal Investigator: Mary Hondalus*

Co-PI: Hugh Townsend

Years: 2004-2005 TOTAL - \$116,757

Are Mares a Source of Rhodococcus Equi for Their Foals?

Texas A & M University, *Principal Investigator: Noah Cohen*

Co-PIs: Nathan Slovis; George Mundy

Years: 2004-2005 TOTAL - \$87,013

Inhibition of Endotoxin with Adenosine Receptor Agonists

University of Georgia, *Principal Investigator: Thomas Murray*

Co-PIs: James Moore; Michel Vandenplas

Years: 2004-2005 TOTAL - \$77,462

Genetic Determinants of Equine Herpesvirus-1 CNS Disease

University of Kentucky, *Principal Investigator: George Allen*

Co-PI: Nick Davis-Poynter

Years: 2004-2005 TOTAL - \$60,000

Production of Antibodies to Selected Equine Cytokines

University of Kentucky, *Principal Investigator: David Horohov*

Years: 2004-2005 TOTAL - \$79,100

Systemically Immunogenic Surface & Secreted Proteins of S. Equi

University of Kentucky, *Principal Investigator: John Timoney*

Co-PI: Sergey Artiushin

Year: 2004 TOTAL - \$42,450

Molecular Epidemiology & Evolution of Sarcocystis Neurona, Agent of EPM

Michigan State University, *Principal Investigator: Linda Susan Mansfield*

Co-PIs: Thomas S. Whittam; A. Mahdi Saeed

Years: 2003-2004 TOTAL - \$52,455

IL-12 as an Adjuvant in a DNA Vaccine for Rhodococcal Pneumonia

Washington State University, *Principal Investigator: Diana Stone*

Co-PI: Steve Hines; Travis McGuire; Melissa Hines

Years: 2003-2004 TOTAL - \$91,063

Response of Foals to Vaccination Against West Nile Virus

University of California – Davis, *Principal Investigator: W. David Wilson*

Co-PI: Judy E. Mihalyi

Year: 2003 TOTAL - \$21,281

Mucosally Immunogenic Surface Expressed Proteins of Streptococcus Equi

University of Kentucky, *Principal Investigator: John Timoney*

Co-PIs: John Walker; Sergey Artiushin

Year: 2003 TOTAL - \$46,500

Respiratory Immune Response of Young Foals

Louisiana State University, *Principal Investigator: David W. Horohov*

Co-PI: Dale Paccamonti

Years: 2002-2003 TOTAL - \$129,930

Equine Genes, Microarrays and Responses to Gram-Positive Toxins

University of Georgia, *Principal Investigator: Michel Vandenplas*

Co-PIs: L. H. Pratt; M. M. Cordonier-Pratt; J. N. Moore; A. Gingle; D. J. Hurley

Years: 2002-2003 TOTAL - \$76,000

Role of Streptococcus Bovis Exotoxins in Equine Laminitis

University of Missouri, *Principal Investigator: Philip Johnson*

Co-PIs: Andria Cogswell; Nat Messer; John Kreeger

Years: 2002-2003 TOTAL - \$98,150

Development of a Refined Equine Model for Equine Protozoal Myeloencephalitis

The Ohio State University, *Principal Investigator: William Saville*

Co-PIs: R. W. Stich; S. M. Reed; M. J. Oglesbee

Years: 2001-2002 TOTAL - \$101,384

Identification of Immunogenic Proteins Unique to Streptococcus Equi

University of Kentucky, *Principal Investigator: John Timoney*

Co-PI: John Walker

Years: 2001-2002 TOTAL - \$90,250

Practical Equine DNA Vaccination: Mucosal Vectors and the "Prime/ Boost" Strategy

University of Wisconsin, *Principal Investigator: D. Paul Lunn*

Co-PIs: Chris Olsen; John Timoney; David Watkins

Years: 2001-2002 TOTAL - \$89,650

Role of DI Particles in Persistent EAV Infection of Stallions

University of California – Davis, *Principal Investigator: N. James MacLachlan*

Co-PIs: Udeni Balasuriya; Jodi Hedges

Years: 2000-2001 TOTAL - \$67,101

Development and Testing of Genetic Vaccines for Vesicular Stomatitis

Colorado State University, *Principal Investigator: Richard A. Bowen*

Years: 2000-2001 TOTAL - \$48,020

Development of BCG Expressing VapA as a Vaccine Against R. Equi

Harvard School, *Principal Investigator: Mary K. Hondalus*

Co-PIs: Barry Bloom; Mary Rose Paradis

Years: 2000-2001 TOTAL - \$101,630

Pathogenesis of Equine Protozoal Myeloencephalitis

Washington State University, *Principal Investigator: Debra Sellon*

Co-PIs: Donald Knowles; Carol Wyatt; Melissa Hines

Years: 2000-2001 TOTAL - \$104,976

Pathogenesis of Vesicular Stomatitis in Horses

University of Georgia, *Principal Investigator: Elizabeth Howerth*

Co-PIs: David Stallknecht; P.O.E. Mueller

Years: 1999-2000 TOTAL - \$57,405

Characterization of the Pyrogenic Mitogen of Streptococcus Equi

University of Kentucky, *Principal Investigator: John Timoney*

Co-PIs: Sergey Artiushin; Abhineet Sheoran

Years: 1999-2000 TOTAL - \$57,182

DNA Vaccination Against Rhodococcus Equi Pneumonia

University of Guelph, *Principal Investigator: J.F. Prescott*

Years: 1999-2000 TOTAL - \$65,200

Generation of Protective Immunity to Equine Herpes Viral Infection Using DNA

University of Wisconsin, *Principal Investigator: D. Paul Lunn*

Co-PI: Chris W. Olsen

Years: 1999-2000 TOTAL - \$79,817

LAMINITIS

Grayson-Jockey Club Research Archives

A disease where the tissues that attach the hoof to the underlying coffin bone become damaged and inflamed. It not only leads to loss of performance but is second only to colic as the biggest cause of premature death in horses. There are three “types” of laminitis:

Endocrine - generally occurs secondary to equine metabolic syndrome and pituitary pars intermedia dysfunction (PPID, equine Cushing’s disease).

Sepsis - develops following a systemic illness such as colitis, metritis, pneumonia, grain overload, etc.

Supporting-limb - develops after a musculoskeletal injury in the opposite limb, as the horse bears excessive weight on the supporting limb.



Grayson is proud to have funded the following projects in finding answers to Laminitis.

Understanding And Preventing Supporting Limb Laminitis

University of Pennsylvania, *Principal Investigator: Andrew Van Eps*

CO-PIs: H. Galantino-Homer, Julie Engiles, Darko Stefanovski, Matthew Ford, Jennifer Macklin, Lynne Cassimeris- Lehigh University, Teresa Burns - The Ohio State University, Mauria Watts- The Ohio State University

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.

Years: 2021-2022 TOTAL - \$ 148,181

AMPK Agonist Combination Therapy and ID in Horses

The Ohio State University, *Principal Investigator: Teresa Burns*

Co-PI: Laura K. Dunbar

By completing this work, this study was designed to characterize a combination therapy to improve equine insulin resistance that is administered orally and well tolerated.

Years: 2020-2021 TOTAL - 151,121

Endocrinopathic Laminitis: Pathophysiology and Treatment

The Ohio State University, *Principal Investigator: James Belknap*

Co-PIs: Teresa Burns, (Heads Lab); Mauria R. Watts; Andrew van Eps (UN of Queensland)

The purpose of this study was to determine if continuous digital hypothermia is effective and therefore indicated in the management of endocrinopathic laminitis, the most common form of the disease.

Years: 2017-2018 TOTAL - \$116,148

Prevention of Supporting Limb Laminitis

University of Queensland, *Principal Investigator: Andrew Van Eps*

Co-PIs: Dean Richardson (Cornell), James Belknap & Mauria Watts (Ohio State)

This study was set up to show the potential efficacy of a novel pneumatic boot to prevent lamellar changes leading to supporting limb laminitis and may provide an effective clinical preventive.

