

# 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:*



### Shining a Light on the Black Box of Early Pregnancy Loss

Cornell University, Principal Investigator: Amanda de Mestre

*Co-PI: Donald Miller*

This study will determine how common genetic disorders of the early equine embryo occur, as well as, identify how they present to veterinarians and key factors that increase their risk.

Years: 2024-2025 TOTAL- \$111,574

### Novel Method for Diagnosis of Nocardioform Placentitis

Louisiana State University, Principal Investigator: Shavahn Loux

*Co-PIs: Kaylin Wiley, Jaden Thompson*

This project is designed to create a sensitive and specific diagnostic test for Nocardioform Placentitis.

Years: 2024-2025 TOTAL- \$132,597

### A Molecular Study On Hemorrhagic Anovulatory Follicles

Southern Illinois University Carbondale, Principal Investigator: Eduardo Gastal

*Co-PIs: Melba O. Gastal, Jones B. Graceli, Erin L. Oberhaus, Kendall A. Hyde, Léa Engelman*

This study investigates gene and hormone levels in HAFs, the leading cause of ovulation failure in mares, using a novel technique (Follicle Wall Biopsy-Trinity) to collect multiple follicular samples.

Year: 2025 TOTAL- \$70,724

### Insulin Dysregulation: Placental Changes and Foal Health

University of Arizona, Principal Investigator: Elaine Norton

*Co-PIs: Michigan State - Jane Manfredi, Dalen Agnew, Chelsey Yob*

This study investigates the role of equine metabolic syndrome on placental function and foal health and metabolic outcomes in order to develop effective treatment and management regimens.

Years: 2024-2025 TOTAL- \$115,003

### **Genomics Of Thoroughbred Stallion Subfertility**

Texas A&M University, Principal Investigator: Terje Raudsepp

*Co-PIs: Brian W. Davis, Rytis Juras*

The proposed project aims to identify candidate genes and regulatory variants underlying impaired acrosome reaction and subfertility in Thoroughbred stallions using multi-platform genomics.

Years: 2023-2024 TOTAL - \$77,371

### **Gallium Nitrate To Treat Bacterial Endometritis In Mares**

Oklahoma State University, Principal Investigator: Dale Kelley

*Co-PIs: Jennifer Rudd, Deon Van Der Merwe, Candace Lyman- Auburn*

With increased antimicrobial resistance there is a need to develop new, safe, and efficacious antimicrobial strategies, which is the aim of this study.

Years: 2023-2024 TOTAL - \$137,126

### **Antibiotic Effects On Uterine Microbiome And Resistome**

University of Illinois, Principal Investigator: Igor Canisso

*Co-PIs: Giorgia Podico, Klíbs Galvão, University of Florida*

This study will examine uterine microbiome and resistome of mares resistant and susceptible to endometritis treated with post-mating antibiotics.

Years: 2023-2024 TOTAL - \$136,824

### **Diet Nonstructural Carbohydrates Alter Ovarian Functions**

Colorado State Principal Investigator: Elaine Carnevale

*Co-PIs: Adam Chicco, Giovana Catandi, Raul Gonzalez*

This study will determine if feeding nonstructural carbohydrates (grains and sugars) to older mares can alter cell function and metabolism in ovarian follicles, impairing ovulation, oocyte and embryo viability, and fertility.

Year: 2024 TOTAL - \$96,905

### **Equine Placentitis: New Approaches To An Old Problem**

University of California-Davis, *Principal Investigator: Pouya Dini*

*CO-PIs: Bart C Weimer, Richard V. Pereira, Fabio Lima, Machteld van Heule, Margo Verstraete*

The goal of this study is to identify pathogens involved in placentitis and investigate their interaction with the placenta using bioinformatics and in vitro studies to develop better diagnostic and treatment methods.

YEARS: 2022-2023 TOTAL- \$ 112,520

### **Evaluating EVs From Equine Fetally-Derived MSCs**

Colorado State University, *Principal Investigator: Fiona Hollinshead*

*CO-PIs: Riley Thompson, Christianne Magee, Gerrit Bouma,*

*Budhan Pukazhenthí (Smithsonian Cons. Bio)*

This project will be evaluating extracellular vesicles (EVs) from equine fetally-derived mesenchymal stem cells as an endometritis therapeutic.

YEAR: 2022 TOTAL- \$ 45,418

### 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 Angiogenesis 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 $\alpha$ and SPP $\beta$ 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 Ca<sup>2+</sup> 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<sub>2a</sub>, Oxytocin and Conceptuses**

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

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