UK Gluck Equine Research Foundation
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Gluck Equine Research Center Donors 44
The Maxwell H. Gluck Equine Research Center has served as a valuable resource...

... to the equine industry and veterinary community with regards to new discovery and knowledge in equine health and well-being for over a quarter of a century. Equine scientists have conducted research resulting in the development of vaccines and diagnostics for infectious diseases, recommendations to prevent transmission of diseases, improved fertility and efficient reproductive management of horses, effective parasite control, basic understanding of regenerative medicine, establishment of reference standards for drug detection in racing and performance horses, and faculty at the Gluck Center have taken leadership in pioneer work on equine genomics and cytogenetics.

Our past and current success is the result of the Gluck Center’s ability to attract exceptionally talented researchers to Kentucky. These world-renowned faculty and staff have raised the current research productivity to one of the highest levels in the history of the Gluck Center. As you will read in this annual report, researchers at the Gluck Center were very productive in publishing scientific publications in 2013. This included eight books/chapters in books, 80 peer reviewed refereed articles and 22 non-refereed lay articles. The Gluck Center faculty, postdoctoral scholars and graduate students also traveled the world presenting abstracts and/or participating in more than 160 scientific conferences and meetings internationally, nationally and locally in Kentucky.

However, much more needs to be done and the challenge we face is to expand our research efforts and to provide information to the global equine community during times of shrinking resources in an already underfunded area of equine research. The Gluck Center is not alone in this challenge, and we have reached out and explored partnerships with other universities, research foundations, and pharmaceutical industries with a strong commitment to equine health and well-being.

We have developed a dual PhD degree program with the University of Copenhagen, in which graduate students will be trained in equine research as well as in a clinical setting in Kentucky and in Denmark. We hope this program will produce new leaders in the field of equine clinical sciences at an international level.

We have also signed a partnership agreement with Hippola, the European equine research consortium, in an attempt to bring together expertise in critical areas of equine research. An agreement was recently signed with Lincoln Memorial University, College of Veterinary Comparative Medicine. The program will add valuable resources to the Gluck Center and provide an opportunity for veterinary students to obtain research training in laboratories at the Gluck Center. Opportunities also exist for veterinary students from Auburn University to receive research training and experience in laboratories within UK’s College of Agriculture, Food and Environment. We are very excited about the possibility to directly contribute to the quality of future generations of veterinarians by working together with a veterinary educational institution.

We have also entered into a partnership with the University of Florida Equine Soundness Program, which will allow us to expand into an area of great importance to the racing and show horse industry and build on the past success of this program in UF’s College of Veterinary Medicine.

We are also continuing our long-standing collaborative relationships with the pharmaceutical industry. In addition to research support through grants and contracts, Zoetis is providing the Gluck Center with a graduate student fellowship for a clinical veterinarian seeking a PhD.

A recent survey by UK’s College of Agriculture, Food, and Environment concluded that the local horse industry contributes $3 billion to the state of Kentucky. Central Kentucky is without any doubts one of the most prominent horse regions in the world, and the infrastructure for horse activities in Kentucky is second to none. We recognize that the importance of what we do is not limited to Kentucky, but has an impact on the global equine industry. We are committed to an international leadership role in equine research and firmly believe that the more successful we are in bringing great minds together, the better we will serve the industry and veterinary profession, which translates into healthier horses around the world.

Thank you for your support. By making a donation to the Gluck Center, your gift benefits equine research, facility upgrades, equipment needed for research and graduate student scholarships. To donate to the Gluck Center, visit http://www.uky.edu/GiveNow/welcome.htm. Under the gift information section, first select “Agriculture” and then select “Gluck Equine Research Enrichment Fund.”

Dr. Mats Troedsson, DVM, PhD, Dipl. ACT
Gluck Equine Research Center Director
and Department of Veterinary Science Chair
M.Troedsson@uky.edu
History
The Maxwell H. Gluck Equine Research Center is the only scientific institute in the United States with nearly all faculty conducting full-time research in equine health and diseases.