Years: 2015-2016 TOTAL - \$188,169

Events Affecting Laminar Adhesion in Equine Sepsis

The Ohio State University, *Principal Investigator: James Belknap*

Co-PI: Mauria Watts, Andrew Van Eps (UN of Queensland), Scott Napper (UN of Saskatchewan)

This project looked into providing targets for pharmaceutical therapies to either replace or augment continuous digital hypothermia.

Years: 2014-2015 TOTAL - \$165,391

Weight Bearing; Perfusion and Bioenergetics in Laminitis

University of Queensland, *Principal Investigator: Andrew Van Eps*

Co-PIs: Dean Richardson (Cornell), James Belknap & Mauria Watts (Ohio State)

This research was designed to confirm the cause of supporting limb laminitis and to test potential therapeutic interventions.

Years: 2014-2015 TOTAL - \$82,125

Laminar Signaling in Supporting Limb Laminitis

The Ohio State University, *Principal Investigator: James Belknap*

Co-PI: Samuel Black (UN of MA)

Years: 2012-2013 TOTAL - \$131,740

Targeting 5-HT in Equine Laminitis

University of Georgia, *Principal Investigator: Thomas Robertson*

Co-PIs: Benjamin Brainard; James Moore; Robert Arnold; John Peroni

Years: 2012-2013 TOTAL - \$50,292

Digital Hypothermia in Laminitis: Timing & Signaling

The Ohio State University, *Principal Investigator: James Belknap*

Co-PIs: Andrew van Eps; Mauria Watts

Years: 2011-2012 TOTAL - \$88,522

Lamellar Energy Failure in Supporting Limb Laminitis

The University of Queensland, *Principal Investigator: Andrew van Eps*

Co-PIs: Simon Collins; Christopher Pollitt; Dean Richardson (UN of PA)

Years: 2011-2012 TOTAL - \$81,060

In Vivo Gene Transfer for Laminitis

University of Pennsylvania, *Principal Investigator: Dean Richardson*
Co-PIs: Jeffrey Mason; Andrea Phillips; James Wilson
Years: 2010-2011 TOTAL - \$70,865

Endotoxemia as Predisposing Factor for Laminitis

University of Tennessee, *Principal Investigator: Nicholas Frank*
Year: 2010 TOTAL - \$41,490

Effect of Digital Hypothermia on Inflammatory Injury in Laminitis

The Ohio State University, *Principal Investigator: James Belknap*
Co-PI: Mauria Watts
Years: 2008-2009 TOTAL – \$82,109

Transcriptomics and Proteomics of Equine Laminitis

University of Pennsylvania, *Principal Investigator: Hannah Galantino-Homer*
Co-PIs: Neal Rubinstein; James Orsini; Chris Politt (UN of Queensland Australia)
Years: 2008-2009 TOTAL - \$137,269

Efficacy of Lidocaine in the Treatment of Equine Laminitis

The Ohio State University, *Principal Investigator: James Belknap*
Co-PI: Samuel J. Black
Years: 2007-2008 TOTAL - \$80,747

Levothyroxine as a Treatment for Insulin Resistance

University of Tennessee, *Principal Investigator: Nicholas Frank*
Years: 2007-2008 TOTAL - \$56,876

Leukocyte & Vascular Function in Endotoxemia & Laminitis

University of Georgia, *Principal Investigator: Thomas Robertson*
Co-PIs: David Hurley; John Peroni; Thomas Krunkosky
Year: 2007 TOTAL - \$29,852

Use of Microarrays to Characterize Endotoxemia in Vivo

University of Georgia
Principal Investigator: Michel L. Vandenplas
Co-PIs: J. Moore; M. Cordonnier-Pratt; L Pratt
Year: 2005 TOTAL - \$22,745

Efficacy of Recombinant Equine Gonadotropins

University of California - Davis

Principal Investigator: Janet Roser

Co-PI: Irving Boime

Year: 2004 TOTAL - \$51,258

Ischemia-Reperfusion Injury in Equine Laminar Arteries

University of Georgia

Principal Investigator: Stephen Lewis

Co-PIs: John Peroni; Jon Graves; Tom Robertson

Years: 2003-2004 TOTAL - \$56,000

Role of Endothelin-1 in the Pathophysiology of Equine Laminitis

Louisiana State University, *Principal Investigator: Rustin Moore*

Co-PI: S. C. Eades

Year: 2003 TOTAL - \$53,430

Functional Analyses of Equine Laminar Arteries

University of Georgia

Principal Investigator: John Peroni

Co-PIs: Stephen Lewis; Jon Graves

Years: 2002-2003 TOTAL - \$44,089

Role of Endothelin and Nitric Oxide in Equine Laminitis

Louisiana State University, *Principal Investigator: Rustin Moore*

Co-PIs: Susan Eades; Ashley Holm; C.S. Venugopal; Julian Oliver

Years: 1999-2000 TOTAL - \$89,892

MISCELLANEOUS (OTHER)



Grayson-Jockey Club Research Archives

Pharmacology, radiology, and DNA mapping are just a few of the many types of research studies that would fall into this category.

Grayson is proud to have funded the following projects:

Pharmacokinetics of Oral Mycophenolate Mofetil in Horses

The Ohio State University, *Principal Investigator: Gwendolen Lorch*
CO-PIs: Riley Thompson, Christianne Magee, Gerrit Bouma, Budhan Pukazhenti (Smithsonian Cons. Bio)

This proposal will evaluate the pharmacokinetics of orally administered mycophenolate mofetil as a safe, effective and inexpensive immunosuppressant drug for management of equine immune-mediated.
Year: 2022 TOTAL -\$ 65,029

Mitigation of Equine Recurrent Uveitis Through SOCS

University of Florida, *Principal Investigator: Joseph Larkin*
CO-PIs: Wesley Smith, Sonal Tuli, Daniel Gibson, Caryn Plummer, Jorge Hernandez

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.

Years: 2021-2022 TOTAL - \$ 150,610

Predicting Exercising Arrhythmias With Resting ECGS

University of Minnesota, *Principal Investigator: Molly McCue*
CO-PIs: S. Durward-Akhurst, Anna Lytle, K Jeevaratnam- University of Surrey, C Marr, Rosssdales Vet Surgeons

This project will use at rest ECGs to identify horses with irregular heart rhythms at exercise that can cause sudden cardiac death (SCD), allowing for increased monitoring and improved understanding of SCD.

Years: 2021-2022 TOTAL - \$ 119,477

Thoroughbred Sales Radiology-Ultrasonography Study

Colorado State University, *Principal Investigator: C. Wayne McIlwraith*
Co-PIs: Chris Kawcak, Frances Peat, David Frisbie, Kurt Selberg, Jeffrey Berk, EQ Med Associates- KY

This study was designed to improve the industry's understanding of the significance of sesamoiditis, ultrasonographic suspensory branch changes, and stifle lucencies in sales yearlings and two-year-olds.

Year: 2018-2019 TOTAL - \$143,624

Unraveling Complex Traits by Defining Genome Function 2

University of California- Davis, *Principal Investigator: Carrie Finno*

Co-PIs: Rebecca Bellone, Nicole Kingsley, Erin Burns, Ted Kalbfleisch (UN of Louisville), Jessica Peterson, (UN of Nebraska)

This project is designed to create an atlas of gene regulation in the horse.

Year: 2018-2019 TOTAL - \$199,990

Novel Analgesic Combination in Horses Part II

University of Minnesota, *Principal Investigator: Alonso Guedes*

Co-PIs: Troy Trumble; Prathibha Mangedarage

A study to develop a medication strategy for joint inflammation/pain to provide pain relief as well as help protect the joint cartilage from damage caused by chemical mediators of inflammation.

Year: 2018 TOTAL - \$69,130

Predicting the Risk of Equine Fatal Injury During Racing

University of Glasgow, *Principal Investigator: Tim D. Parkin*

Co-PI: Stamatis Georgopoulos

The project used the Equine Injury Database (EID) to better predict and identify horses at greatest risk of fatal injury during racing and provide measures to further reduce the number of horses dying on North American racetracks.

Years: 2017- 2018 TOTAL - \$83,360

Unraveling Complex Traits By Defining Genome Function

University of California, Davis, *Principal Investigator: Carrie Finno*

Co-PIs: Jessica Peterson; Rebecca Bellone; Erin Burns; Katerine Hilburger; James MacLeod (UK); Ted Kalbfleisch (U of Louisville); Sara Nilson (U of Nebraska)

This proposal was designed to define the critical next step to understand underlying mechanisms of disease by developing a database of tissue– specific gene expression and regulation in the healthy adult horse.

Year: 2016-2017 TOTAL - \$199,177

Novel Analgesic Combination In Horses Part I

University of Minnesota, *Principal Investigator: Alonso Guedes*

Co-PIs: Troy Trumble; Christophe Morisseau; Bruce Hammock (UC Davis)

A study of a novel, likely more efficacious and potentially safer approach than currently available options to manage pain in horses.

Year: 2016-2017 TOTAL - \$92,099

Microsphere Encapsulated EPCs and Wound Vascularization

Auburn University, *Principal Investigator: Anne Wooldridge*

Co-PIs: Elizabeth Lipke; Fred Caldwell; Ning Cheng; Randolph Winter

This study reviewed injectable hydrogel microsphere scaffolds containing endothelial progenitor cells for a potential novel therapy to decrease healing time in distal limb wounds in the horse.

Years: 2015-2016 TOTAL - \$76,226

Characterization of Intra-Articular Isoflupredone

University of California – Davis, *Principal Investigator: Heather Knych*

Co-PIs: Michelle Mitchell; Linda Harrison (Willow Oak)

This study was designed to provide valuable information for establishing a threshold concentration and withdrawal time for intra-articular isoflupredone acetate in horses.

Years: 2014-2015 TOTAL - \$90,069

Pharmacodynamic Evaluation of Omeprazole

University of Queensland, *Principal Investigator: Paul Mills*

Co-PIs: Ben Sykes & Katja Sykes (BW Sykes Consultancy)

The aim of this study was to review omeprazole and develop a revised set of treatment recommendations for the treatment of gastric ulcers in the horse.

Years: 2014 TOTAL - \$52,745

Factors Affecting Omeprazole Pharmacokinetics in Horses EPM

University of Queensland, *Principal Investigator: Paul Mills*

Co-PIs: Ben Sykes (BW Sykes Consultancy); C. McGowan (UN of Liverpool/UK)

Year: 2013 TOTAL - \$19,640

Effect of CYP2D Genetic Polymorphisms on Drug Metabolism EPM

University of California- Davis, *Principal Investigator: Heather Knych*

Co-PIs: Carley Corado; Amy Young

Year: 2013 TOTAL - \$81,647

Systemic Effects of Analgesic Combos in Horses

University of Florida, *Principal Investigator: Linda Christine Sanchez*

Co-PIs: Johanna R. Effenbein; Robert MacKay; Sheilah Robertson

Years: 2010-2011 TOTAL - \$64,219

Ethyl Pyruvate & Endotoxemia in Horses

Michigan State University, *Principal Investigator: Susan Holcombe*

Co-PIs: Vanessa Cook; Andrew Brown; Eric Schroeder; Lorraine Sordillo

Year: 2010 TOTAL - \$63,040

Pharmacokinetics/Pharmacodynamics of Quinapril

North Carolina State University, *Principal Investigator: Jennifer Davis*

Co-PIs: Babetta Breuhaus; Karin Kruger

Year: 2010 TOTAL - \$31,553

Hydrocortisone Replacement Therapy in Septic Foals

University of Georgia, *Principal Investigator: Michelle Henry Barton/*

Co-PIs: Kelsey Hart; Amanda Martabano House; Michel Vandenplas; Steve Giguère; Julia Flaminio (Cornell)

Years: 2008-2009 TOTAL - \$49,306

Effect of Flunizin on Lidocaine Plasma Protein Binding

Kansas State, *Principal Investigator: Butch KuKanich*

Year: 2008 TOTAL - \$8,217

Calcium/Magnesium & Hormones in Septic Foals

The Ohio State University, *Principal Investigator: Ramiro Toribio*

Years: 2007-2008 TOTAL - \$37,600

Tramadol in Horses

Auburn University, *Principal Investigator: Allison Stewart*

Year: 2007 TOTAL - \$20,000

Effect of Compounding and Storage on Drug Stability

North Carolina State University, *Principal Investigator: Mark Papich*

Year: 2006 TOTAL - \$14,152

Development of a Maintenance Fluid for Horses

Michigan State University, *Principal Investigator: Harold Schott II*

Co-PI: Gary Carlson

Years: 2005-2006 TOTAL - \$109,941

Effect of Fentanyl on Visceral & Somatic Nociception in Horses

University of Florida, *Principal Investigator: Linda Christine Sanchez*

Co-PIs: Cynthia Kollias-Baker; Sheilah Robertson

Year: 2004 TOTAL - \$46,730

Electrical Cardioversion of Atrial Fibrillation in the Horse

University of Guelph, *Principal Investigator: P. W. Physick-Sheard*

Years: 2002-2003 TOTAL - \$8,394

MUSCULOSKELETAL

Grayson-Jockey Club Research Archives



The horse's musculoskeletal system consists of the bones, cartilage, muscles, ligaments, and tendons. Their primary function is to support of the body, provide motion, and protect vital organs. There are 205 bones in the horse's skeleton. Twenty of these bones are in each foreleg and 20 in each hind limb, for a grand total of 80 bones in the four equine legs. These studies focus on joint health, arthritis, bone regeneration, and imaging advancements to make safe diagnosis in the horse.

Grayson is proud to have funded the following projects:

[Development of a Palmar Osteochondral Disease Model](#)

Colorado State University, *Principal Investigator: Chris Kawcak*

CO-PIs: Lauren Smanik, Kurt Selberg, Holly Stewart, Jennifer Daniels, Christine Battaglia

The goal of this proposal is to develop an experimental model of palmar osteochondral disease in horses to better study disease progression and facilitate development of improved treatment strategies.

Year: 2022 TOTAL - \$ 95,790

[Treatment of Joint Injury With Mesenchymal Stromal](#)

University of Guelph, *Principal Investigator: Thomas Koch*

CO-PIs: Mark Hurtig, Keith Russell

Evaluation of equine umbilical cord blood-derived mesenchymal stromal cells to treat joint injuries in horses.

Years: 2021-2022 TOTAL - \$ 116,960

[Optimizing Bone Growth to Reduce Equine Fracture](#)

University of Illinois Urbana-Champaign, *Principal Investigator: Mariana Kersh*

CO-PIs: Annette McCoy

Reduction in distal limb fractures through exercise in young horses would have a significant positive impact on horse welfare and the economics and public perception of the horse industry.

Years: 2021-2022 TOTAL - \$ 118,583

[Injury Prediction From Stride Derived Racing Load](#)

University of Melbourne, *Principal Investigator: Chris Whitton*

CO-PIs: Peta Hitchens, Adelene Wong, Ashleigh Morrice-West

By studying patterns in bone fatigue accrual over time in racehorses, we will better, and earlier, identify horses at risk of limb injury, facilitating timely evidence based preventative strategies.

Years: 2021-2022 TOTAL - \$ 189,308

Diagnosis Of Incipient Condylar Stress Fracture

University of Wisconsin–Madison, *Principal Investigator: Peter Muir*

CO-PIs: Corinne Henak, Sabrina Brounts, Carla Winsor, Jordan Gruel,

C Whitton - University of Melbourne

F Malekipour - University of Melbourne, Seamus Hoey, University of Dublin

This study will save the lives of racehorses by establishing screening using fetlock CT for diagnosis of horses with a high risk of imminent serious injury for personalized clinical care.

Years: 2021-2022 TOTAL - \$ 134,951

Hyperthermia and Acidosis in Exertional Muscle Damage

Oklahoma State University, *Principal Investigator: Michael Davis*

Co-PIs: Montana Fulton, K Williamson, Waypoint Vet Ed, Warrick Bayly (Washington State)

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.