Construction began on the 81,000 square foot facility in 1986 and was completed in 1987. The center is named after the late Maxwell H. Gluck, owner of Elmendorf Farm in Lexington. Maxwell Gluck and his wife, Muriel, generously donated $3 million to the University of Kentucky in 1983 for construction of the research facility on the condition the gift be matched by $3 million from the state and $3 million from members of the horse industry.

Research
The mission of the Gluck Center is scientific discovery, education and dissemination of knowledge for the benefit of the health and well-being of horses.

Today, the Gluck Center faculty conduct equine research in six targeted areas: genetics and genomics, infectious diseases and immunology, musculoskeletal science, parasitology, pharmacology/toxicology and reproductive health.

Major research accomplishments of researchers at the Gluck Center has had an international impact on equine research. Some of the major research accomplishments include:

- World Organisation for Animal Health (O.I.E.)-designated world reference laboratory for equine rhinopneumonitis, equine influenza and equine viral arteritis
- Developed six major vaccines to protect against strangles, equine influenza, equine rhinopneumonitis, equine viral arteritis, the shaker foal syndrome (toxoinfectious botulism) and validated field safety and efficacy of equine rotavirus vaccine
- Developed diagnostic serological tests for contagious equine metritis (CEM), Tyzzer’s disease, equine protozoal myeloencephalitis (EPM), equine herpesvirus myeloencephalopathy, strangles and equine viral arteritis
- Developed enzyme-linked immunosorbent assay (ELISA) test for drug detection
- Demonstrated the usefulness of artificial lights and progesterone/estradiol treatments for hastening the onset of the breeding season
- Determined the genetic basis for and developed tests for inheritance of certain color coat traits
- Provided leadership in the sequencing of the complete genome of the horse and structural characterization of horse genes
- Performed the definitive experiments that identified the cause of Mare Reproductive Loss Syndrome

Equine Research Hall of Fame
The Equine Research Hall of Fame, established by the
The Equine Research Hall of Fame provides a lasting tribute to the most renowned equine researchers in a variety of disciplines and serves as an international forum for honoring outstanding achievements in equine research.

**Gluck Equine Research Foundation**

The Gluck Equine Research Foundation was formed as a non-profit organization to provide the exchange of information between the Gluck Center and the horse industry and to secure research funds. Since the Foundation’s inception, it has been highly supportive in raising funds for equine research, endowed faculty positions, and facilities. Funding for graduate student support has allowed Gluck Center faculty to educate the next generation of scientists.

**Industry Outreach**

Providing research information to the equine community is an important facet of the Gluck Center. Information is shared through the Gluck Center’s website, www.ca.uky.edu/gluck, and three newsletters:
- Bluegrass Equine Digest (monthly)
- Lloyd’s Equine Disease Quarterly
- Research & Service Report (biennially)

**Department of Veterinary Science**

The Gluck Center is part of the Department of Veterinary Science along with the Animal Genetics Testing and Research Laboratory (AGTRL) and the Veterinary Diagnostic Laboratory (VDL).

The mission of the Department of Veterinary Science is to assure the health and viability of animal agriculture through teaching, discovery, research and service. Faculty in the Department of Veterinary Science frequently collaborate on research projects with faculty in UK’s College of Agriculture, Food and Environment and College of Medicine, with veterinarians in central Kentucky and scientists at other institutions.

The Gluck Center is also part of the UK Ag Equine Programs, an overarching concept for all equine activities in the College of Agriculture, Food and Environment. Created in 2005 as a front door to equine programs at UK, the UK Ag Equine Program’s mission is to discover, share and apply new knowledge that will enhance the health, performance and management of horses commensurate with the signature status of Kentucky’s equine industry.

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The late Maxwell and Muriel Gluck (top) donated $3 million to the University of Kentucky for construction of the research facility on the condition the gift be matched by the state and members of the horse industry. (Below) James Bassett III, former president of Keeneland, Muriel Gluck and former UK President Otis A. Singletary broke ground for the center in 1985.

University of Kentucky Equine Research Foundation (now the UK Gluck Equine Research Foundation), honors those distinguished researchers who have dedicated their careers to equine science. The Hall of Fame is at the Gluck Center.

On Dec. 1, 1990, 12 scientists became the first inductees into this prestigious hall. Inductees are selected for the honor by an international scientific committee that evaluates the achievements and contributions of eminent researchers who were nominated by their peers and colleagues. The inductees, active, retired or deceased, are individuals from throughout the world who have expanded the body of knowledge of equine science through their contributions to basic or applied research.
Twenty-three faculty at the Gluck Equine Research Center are assisted by students, post docs, research staff and visiting scientists in conducting research in the areas of:

Genetics and Genomics

Immunology

Infectious Diseases

Musculoskeletal Sciences

Parasitology

Pharmacology/Toxicology

Reproductive Health

Some of the world’s top scientists are drawn to the Gluck Center to provide solutions to equine health problems. Gluck Center faculty also respond to some of the equine industries toughest problems.
**GENETICS AND GENOMICS**

**FACULTY**
Ernie Bailey, Professor  
Kathryn Graves, Assistant Clinical Professor  
Teri Lear, Associate Professor  
James MacLeod, Professor (See page 20)

**RESEARCH SNAPSHOT**
Coat color genetics  
Contracted foal syndrome  
Cytogenetics and infertility  
Dwarfism  
Genetics and equine arteritis virus  
Junctional epidermolysis bullosa (JEB)  
Parrot mouth

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Ernie Bailey, PhD  
Professor

**Education:**
PhD – University of California-Davis (Genetics), 1980  
MS – University of California-Davis (Comparative Pathology), 1975  
BS – University of California-Davis (Genetics), 1973

**Interest:**
Immunogenetics and genomics—We are interested in the genetic influences on the innate and adaptive immune systems which protect the horse from infectious diseases. Other interests include the development of the genetic map for horses and investigation of genes involved in the health of the horse such as contracted tendons, extreme lordosis and dwarfism.

**Projects:**
• Genomics and gene mapping in horses.  
• Investigation of the hereditary aspects of EIPH, swayback, dwarfism, cataracts and equine arteritis virus susceptibility.

**Graduate student**
• John Eberth, MS (Graduated 2013), PhD Candidate – TBD.

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Kathryn Graves, PhD  
Assistant Clinical Professor and  
Director, Animal Genetics Testing and Research Laboratory

**Education:**
PhD – Cornell University, 1985  
BS – Cook College, Rutgers University, 1980

**Interest:**
Overseeing a high quality Animal Genetics Testing and Research Laboratory and providing genotyping services to 50 equine registries. In addition, the lab offers specific tests for color genes and heritable disease mutations.

**Projects:**
• Develop new DNA-based color tests.  
• Candidate gene sequencing to identify causative mutations for heritable diseases.
Education:
PhD – University of Kentucky (Genetics), 1997
MS – University of Louisville (Cytogenetics/Zoology), 1986
BA – Indiana University Southeast (Zoology/Field Biology), 1975

Interest:
Identifying genes causing inherited diseases in horses. Understanding genomic changes that differentiate horses from other perissodactyls. Providing clinical cytogenetics services to equine veterinarians in the United States and other countries by identifying chromosomal abnormalities that affect health and fertility.

Clinical Cytogenetics Services:
In keeping with the service and outreach mission of the university, my lab offers clinical cytogenetics services to equine veterinarians. Between 1.5% and 3% of the general horse population carries a chromosomal abnormality including abnormalities of the sex chromosomes, aneuploidy and chromosomal translocations. Chromosomal abnormalities can profoundly affect fertility and survival. We have identified chromosomal abnormalities that affect mare fertility, cause severe congenital abnormalities in foals, and cause sexual ambiguity.

Projects:
• Equine chromosome disorders causing repeated early embryonic loss and congenital abnormalities.
• Identifying the cause of Contracted Foal Syndrome and other congenital diseases of foals.
• Identifying the causes of Disorders of Sexual Development in horses.
• Comparing the genome of the horse and other perissodactyls to better understand equid evolution, behavior and disease resistance.