Year: 2021 TOTAL - \$137,167

Bisphosphonates and Fatal Musculoskeletal Injury

Cornell University, *Principal Investigator: Heidi Resink*

Co-PIs: Eve Donnelly, Sean McDonough, Husni Mohammed, Wayne Schwark, Anthony Condo, Kira Noordwijk, Erik Taylor, Scott Palmer (NY State Game), George Maylin (Morrisville State)

This project looks at determining the prevalence of bisphosphonate use in racehorses and whether bisphosphonates are associated with fatal musculoskeletal injury which is essential to equine welfare and the future of racing.

Years: 2020-2021 TOTAL - \$114,006

Enhancing the Efficacy of MSCs for Tendon Healing

North Carolina State University, *Principal Investigator: Lauren Schnabel*

Co-PIs: Kristen Messenger

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.

Years: 2020-2021 TOTAL - \$100,687

SDFT Adaptation in Thoroughbred Racehorses

The Ohio State University, *Principal Investigator: Sushmitha Durgam*

Co-PIs: Susan Stover (UC Davis), Matthew Stewart (Un of Illinois)

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.

Years: 2020-2021 TOTAL - \$56,904

Bisphosphonate Effects on Biomarkers and Bone Metabolism

University of California- Davis, *Principal Investigator: Heather Knych*

Co-PIs: Carrie Finno, Mathieu Spriet, Rick Arthur, Anna Dahlgren, Kirsten Kanarr, Kelsey Seminoff

This study will allow for development of sensitive and alternate methods for detection of bisphosphonates.

Years: 2020-2021 TOTAL - \$212,237

Novel Delivery of Antimicrobials into Equine Joints

University of Melbourne, *Principal Investigator: Simon Bailey*

Co-PIs: Ted Whitem, Jamie Wearn, Andrew Woodward

This study is for the development and testing of, a novel (gel) carrier formulation for the antibiotic Cefuroxime, injection into horses' joints for application as a treatment of joint infections.

Years: 2020-2021 TOTAL - \$87,692

Diagnostic Assay for Recurrent Exertional Rhabdomyolysis

University of Minnesota, *Principal Investigator: Molly McCue*

Co-PIs: James Mickelson, Samantha K Beeson, Emmeline Hill (Un Dublin), Lisa Katz (Un Dublin)

This study was to 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.

Years: 2020-2021 TOTAL - \$137,640

Novel Treatment for Recurrent Exertional Rhabdomyolysis

Michigan State University, *Principal Investigator: Stephanie Valberg*

CO-PIs: Lorraine Sordillo, Marisa Henry, Deborah Velez-Irizarry, Jeff Gandy,

Joe Pagan (KY EQ Research), Clara Fenger (EQ Integrated Med)

This project was to determine if a potent antioxidant coenzyme Q10, not subject to withdrawal times, can benefit horses with tying up by replenishing diminished muscle coQ10 levels and decreasing oxidative stress.

Year: 2020 TOTAL - \$56,942

Antimicrobial Properties of Equine MSCs

Colorado State University, *Principal Investigator: Laurie Goodrich*

CO-PIs: Steve Dow, Wayne McIlwraith, Valerie Johnson, Lynn Pezzanite, Nikki Phillips,

Tom Schaer (PENN), Lauren Schnabel (NCSU)

This study was designed to validate TLR activated equine mesenchymal stem cells as an effective, novel therapy in treating multi-drug resistant infections.

Years: 2019-2020 TOTAL - \$198,056

Robotic CT for Assessing of Bone Morphology

University of Pennsylvania, *Principal Investigator: Kyla Ortved*

CO-PIs: Mary Robinson, Kathryn Wulster, Dean Richardson, Joanne Haughan, Jessica Morgan,

Kara Brown, Tom Schaer, Josh Benson

The focus on screening fetlock joints using standing robotic CT and biomarker analysis to prevent catastrophic injuries in the Thoroughbred racehorse.

Years: 2019-2020 TOTAL - \$105,869

Standing PET of the Racehorse Fetlock

University of California-Davis, *Principal Investigator: Mathieu Spriet*

Co-PIs: Scott Katzman, Larry Galuppo, Sue Stover

This project was designed to validate a Positron Emission Tomography (PET) technology for early detection of fetlock lesions in standing horses to prevent catastrophic breakdowns in racehorses.

Year: 2019 TOTAL - \$134,477

Racehorse Stride Characteristics- Injury and Performance

University of Melbourne, *Principal Investigator: Chris Whitton*

Co-PIs: Peta Hitchens, Adelene Wong

A study to identify changes in stride characteristics of racehorses over time to determine identify those parameters that can be used as an early indicator of injury or that are key to injury development.

Year: 2019 TOTAL - \$87,737

Development of Limited View 3D Imaging

Colorado State University, *Principal Investigator: Chris Kawcak*

Co-PIs: Martine Duff, Kurt Selberg, Holly Stewart, Wayne McIlwraith, Xiaochuan Pan and Emil Sidky (UN of Chicago)

The goal of this proposal was to develop a point-of-care, 3-dimensional imaging technique that can be used to better characterize and prevent injuries in racehorses.

Year: 2018-2019 TOTAL –198,836

Underlying Cause of Recurrent Exertional Rhabdomyolysis

Michigan State University, *Principal Investigator: Stephanie Valberg*

Co-PIs: Deborah Velez-Irizarry; ; Keri Gardner; Melissa Schott

The aim of this study was to determine if stress-induced modification to the skeletal muscle calcium release channel forms the basis for tying up in thoroughbreds and to pinpoint a target for development of effective new treatments.

Year: 2018 TOTAL - \$57,643

Platelet Lysate Therapy in Infectious Arthritis

North Carolina State University, *Principal Investigator: Lauren Schnabel*

Co-PIs: Jessica Gilbertie; Julie Long; Tom Schaer, (U of PA)

This proposal examined the antibacterial properties of platelets to treat joint infections in horses more effectively than conventional therapies, with the goal of reducing morbidity and mortality.

Years: 2017- 2018 TOTAL - \$101,440

Bone Marrow Mononuclear Cells for Equine Joint Therapy

Virginia Maryland CVM, *Principal Investigator: Linda A. Dahlgren*

Co-PIs: Bruno C. Menarim; Christopher R. Byron; Xin M. Luo; Anne E. C. Nichols

The results from this study will pave the way to investigate a new cell therapy from equine bone marrow as a targeted regenerative therapy for horses suffering from arthritis.

Years: 2017- 2018 TOTAL - \$99,620

Synovial Oxylipid Profiles: Role Of Omega-3 Fatty Acids

Michigan State University, *Principal Investigator: John Caron*

Co-PIs: Lorraine Sordillo; Jeffrey Gandy; Jennifer DeVries

This project was a first step in establishing science-based guidelines for the nature and amount of dietary polyunsaturated fatty acids that will prevent or delay osteoarthritis in horses.

Year: 2017 TOTAL - \$37,307

PET Imaging Of the Equine Distal Limb

University of California, Davis, *Principal Investigator: Mathieu Spriet*

Co-PIs: Scott Katzman; Larry Galuppo; Pablo Espinosa

A study of Position Emission Tomography (PET) imaging as a diagnostic tool, newly available to the horse, that will allow detection of lesions not identified with other techniques.

Year: 2016-2017 TOTAL - \$82,014

Immune Properties of Autologous and Allogeneic BMDMSCs

Colorado State University, *Principal Investigator: Laurie Goodrich*

Co-PIs: Steve Dow; Aimee Colbath; C. Wayne McIlwraith; Jennifer Phillips;

Frank Barry (UN of Ireland)

Designed to answer important question of whether allogeneic mesenchymal stem cells derived from bone marrow (BMDMSCs) are a viable alternative to autologous BMDMSCs in the horse. (Autologous means cells from the horse's own bone marrow; allogeneic means from another, healthy horse.)

Years: 2015-2016 TOTAL - \$115,890

Contrast Enhanced CT for Detection of Cartilage Injury

Colorado State University, *Principal Investigator: Christopher Kawcak*

Co-PIs: Bradley Nelson; Laurie Goodrich; C. Wayne McIlwraith; Myra Barrett;

Mark Grinstaff & Rachel Stewart (Boston UN); Natasha Werpy (UN of FL)

This project reviewed critical evaluation of CCECT as a method for the detection of early osteoarthritis in horses and for applications of its use in clinical patients.