Graduate students and research staff:
• Judy Lundquist, Research Technician.
• Allison Sparling, PhD Candidate – Characterization and function of horse-specific genes.
Amanda A. Adams, PhD
Assistant Professor

EDUCATION:
Postdoctoral Scholar – University of Kentucky (Equine Immunology), 2011
PhD – University of Kentucky (Veterinary Science), 2008
BS – Stephens College (Biology), 2003

INTEREST:
My research interests are focused on characterizing the immune system of the geriatric horse, by identifying mechanisms responsible for immunosenescence, inflamm-aging and altered immune responses to vaccination. We are also interested in further understanding of how some endocrine disorders, in particular Equine Cushing’s disease, affects the immune response of aged horses. The goal is to improve the health and well-being of the aged horse by identifying interventions that have the potential to improve the function and redox state of the immune system. In addition, I have established research funding to further understand the effect of nutritional intervention on the inflammatory and endocrine response of the equine metabolic syndrome (EMS) horse. There is a growing need to understand mechanisms responsible and pathways involved in equine metabolic syndrome. Thus, my goal is to identify potential treatments that target both the inflammatory and metabolic component of EMS.

PROJECTS:
• Studies ongoing to determine what role nutritional intervention has on age-related changes in immune function, in particular chronic inflammation or inflamm-aging.
• To understand how ‘season’ affects the inflamm-aging response of aged horses.
• Study the effects of polyphenolic bioactive compounds (pterostilbene, resveratrol, curcuminoids, quercetin, and hydroxypterostilbene) on pro-inflammatory cytokine production using the aged horse as a model.
• Studies ongoing to develop the horse as a model system for human aging to further understand age-related changes in the immune response, in particular mechanisms responsible for inflamm-aging, focusing on T-cell membrane rafts.
• Identifying biomarkers of aging to better predict the “biological age” of the horse.
• Developing novel diagnostic tools for diagnosis of Equine Cushing’s disease or pituitary pars intermedia dysfunction (PPID) and evaluating novel treatments for PPID horses.
• To determine if PPID horses respond as well to vaccination compared to non-PPID horses.
• Studies ongoing to characterize mechanisms responsible for Equine Metabolic Syndrome (EMS) and to identify possible treatments for EMS.
• To characterize what role gut microflora may play in inflamm-aging and EMS.
• Other studies ongoing to determine how weaning stress affects the immune response and how one might modulate or improve immunity during the weaning period.

GRADUATE STUDENT:
• Sarah Elzinga, PhD Candidate – Characterizing mechanisms responsible for Equine Metabolic Syndrome (EMS) and to identify possible treatments for EMS
• Melissa Siard, PhD Candidate – Characterization of the Immunological and Physiological responses of aged horses with PPID
Education:
Professor of Veterinary Immunology, Louisiana State University, 1988-2003
Fellowship – FDA, Bethesda, MD, 1986-1988
PhD – University of Tennessee, 1985
MS – Purdue University, 1981
BS – Pennsylvania State University, 1978

Interest:
My group continues to investigate the immune responses of horses to various infectious
diseases. We are also especially interested in infections that occur in the foal, such as
*Rhodococcus equi* and *Lawsonia intracellularis*. We also collaborate with other groups
to study the characterization of cell-mediated immune responses in EIA-infected and
vaccinated horses, vaccination of foals against equine influenza virus, further investiga-
tions into parasite immunology and the characterization of inflammatory responses to
exercise.

Projects:
• Underlying immunological basis for the susceptibility of foals to infection with *Rhod-
ococcus equi*, a cause of pneumonia in foals less than 3 months old (Macarena Sanz)
• Infections that occur later in the life of the foal, such as *Lawsonia intracellularis*, the
causative agent for equine proliferative enteropathy (EPE). (Allen Page)
• Older horse immune function (Amanda Adams)
• Cell-mediated immune responses in EIA-infected and vaccinated horses. The goal
will be to identify immunological responses that may be important in controlling viral
replication and disease (Chong Liu, in collaboration with Charles Issel at the Gluck
Center and Ron Montelaro at Pittsburgh)
• Characterization of inflammatory responses to exercise with the goal of identifying im-
munological markers for exercise-induced injury in the performance horse
• Other collaboration projects include vaccination of foals against equine influenza virus
with Thomas Chambers at the Gluck Center and parasite immunology with Gene Lyons
and Martin Nielsen at the Gluck Center

Graduate students, research staff, undergraduates and visiting scientists:
• Alex Betancourt, Research Technician
• Chong Liu, PhD Candidate – Cell mediated immunity to EIAV
• Allen Page, PhD (graduated 2013), Postdoctoral Scholar – *Lawsonia intracellularis*
infection and immunity
• Macarena Sanz, PhD Candidate – *Rhodococcus equi* infections of the young horse

Undergraduates: Craig Stewart
Visiting Students: Whitney Zoll, DVM student, Michigan State University, and
Michelle Tucker, DVM student, Texas A&M University
INFECTION DISEASES

FACULTY
Sergey Artiushin, Assistant Professor
Udeni Balasuriya, Professor
Thomas Chambers, Associate Professor
Frank Cook, Associate Professor
Roberta Dwyer, Associate Professor
Charles Issel, Professor
John Timoney, Professor
Peter Timoney, Professor

RESEARCH SNAPSHOT
Equine rhinopneumonitis
Equine influenza
Equine viral arteritis
Equine infectious anemia
Equine rotaviral enteritis
Strangles and other equine streptococcal diseases
Equine leptospirosis
Equine clostridial enteritis
Diagnostic test development
Vaccine development
Disease surveillance and reporting
Biosecurity/Disaster preparedness

Education:
PhD – Moscow State University (Microbiology), 1981
MS – Moscow Veterinary Academy (Biophysics), 1973

Interest:
Research interests are focused on molecular studies of Streptococcus equi, Streptococcus zooepidemicus, and Leptospira interrogans. S. equi causes strangles and S. zooepidemicus is responsible for endometritis in mares. Leptospirosis can cause abortion and stillbirth as well as recurrent uveitis (a major cause of equine blindness).

Projects:
• Development of rapid diagnostic assays for identification of bacterial pathogens.
• Study of surface and secreted proteins of Streptococcus as virulence factors and potential protective antigens.
• Analysis of genetic variations in Streptococcus.
• Identification of virulence factors of S. zooepidemicus responsible for developing acute infection in dogs and horses.

Education:
PhD – University of California-Davis (Comparative Pathology with special emphasis in molecular virology), 1996
MS – University of California-Davis (Comparative Pathology with special emphasis in diagnostic pathology), 1991
BVSc – Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka, 1985

Interest:
The major focus of my laboratory is to definitively characterize the molecular epidemiology and pathogenesis of equine arteritis virus (EAV) and equine herpesvirus-1 (EHV-1) infections of horses, and to develop improved diagnostic and prophylactic reagents to control these economically important viral diseases. In addition, some of the recent studies in my laboratory are focused on characterizing the virus-host interactions by combining contemporary molecular biology techniques and host genomic analysis using genome-wide association study (GWAS). Specifically, these studies are focused on identifying the cellular factors involved in EAV pathogenesis, as well as studying the interaction between equine CD3+ T lymphocytes and EAV to better understand the establishment of persistent infection in
stallions in the presence of high serum neutralizing antibody titers. An additional focus of my research is development of new diagnostic and vaccine technologies, definition of the epidemiology and pathogenesis of other important equine viral diseases, and the recognition of novel and emerging viral diseases of the horse. My long-term goal is to provide a state-of-the-art research resource as well as diagnostic expertise, reagents and technology that are dedicated to the horse, and to facilitate transfer of this technology and expertise to appropriate partners and collaborators, as well as veterinarians, post-doctoral, graduate and undergraduate trainees.