Years: 2014-2015 TOTAL - \$178,226

Serum Biomarkers for Equine Laminitis

University of Pennsylvania, *Principal Investigator: Hannah Galantino-Homer*

Co-PIs: Julie Engiles; Susan Megee; Bettina Wagner -Cornell

Years: 2013-2014 TOTAL - \$142,147

Acoustoelastography to Monitor Injured Equine Tendon

University of Wisconsin–Madison, *Principal Investigator: Sabrina Brounts*

Co-PIs: Sarah Duenwald–Kuehl; Ray Vanderby; Roderic Lakes

Years: 2013-2014 TOTAL - \$89,344

Motor Responses in Equine Cervical Stenotic Myelopathy EPM

Iowa State University, *Principal Investigator: Cody Alcott*

Co-PIs: Nicholas Jeffery; David Wong; Brett Sponseller; Andrea Manternach

Year: 2013 TOTAL - \$32,848

Detection of Lameness in Racehorses at the Gallop EPM

University of Missouri, *Principal Investigator: Kevin Keegan*

Co-PIs: Joanne Kramer; Marco Lopes; David Wilson; Shannon Reed; P. Frank Pai

Year: 2013 TOTAL - \$71,422

Stem Cell Homing After IV Regional Limb Perfusion

Cornell University, *Principal Investigator: Alan Nixon*

Co-PIs: Ashlee Watts; Whitney Linnenkohl; Hussni Mohammed; Michael Scimeca

Years: 2012-2013 TOTAL - \$150,000

Treatment of Experimental Equine Laminitis with Doxycycline

Louisiana State University, *Principal Investigator: Susan Eades*

Co-PIs: Lee Ann Fugler; Daniel Paulsen

Years: 2012-2013 TOTAL - \$58,400

AAV-IRAP Gene Therapy to Prevent Osteoarthritis

Colorado State University, *Principal Investigator: Laurie Goodrich*

Co-PIs: David Frisbie; Natasha Werpy; C. Wayne McIlwraith; R J Samulski (UN of NC)

Years: 2011-2012 TOTAL - \$134,635

Generation of Equine iPS Cells for Regenerative Therapy

Cornell University, *Principal Investigator: Lisa A. Fortier*

Co-PIs: John Schimenti; Lauren Schnabel

Years: 2011-2012 TOTAL - \$97,352

Cell & Growth-Factor Dependent Tenogenesis

University of California – Davis, *Principal Investigator: Martin Vidal*

Co-PIs: Keith Baar; Kerstien Padgett

Years: 2011-2012 TOTAL - \$80,332

Equine Bone Regeneration with Adults Stem Cells

Louisiana State University, *Principal Investigator: Mandi Lopez*

Co-PIs: Jeff Gimble (Stem Cell Lab Pennington BioMed)

Years: 2010-2011 TOTAL - \$157,830

Orthopaedic & Genetic Roles in Wobblers Syndrome

University of Kentucky, *Principal Investigator: James N. MacLeod*

Co-PIs: Jennifer James, Stephen Reed, Neil Williams; Neil Williams; Anthony Pease (MI State UN)

Years: 2010-2011 TOTAL - \$102,193

Clinical Admin of Doxycycline for Arthritis

Cornell University, *Principal Investigator: Lisa Fortier*
Co-PIs: Lauren Schnabel; Thomas Divers; Mark Papich (NC State)
Year: 2010 TOTAL - \$63,073

Developing eqBMP-2 for Bone and Cartilage Repair

University of Illinois, *Principal Investigator: Matthew Stewart*
Co-PIs: Dan Peck; Brendan Harley; Christopher Evans (Harvard)
Years: 2009-2010 TOTAL - \$87,286

Incidence of Nonfatal Injuries in Racing Thoroughbreds

Colorado State University, *Principal Investigator: C.Wayne McIlwraith*
Co-PIs: Ashley Hill; Jeff Blea (S. CA UN); Michael Peterson (UN of MN); R. Arthur (UC-Davis)
Year: 2009 TOTAL - \$44,397

Mesenchymal Stem Cell Treatment

Washington State University, *Principal Investigator: Robert Schneider*
Co-PIs: Stavros Yiannikouris; Chad Marsh; Sarah Sampson; Greg Roberts;
David Frisbie & John Kisiday (CSU)
Year: 2009 TOTAL - \$40,570

Differentiated Stem cells for Cartilage Repair

Cornell University, *Principal Investigator: Alan Nixon*
Co-PIs: Ashlee Watts; Kyla Ortved
Years: 2008-2009 TOTAL - \$147,328

Equine Cord Blood Stem Cells - From Farm to Point of Care

University of Guelph, *Principal Investigator: Dean Betts*
Years: 2008-2009 TOTAL - \$83,132

Effects of Joint Geometry on Fetlock Joint Disease

Colorado State University, *Principal Investigator: Chris Kawcak*
Co-PIs: Christian Puttlitz; Tim Parkin; C. Wayne McIlwraith; Kenton Morgan
Years: 2007-2008 TOTAL - \$80,480

Hydroxyapatite Coatings to Prevent Pin Loosening in Horses

Purdue University, *Principal Investigator: Timothy Lescun*
Years: 2007-2008 TOTAL - \$69,039

Bactericidal Implant Analysis in a Prosthetic Infection Model

University of Pennsylvania, *Principal Investigator: Dean Richardson*

Co-PIs: Thomas Schaer; Noreen Hickok; Christopher Adams

Years: 2007-2008 TOTAL - \$100,206

Patient-Side Constructs for Cartilage Regeneration

Cornell University, *Principal Investigator: Lisa Fortier*

Co-PIs: Alan Nixon; Julia Flaminio

Years: 2006-2007 TOTAL - \$178,542

Growth Factor Enhanced Progenitor Cells for Tendon Healing

University of Illinois, *Principal Investigator: Allison Stewart*

Co-PIs: Jennifer Barrett; Matthew Steward

Years: 2006-2007 TOTAL - \$44,320

MRI Characterization of the Hindlimb Suspensory Ligament

North Carolina State University, *Principal Investigator: Michael Schramme*

Co-PIs: Dianne Little; Anthony Pease; W. Rich Redding; Keith Linder

Year: 2006 TOTAL - \$23,890

Gene Transfer of BMP-2 for Enhancing Fracture Healing

Colorado State University, *Principal Investigator: David Frisbie*

Co-PI: Louise Southwood

Years: 2005-2006 TOTAL - \$74,506

Acceleration of Third Metacarpal Fracture Healing with rhBMP-2

University of Wisconsin-Madison, *Principal Investigator: Mark Markel*

Co-PIs: Ryland Edwards; Maria Faria; Yan Lu

Years: 2005-2006 TOTAL - \$135,278

Culture & Characterization of Equine Marrow Stem Cells

Louisiana State University, *Principal Investigator: Jill Johnson*

Co-PIs: Martin Vidal; Jeffrey Gimble; Rustin Moore; Mandi Lopez

Year: 2005 TOTAL - \$17,432

Molecular Therapy for Bone Healing in Horses

The Ohio State University, *Principal Investigator: Alicia Bertone*

Co-PIs: John Mattoon; Alan Litsky; Christopher Evans; Stephen Weisbrode; Jeffrey Bartlett

Year: 2005 TOTAL - \$55,995

Tetracyclines as Therapeutics for Equine Arthritis

Cornell University, *Principal Investigator: Lisa Fortier*

Co-PI: R.A. Greenwald

Year: 2004 TOTAL - \$71,544

Epidemiology of Proximal Sesamoid Fractures in Thoroughbreds

University of California – Davis, *Principal Investigator: Susan Stover*

Co-PIs: Ian Gardner; Lucy Anthenill

Year: 2004 TOTAL - \$62,416

Effects of Early Exercise on Osteochondral Tissues

Colorado State University, *Principal Investigator: Christopher Kawcak*

Co-PIs: C. Wayne McIlwraith; Neil Broom; Elwyn Firth

Years: 2003-2004 TOTAL - \$68,523

Significant Contributions to Hoof & Sole by Lamina & Bars

Michigan State University, *Principal Investigator: Robert Bowker*

Years: 2003-2004 TOTAL - \$64,641

Chondroprotection for Impacted Equine Cartilage Explants

Michigan State University, *Principal Investigator: Michael Orth*

Co-PIs: Angela Schlueter; John Caron

Years: 2003-2004 TOTAL - \$49,715

Growth Factor Gene Transduced Stem Cells for Cartilage Repair

Cornell University, *Principal Investigator: Alan Nixon*

Co-PIs: Paul Robbins; Chris Beinlich

Years: 2002-2003 TOTAL - \$101,254

Does Suspensory Apparatus Injury or Its Risk Factors Increase Risk for Metacarpal Condylar Fracture in the Thoroughbred Racehorse?