**Projects:**

**Equine Arteritis Virus**
- Identification of host genetic factors responsible for establishment of EAV carrier state
- Identification of genetic determinants of virulence and attenuation of EAV
- Mechanisms of EAV pathogenesis and persistent infection of stallions
- Molecular epidemiology of EAV infection and evolution of EAV
- Characterization of equine immune response to EAV infection

**Equine Herpesvirus-1**
- Molecular characterization of neurovirulent EHV-1 strains
- *In vitro* antiviral activity of herpesvirus DNA polymerase inhibitors against neuropathogenic and non-neuropathogenic strains of EHV-1

**Development and Validation of New Diagnostic Assays for Equine Viral Diseases**
- Molecular diagnostic assays
- Serological assays
- Fishing for novel pathogens

**Development of Improved Prophylactic Reagents**
- Development of improved vaccines against equine and porcine arterivirus infections
- Development of attenuated marker vaccines for equine arteritis virus
- Development of a genetically defined live attenuated equine herpesvirus-1 vaccine

**Services:**
- Provide assistance with molecular diagnostics (RT-PCR and real-time RT-PCR).
- Testing of clinical specimens submitted to the OIE designated reference laboratory for equine viral arteritis (EVA) at the Gluck Center.
- Testing of clinical specimens submitted to the OIE designated reference laboratory for equine influenza infections and for equine herpes virus at the Gluck Center.
- Provide molecular diagnostic reagents to diagnostic laboratories.
- Provide advice on equine viral arteritis to veterinarians and equine industry associates over the phone.

**Graduate students and research staff:**
- Pamela Henney, Research Specialist
- Yanqiu Li, Postdoctoral Scholar – Molecular characterization of neurovirulent EHV-1
- Bora Nam, Undergraduate Student/Laboratory Assistant
- Kristin Pfahl, MS Candidate – Development and validation of improved serological assays for EVA
R. Frank Cook, PhD
Associate Professor

Education:
PhD – University of Warwick (Virology), 1980
BSc – University of Sussex (Biochemistry), 1976

Interest:
My research focuses on Equine Infectious Anemia Virus (EIAV), a virus closely related to HIV in humans. My most recent interests are in the field of vaccine design.

Projects:
• Design of vaccines against all lentiviruses including HIV-1.
• Provide purified antigens for inclusion in commercial USDA-approved test kits.
• Strategies to enhance efficacy of DNA vaccination in the horse (i.e., the use of cytokines to enhance the efficacy of vaccines).
• Molecular epidemiology of equine herpesviruses.
• Genetic basis of differing susceptibility to disease and immune responses to vaccinations.
Roberta Dwyer, DVM, MS, DACVPM, Professor

Education:
Board Certified in Epidemiology, ACVPM, 2003
Diplomate, American College of Veterinary Preventive Medicine, 1993
MS – University of Kentucky, 1990
DVM – Iowa State University, 1985

Interest:
Equine preventive medicine and infectious diseases, disease outbreak investigation and epidemiology, biosecurity, disaster preparedness and response, risk reduction to agroterrorism and pre-veterinary advising and undergraduate teaching.

Projects:
• Consultations for veterinarians, farm managers and horse owners.
• Biosecurity plan development for veterinary and farm facilities.
• AAEP on-call media veterinarian for infectious disease issues.
• Instructor for a national extension program, “Strengthening Community Agrosecurity Plans.”
• Co-editor of Lloyd’s Equine Disease Quarterly.
• Planning section chief for a national Incident Management Type II team (disaster response team).

Charles Issel, DVM, PhD, Wright-Markey Chair in Equine Infectious Diseases and Professor

Education:
Diplomate – American College of Veterinary Microbiologists, 1976
PhD – University of Wisconsin (Veterinary Science), 1973
MS – University of Wisconsin (Veterinary Science), 1971
DVM – University of California–Davis, 1969
AB – University of California–Berkeley (Zoology), 1965

Interest:
Our research, continuous since 1974, involves equine infectious anemia from A to Z. We are working with the national and international veterinary community to develop and implement sensitive, specific and practical diagnostic tests for EIA to complement the “Coggins” test in effective control programs. Our work indicates that we should adopt a three-tiered testing approach which would more accurately detect positive horses with difficult to read AGID test reactions. At the same time we are studying the intricacies of the EIA virus (EIAV), a lentivirus, in an attempt to define the genetic and antigenic variations in this highly mutable agent and how it impacts protective immunity, i.e., vaccine design and efficacy. This work is valuable in its own right as well as being of comparative value as a model for AIDS. Our projects with the USDA have resulted in a DVD package that includes our video from 1996 and a new video from 2010, “Equine Infectious Anemia Testing – Refining our approach.” Both videos are available online at http://www.aphis.usda.gov/animal_health/animal_diseases/eia/. To obtain the DVD package, visit http://www.aphis.usda.gov/vs/nahss/equine/eia/index.htm.