University of California – Davis, *Principal Investigator: Susan Stover*

Co-PIs: Ian Gardner; Bill Johnson; Ashley Hill

Years: 2001-2002 TOTAL - \$69,834

The Safety of Shockwave Therapy in Performance Horses

Iowa State University, *Principal Investigator: Scott McClure*

Co-PIs: Iona Scone; Richard Evans; Viren Amin; Mark Williamson

Year: 2001 TOTAL - \$50,000

Basis for Pharmacologic Treatment of Flexural Deformities

Michigan State University, *Principal Investigator: Steven Paul Arnoczky*

Co-PI: John Stick

Year: 2001 TOTAL - \$33,364

Muscle Glycogen Metabolism in Horses

The Ohio State University, *Principal Investigator: Kenneth Hinchcliff*

Co-PIs: Catherine Kohn; Richard Sams; Lynn Taylor; Veronique Lacombe; Steven Devor

Year: 2001 TOTAL - \$94,967

Further Evaluation of the Effect of Shoeing on Impact Trauma in the Racehorse

University of Pennsylvania, *Principal Investigator: David Nunamaker*

Co-PIs: Barbara Dallap; Raymond Boston; Chris Ryan; Mary Hazzard; Rob Sigafos; John Fisher

Years: 2001-2002 TOTAL - \$63,410

Serum Markers for Detection of Musculo-Skeletal Injury in Horses

Colorado State University, *Principal Investigator: David Frisbie & R. Clark Billingham*

Co-PIs: R.C. Billingham; C. Wayne McIlwraith

Years: 2000-2001 TOTAL - \$98,792

Hoof Wall Epidermal Laminae: Adaptive Response to Stress

Michigan State University, *Principal Investigator: Robert Bowker*

Co-PI: Diane Troyer

Years: 2000-2001 TOTAL - \$69,708

Intramuscular Calcium Regulation in Exertional Rhabdomyolysis

University of Minnesota, *Principal Investigator: Stephanie Valberg & Esther Gallant*

Co-PIs: Esther Gallant; J.R. Mickelson

Years: 2000-2001 TOTAL - \$100,172

Stem Cell Induced Chondrogenesis for Cartilage Repair

Cornell University, *Principal Investigator: Alan J. Nixon*

Co-PIs: Chris Evans; Marcus White

Years: 1999-2000 TOTAL - \$97,621

A Dynamometric Horseshoe for Assessing Forces Associated with Racing Surfaces

University of California – Davis, *Principal Investigator: Maury Hull*

Co-PI: Susan Stover

Year: 1999 TOTAL - \$35,408

Effects of Toe Grabs on the Locomotor Patterns of Galloping Horses

Washington State University, *Principal Investigator: Marc H. Ratzlaff*

Co-PI: David Hutton

Year: 1999 TOTAL - \$44,411

Gene Therapy for Equine Arthritis

University of Pennsylvania, *Principal Investigator: Dean Richardson*

Co-PI: Brian Foley

Years: 1999-2000 TOTAL -\$69,100

REPRODUCTION (THERIO)



Grayson-Jockey Club Research Archives

Research in this area includes stallion fertility issues, placentitis, mare reproductive loss, endometritis, infections and environmental issues that can affect reproduction.

Grayson is proud to have funded the following projects:

Protein Based in Vivo Diagnostic for Endometrial Biofilm

University of Kentucky, *Principal Investigator: Mats Troedsson*

CO-PIs: Barry Ball, Carleigh Fedorka, A. Miki Bojesen (UN Copenhagen)

This project researched successful management of bacterial biofilms in the uterus as an accurate diagnostic in vivo assay.

Year: 2020 TOTAL -\$48,145

Nocardioform Placentitis

University of Kentucky

This project was the funding of collection and storage of Nocardioform placentitis samples for future research at the University of Kentucky and with collaborative partners.

Year: 2020 TOTAL - \$90,000

Intrauterine Antibiotics May Augment Placentitis Therapy

North Carolina State University, *Principal Investigator: Christopher Bailey*

Co-PIs: Mark Papich, Maria Correa, Karen Von Dollen, Nathan Long (Clemson)

This proposal explored the potential for intrauterine antibiotic treatment to improve foal survival and health in mares with ascending placentitis.

Year: 2019 TOTAL - \$63,873

Firocoxib Properties in Equine Pregnancy & Placentitis II

University of Florida, *Principal Investigator: Margo Macpherson*

Co-PIs: Malgorzata Pozor; Susanne Benson

This project was designed to provide a fundamental step toward determining if specific drugs (including firocoxibs) are performing expected functions, such as resolving inflammation, in pregnancies threatened by placentitis.

Year: 2018 TOTAL - \$49,467

Evaluation of Kisspeptin the Pregnant Mare

Colorado State University, *Principal Investigator: Christianne Magee*

Co-PIs: Caleb Brown; Kelly Kirkley

A study of how kisspeptins are involved in equine pregnancy and if they can serve as a biomarker for pregnancy compromise.

Years: 2017- 2018 TOTAL - \$113,063

Metabolomic Profiling Of Placentitis Biomarkers In Mares

North Carolina State University, *Principal Investigator: Christopher Bailey*

Co-PIs: Theresa Beachler; Sara Lyle; John Gadsby; Samuel Jones; Hanna Gracz (NMR Consult)

This project reviewed metabolomic profiling of mares with placentitis to allow development of screening and specific assays to improve treatment outcome.

Year: 2017 TOTAL - \$90,453

Firocoxib Properties in Equine Pregnancy and Placentitis

University of Florida, *Principal Investigator: Margo MacPherson*

Co-PIs: Steve Giguère; Malgorzata Pozor; Susanne Benson; Kevin Shelton;

Maron Calderwood Mays; Sara Lyle

A study to determine if potent anti-inflammatory properties of firocoxib have the potential to significantly inhibit inflammation, and subsequent preterm delivery of foals, from mares with placentitis.

Years: 2015-2016 TOTAL - \$128,657

Evaluation of Biofilm From Equine Uterine Bacteria EPM

Colorado State University, *Principal Investigator: Ryan Ferris*

Co-PIs: Brad Borlee; Reg. Biocontainment Lab; IDR Center

Year: 2013 TOTAL - \$42,054

Towards a Treatment for Testicular Degeneration

University of Pennsylvania, *Principal Investigator: Regina Turner*

Co-PI: Karen Schlingmann

Years: 2012-2013 TOTAL - \$109,732

Pharmacokinetics of Ceftiofur Sodium in Equine Pregnancy

University of Florida, *Principal Investigator: Margo Macpherson*

Co-PIs: Malgorzata Pozor; Thomas Vicroy; Steeve Giguère

Year: 2012 TOTAL - \$36,633

Hemorrhagic Anovulatory Follicle Syndrome

Southern Illinois University Carbondale, *Principal Investigator: Eduardo Gastal*

Co-PIs: Sheryl King; Dale Buchanan Hales; Buffy Ellsworth; Melba Oliveira Gastal; Angela Renee Baerwald (UN of Saskatchewan Canada); J. Cuervo-Arango Lecina (UN of Card.- Spain)