Projects:
• Improve diagnosis and control of EIA.
• Develop effective vaccines against EIA.
• Provide high quality reagents for use in testing for diseases.
• For more information on EIA please see our website at: http://dept.ca.uky.edu/eia/.

Research staff:
• Sheila J. Cook, Research Scientist
• Joann Keiko Moore, Laboratory Technician Senior
A scanning electron micrograph (left) shows adherence of *Streptococcus equi*, the cause of equine strangles, to stratified squamous epithelium of the equine lingual tonsil. The photo (right) shows *S. equi* within the epithelium of the nasopharyngeal tonsil of a horse three hours after infection. (Photos: John Timoney)
Interest:
Among the diseases of major interest are equine viral arteritis (EVA), contagious equine metritis (CEM), West Nile fever and equine rhinopneumonitis or equine herpesvirus related diseases. Also, development of strategies for reducing the risk of global spread of infectious diseases through international trade and reduction of temporary import/re-export testing requirements for “high health, high performance” horses.

Projects:
• Studies on the mechanism of establishment and persistence of equine arteritis virus in the reproductive tract of the stallion.
• Characterizing the site(s) of localization of equine arteritis virus in the carrier stallion.
• Investigating the variation in virulence among naturally occurring strains of equine arteritis virus, especially as it pertains to the abortigenic effects of the virus.
• Developing less costly, more rapid diagnostic tests for EVA.
• Developing a second generation marker vaccine for EVA/equine arteritis virus infection.
• Advancing current understanding of the molecular epidemiology and pathogenesis of equine herpesvirus myeloencephalopathy.
• Developing a more rapid and reliable diagnostic test for detection of Taylorella equigenitalis/T. asinigenitalis.
• Improving existing control and prevention strategies for contagious equine metritis (CEM).
• Elucidation of the epidemiology of Taylorella asinigenitalis in horses and non-horse equids.
• Investigating the frequency and nature of persistence of equine rhinitis A, and equine rhinitis B1 & B2 viruses in the horse.

Services:
• Responsible for operation of the OIE Reference laboratory for equine viral arteritis and equine rhinopneumonitis (equine herpesvirus 1 & 4 infections) at the Gluck Center, including updating relevant chapters in the OIE Terrestrial Animal Health Code & Manual of Diagnostic Tests & Vaccines for Terrestrial Animals.
• Provision of EVA diagnostic reagents to diagnostic laboratories, nationally and internationally.
• Provide consultation for veterinarians and members of the horse industry on various equine infectious diseases, including but not exclusive of EVA, equine rhinopneumonitis, contagious equine metritis and equine piroplasmosis.
• Co-editor of the Lloyd’s Equine Disease Quarterly.
• Provide quarterly reports to the International Collating Centre, Animal Health Trust, Newmarket, UK, on equine infectious disease occurrences in the United States.
• Veterinary advisor to the Thoroughbred Owners and Breeders Association (USA).
• Member, Veterinary Committee, International Breeders Federation
• Advise the American Horse Council’s Health & Regulatory Committee on matters of infectious diseases.
• Member, International Movement of Horses Advisory Committee to the International Federation of Racing Authorities
• Member, OIE Ad hoc group on “High-health – high performance horses”

Research staff:
• Kathleen Shuck, Principal Research Analyst
MUSCULOSKELETAL SCIENCES

FACULTY
James MacLeod, Professor

RESEARCH SNAPSHOT
Articular cartilage maturation and repair
Genomics
Osteoarthritis
Wobbler Syndrome

Education:
Fellowship – University of Pennsylvania (Endocrinology & Genetics), 1992
PhD – University of Pennsylvania, 1990
VMD – University of Pennsylvania, 1984
BS – University of Delaware, 1980

Interest:
The laboratory studies biological and biomedical aspects of the musculo-
skeletal system, with an emphasis on the growth and maturation of articular
cartilage, the development of osteoarthritis, repair of articular lesions
and the effects of anti-inflammatory medications. Experiments are con-
ducted primarily on a cellular and molecular level. In addition to articular
cartilage, areas of interest include cervical stenotic myelopathy (Wobbler
Syndrome), genomics and limb development.