Years: 2011-2012 TOTAL - \$68,227

Use of Recombinant Equine FSH in Anestrous Mares

University of California – Davis, *Principal Investigator: Janet Roser*

Co-PIs: Geraldine Meyers-Brown; Anthony Claes

Year: 2011 TOTAL - \$86,747

Factors for Success & Failure of Early Pregnancy

University of Guelph, *Principal Investigator: Keith Betteridge*

Co-PIs: M. A. Hayes; JI Raeside; B.N. Lillie; L.G. Arroyo

Years: 2010-2011 TOTAL - \$95,360

Prevention of Placentitis-Induced Labor in Mares

Mississippi State University, *Principal Investigator: Peter Ryan*

Co-PIs: Richard Hopper; David Christiansen; Avery Cooley; Michelle LeBlanc (Rood & Riddle); Barry Fitzgerald & David Horohov (UN of KY)

Year: 2009 TOTAL - \$47,325

Mechanisms of Maintenance and Loss of Early Pregnancy

University of Guelph, *Principal Investigator: Keith Betteridge*

Co-PI: M. A. Hayes

Years: 2008-2009 TOTAL - \$150,000

Xenografting to Study Testicular Function in Stallions

University of Pennsylvania, *Principal Investigator: Ina Dobrinski*

Co-PI: Regina Turner, new PI

Years: 2008-2009 TOTAL - \$134,455

Effect of Angiotes and Aspirin on Mare Uterine Perfusion

University of California – Davis, *Principal Investigator: Irwin I. M. Liu*

Co-PI: Eugene P. Steffey

Years: 2007-2008 TOTAL - \$108,856

Seminal Plasma Proteins SPP α and SPP β in Equine Semen

University of Florida, *Principal Investigator: Mats Troedsson*

Co-PI: William Buhi

Years: 2007-2008 TOTAL - \$77,218

Gene Expression Profile of Equine Endometrium

University of Florida, *Principal Investigator: Alan Ealy*

Co-PI: Mats Troedsson

Year: 2007 TOTAL - \$27,500

Role of the Embryonic Capsule in Success of Early Pregnancy

University of Guelph, *Principal Investigator: Keith Betteridge*

Co-PI: M. Anthony Hayes

Years: 2006-2007 TOTAL - \$147,739

Role of Y-Chromosome Factors in Regulating Stallion Fertility

Texas A & M University, *Principal Investigator: Bhanu Chowdhary*

Co-PIs: Terje Raudsepp; Dickson Varner

Years: 2006-2007 TOTAL - \$50,000

Treatment Efficacy on Pregnancy Outcome in Equine Placentitis

University of Florida, *Principal Investigator: Margo Macpherson.*

Co-PI: Thomas Vicroy

Years: 2005-2006 TOTAL - \$70,445

Accelerated Regression of Endometrial Cups and eCG

Cornell University, *Principal Investigator: Douglas Antczak*

Co-PI: Dietrich Volkmann

Years: 2002-2003 TOTAL - \$89,958

Hormonal Function in Mares Suffering From The Mare Reproductive Loss Syndrome (MRLS)

Cornell University, *Principal Investigator: Dietrich Volkmann*

Year: 2002 TOTAL - \$13,150

Is Administration of Frass or Starved Caterpillars by Nasogastric Tube Associated With Early Pregnancy Loss in The Mare?

Rood & Riddle Equine Hospital & University of Kentucky, *Principal Investigator: Bill Bernard*

Co-PIs: Bruce Webb; Michelle LeBlanc

Year: 2002 TOTAL - \$46,530

Production & Efficacy of Recombinant Equine Gonadotropins

University of California Davis, *Principal Investigator: Janet Roser*

Co-PI: Irving Boime

Year: 2002 TOTAL - \$51,000

Study of Bacteria Associated with Mare Reproductive Loss Syndrome

University of Kentucky, *Principal Investigator: James Donahue*

Co-PI: Stephen Sells

Year: 2002 TOTAL - \$22,300

Semen Lipid Analysis in Stallions with Unexplained Subfertility

Texas A & M University, *Principal Investigator: Steven Brinsko*

Co-PIs: Dickson Varner; Terry Blanchard; Larry Johnson; Sheri Rigby; John Bauer;

Margo Macpherson

Years: 2001-2002 TOTAL - \$44,238

Mares With Delayed Uterine Clearance: Is Nitric Acid Involved?

Texas A & M University, *Principal Investigator: Judy Delp*

Co-PI: Michael Delp

Year: 2001 TOTAL - \$24, 519

The Insulin-Like Growth Factor System and Stallion Infertility

University of Florida, *Principal Investigator: Margo Macpherson*

Co-PI: Rosalia Simmen

Year: 2000 TOTAL - \$23,102

Myometrial Ca²⁺ Signaling in Mares with Persistent Endometritis

Texas A & M University, *Principal Investigator: Robert Burghardt*

Co-PIs: Terry Blanchard; Dixon Varner; Sherri Rigby; R. B. Mouneimne

Years: 1999-2000 TOTAL - \$93,310

Placentitis: Pathophysiology, Diagnosis and Treatment

University of Florida, *Principal Investigator: Michelle LeBlanc*

Co-PI: Guy Lester

Years: 1999-2000 TOTAL - \$78,090

Interactions Among Prostaglandin F_{2a}, Oxytocin and Conceptuses

University of Kentucky, *Principal Investigator: Karen Jean McDowell*

Years: 1999-2000 TOTAL -\$40,500

RESPIRATORY

Grayson-Jockey Club Research Archives



Viral respiratory infections are common in horses; most notable are equine herpesvirus infection, equine influenza, and equine viral arteritis. Grayson has funded many studies in this area that are listed under Infectious Diseases. The aim of this research is for optimal airway passage, including improving the environment of the horse, the study of equine asthma and treatments for EIPH.

Grayson is proud to have funded the following projects:

[Asthma Performance and Omega-3s in Racing Thoroughbreds](#)

Purdue University, *Principal Investigator : Laurant Couetil*

Co-PIs: Carla Olave, John Burgess, Laura Murray, Jae Hong Park, George Moore, Jeff Blea (Von Bluecher, Blea & Hunkin, Inc.), Drs. Hay & Langsam (Teigland, Franklin and Brokken DVM's, Inc), Clayton McCook (Equine Sports Med)

The main purpose of this study was to investigate the variability of asthma severity in horses racing across the US, its effect on performance and determine if omega-3 PUFA supplementation is beneficial.

Years: 2020-2021 TOTAL - 210,016

[Effect Of Nebulized Lidocaine In Treating Equine Asthma](#)

Tufts University, *Principal Investigator: Melissa Mazan*

Co-PIs: Daniela Bedenice, Jill Minuto, Bettina Wagner (Cornell)

This proposal evaluates the efficacy of inhaled lidocaine in equine asthma in reducing airway inflammation and hyper-responsiveness by promoting an anti-inflammatory lung environment.

Years: 2020-2021 TOTAL - \$129,040

[Effects of Low-Dust Forage On Lung Health of Athletic Horses](#)

Purdue University, *Principal Investigator: Laurent Couetil*

Co-PIs: Jae Hong Park, George Moore, Kathleen Ivester, Calra Olave, Laura Murray, John Burgess, Abhijit Mukhopadhyay

This project was designed to provide a non-pharmaceutical solution to the widespread problem of equine asthma by evaluating the benefits of low-dust forage to racing Thoroughbreds.

Year: 2018-2019 TOTAL - \$126,457

[Is EIPH A Consequence Of High Left Atrial Pressures?](#)

Washington State University, *Principal Investigator: Warwick Bayly*

Co-PIs: Raymond Sides; James H Jones (UC Davis); Renaud LeGuillette (U of Calgary-CA)

This study was to test the theory that EIPH occurs because very high pressures in the left side of the heart during exercise result in pressures in the lungs' smallest vessels that cause them to break and bleed.

Year: 2017 TOTAL - \$144,036

Thyro-Hyoid Muscle Training to Treat DDSP

Cornell University, *Principal Investigator: Normand Durchame*
Co-PIs: Marta Cercone; Jonathan Cheetham; John Hermanson;
Richard Piercy & Justin Perkins (Royal Vet)

This project was to gain better knowledge of DDSP(Dorsal Displacement of the Soft Palate) and create new treatment options and prophylactic training methods to prevent or reduce the occurrence of DDSP in young horses starting training.

Year: 2016-2017 TOTAL - \$217,728

Efficacy of Furosemide Dosed 4– VS 24–Hours Period

University of California – Davis, *Principal Investigator: Heather Knych*
Co-PIs: Michelle Mitchell; Linda Harrison (Willow Oak)

This study was designed to test the suggestion that the therapeutic levels of furosemide, necessary to reduce the increases in physiological parameters associated with strenuous exercise and EIPH, are maintained for as long as 24 hours post-administration to racehorses.

Years: 2015 TOTAL - \$183,839

Mitigating EIPH if Race Day Medication is Banned

Washington State University, *Principal Investigator: Warwick Bayly*
Co-PIs: Debra Sellon; Fairfield Bain; Nicolas Villarino; Carolina Lopez; Ray Sides

The purpose of this study was to identify treatments that can be given before race day and still reduce the severity of EIPH without endangering the horses' health.

Years: 2015 TOTAL - \$148,196

Pulmonary Microvascular Function and EIPH

Michigan State University, *Principal Investigator: Frederik Derksen*
Co-PIs: William Jackson; Kurt Williams; N. Edward Robinson; Alice Stack

Years: 2012-2013 TOTAL -\$123,219

Early Diagnosis of Recurrent Laryngeal Neuropathy

Cornell University, *Principal Investigator: Jonathan Cheetham*
Co-PIs: Amy Yeager; Margret Thompson; Norm Ducharme; Hussni Mohammed

Years: 2011-2012 TOTAL - \$87,920

Pulmonary Vein Remodeling in EIPH

Michigan State University, *Principal Investigator: Frederik Derksen*
Co-PIs: Kurt Williams; Alice Stack; Jeffery Gandy; Lorraine Sordillo; N. Edward Robinson;
H. de Feijter-Rupp

Years: 2010-2011 TOTAL - \$131,596

Mapping Pulmonary Venous Occlusion in EIPH

Michigan State University, *Principal Investigator: Frederik Derksen*
Co-PIs: Kurt Williams; Edward Robinson; David Todem
Years: 2008-2009 TOTAL - \$124,644

Environmental Particulates and Airway Mucus in Racehorses

Michigan State University, *Principal Investigator: N. Edward Robinson*
Co-PIs: Susan Holcombe; Frederik Derksen
Years: 2006-2007 TOTAL - \$151,248

Efficacy of Furosemide in Treatment of EIPH

The Ohio State University, *Principal Investigator: Kenneth Hinchcliff*
Co-PIs: Alan Guthrie - Took over project; Paul Morley; Richard Sams
Years: 2006-2007 TOTAL - \$98,000

Blood-induced Pulmonary Fibrosis in Horses

Michigan State University, *Principal Investigator: Frederik Derksen*
Co-PIs: Bruce Uhal; Edward Robinson; Kurt Williams
Years: 2005-2006 TOTAL - \$113,479

Clara Cell Protein in Recurrent Airway Obstruction

University of Guelph, *Principal Investigator: Dorothee Bienzle*
Years: 2004-2005 TOTAL - \$53,000

Role of Neurokinin-A in Equine Obstructive Pulmonary Disease

Louisiana State University, *Principal Investigator: Changaram Venugopal*
Co-PIs: Rustin Moore; Gary Wise
Years: 2003-2004 TOTAL - \$106,920

Effect of Airway Inflammation and Mucus on Racehorse Performance

Michigan State University, *Principal Investigator: Susan Holcombe*
Co-PIs: N. E. Robinson; Frederik Derksen; John Kaneene; Elizabeth Carr; Ron Genovese
Years: 2002-2003 TOTAL - \$83,261

Furosemide Continuous Rate Infusion in the Horse

North Carolina State University, *Principal Investigator: Sarah Gardner*
Co-PI: Clarke Atkin
Year: 2002 TOTAL - \$14,987

The Effect of the Hyoepiglotticus Muscle on the Epiglottis in the Horse

Michigan State University, *Principal Investigator: Susan Holcombe*
Year: 2000 TOTAL - \$16,884

Does Cytokine Production Correlate with Reversible Airway Obstruction in COPD and SPAOPD Horses?

Louisiana State University, *Principal Investigator: David Horohov*

Co-PIs: Thomas Seahorn; Ralph Beadle

Years: 1999-2000 TOTAL -\$106,810

Neuromuscular Basis for Dorsal Displacement of the Soft Palate

Michigan State University, *Principal Investigator: Susan Holcombe*

Co-PI: N.E. Robinson

Year: 1999 TOTAL - \$51,047

TRACK / SURFACES

Grayson-Jockey Club Research Archives



The surface that a horse trains and competes on can impact their health and performance. Researchers found that hard surfaces, shallow footing depths, and compacted footing could increase horses' injury risk. In comparison, a soft or deep arena surface has too much cushion, making the footing unstable. As the surface shifts under the hoof, the horse is forced to work harder for balance and support, which can often lead to inflammation of the leg's soft tissues and other injuries.

Grayson is proud to have funded the following projects to find answers to competition surfaces:

Training Programs for Prevention of Fetlock Injury

University of California- Davis, *Principal Investigator: Susan Stover*

CO-PIs: David P. Fyhrie, Tanya Garcia-Nolen, Sarah Shaffer

The purpose of this study was to predict proximal sesamoid bone fracture in racehorses from a calibrated computational model that incorporates training programs, track surface properties, and bone's reparative processes.

Years: 2019-2020 TOTAL - \$83,331

Training and Surfaces for Injury Prevention

University of California- Davis, *Principal Investigator: Susan Stover*

Co-PIs: David Fyhrie; Tanya Garcia; Sarah Shaffer

This study was to assess the Risk for bone fracture in the fetlock joint due to training program and race surface properties to determine using computer models that simulate bone damage and repair.

Year: 2016-2017 TOTAL - \$183,582

Optimization of Racetrack Surface Properties

University of California – Davis, *Principal Investigator: Susan Stover*

Co-PIs: Jennifer Symons; David Hawkins; David Fyhrie; Shrinivasa Upadhyaya

This study was designed to create a computer modeling and simulation approach to be used to create an economical tool for investigation of race surface characteristics on fetlock motion, and thus risk for injury.

Years: 2014-2015 TOTAL - \$50,648

Race Surface Optimization for Fetlock Injury Prevention

University of California – Davis, *Principal Investigator: Susan Stover & Mont Hubbard*

Co-PIs: Shrinivasa Upadhyaya; Tanya Garcia; Jacob Setterbo

Year: 2010 TOTAL - \$61,864

Track Banking & Asymmetry of Hoof Loading

University of Guelph, *Principal Investigator: Jeffrey Thomason*
Co-PIs: M. Peterson (UN of Maine); C. W. McIlwraith (UN of COL);
B. Woodward (Woods Hole Oceanographic)
Year: 2010 TOTAL -\$36,761

Validation of Laboratory Assessment of Track Surfaces

University of California – Davis, *Principal Investigator: Susan Stover*
Co-PIs: Mont Hubbard; Jacob Setterbo; Shrinivasa Upadhyaya; Tanya Garcia
Year: 2009 TOTAL - \$49,786

Performance Parameters for Engineering Track Management

Colorado State University, *Principal Investigator: C. Wayne McIlwraith*
Co-PI: Michael Peterson (UN of Maine)
Year: 2008 TOTAL - \$43,838

Effects of Dirt, Turf & Polytrack Racing Surfaces on Hoof Loads

University of California – Davis, *Principal Investigator: Susan Stover*
Co-PI: Maury Hull
Year: 2005 TOTAL - \$51,294

The Horse-Racetrack Interface: the Effect of Shoeing on Impact Trauma

University of Pennsylvania, *Principal Investigator: David Nunamaker*
Co-PIs: Barbara Dallap
Years: 1999-2000 TOTAL -\$52,335