Projects:
• Articular cartilage maturation.
• Articular cartilage repair.
• Intra-articular glucocorticoid therapy.
• Wobbler syndrome (cervical stenotic myelopathy).
• Genomics and gene expression.

Postdoctoral/Graduate students and visiting scientists:
• Emma Adam, BVetMed, Dipl. ACVIM, Dipl. ACVS, PhD Candidate –
  Articular cartilage maturation and repair
• Michael Fettinger, MS, Research Analyst
• Jennifer Janes, DVM, PhD Candidate – Pathogenesis of cervical stenotic
  myelopathy
• Parvathy Thampi, BVSc, MS, PhD Candidate – Articular cartilage matu-
  ration and repair
• Ellen Wiegand, BS, PhD Candidate – Articular cartilage maturation and
  repair
• Wenying Zhu, MS, PhD Candidate – Osteoarthritis and intra-articular
  glucocorticoid therapy
**FACULTY**
Daniel Howe, Professor  
Eugene Lyons, Professor  
Martin Nielsen, Assistant Professor  

**RESEARCH SNAPSHOT**
Drug resistance in parasites  
Equine protozoal myeloencephalitis  
Helminths, including life cycles, prevalence and control  
Parasite diagnostics

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**Daniel Howe, PhD**  
Professor  

**Education:**  
PhD – Purdue University (Molecular Parasitology), 1992  
MS – Western Illinois University (Biology/Parasitology), 1990  
BS – Western Illinois University (Biology), 1988

**Interest:**  
Molecular studies of protozoan parasites – The primary research goal is to obtain a better understanding of the parasite *Sarcocystis neurona*, the primary cause of equine protozoal myeloencephalitis (EPM). Studies are ongoing to determine the genome sequence for *S. neurona*. Other interests include the development of improved serum assays for EPM diagnosis. Additionally, we are investigating approaches to develop an effective vaccine against EPM.

**Projects:**
• Characterization of novel genes and antigens from the parasite *Sarcocystis neurona*.  
• Development of a serologic assay for diagnosis of EPM and to develop a vaccine for EPM.  
• Sequencing and annotation of the *S. neurona* genome.

**Postdoctoral/Graduate students, research staff and undergraduates:**
• Sriveny Dangoudoubiyam, Postdoctoral Scholar – Genome of *Sarcocystis neurona*  
• Ablesh Gautam, PhD Candidate – Characterization of the SnSAG family of surface antigens in *Sarcocystis neurona*  
• Michelle Yeargan, Research Specialist  
*Undergraduate*: Maggie Schlich, Agriculture Biotechnology, and Allison Young, Agriculture Biotechnology

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**Eugene Lyons, PhD**  
Professor  

**Education:**  
PhD – Colorado State University (Parasitology), 1963  
MS – Kansas State University (Parasitology), 1958  
BS – South Dakota State University (Wildlife), 1956

**Interest:**  
Parasitology: Control and transmission of internal parasites of horses. Nearly all dewormers currently on the market were tested for efficacy on internal parasites here in the Department of Veterinary Science. Studies are ongoing on resistance of small strongyles and ascarids to commercial dewormers. Other research is concentrated on profiling the passage of small strongyle eggs in feces (EPGs) of older horses. This is to try and determine which animals are low egg shedders, and thus don’t need deworming, and which ones are “high” egg shedders, which are needing antiparasitic treatment. Other research is on internal parasites of wildlife, especially hookworms in pinnipeds.

**Projects:**
• Control, transmission and prevalence of natural infections of internal parasites of horses.  
• Drug resistant nematodes in field and critical/controlled tests.  
• Seasonal and yearly transmission.  
• Molecular identification of parasite species and basis of drug resistance.
Research staff and visiting scientists:
• Tetiana Kuzmina, PhD, Visiting Scientists from Ukraine
• Sharon Tolliver, Research Specialist

Education:
Diplomate ACVM – American College for Veterinary Microbiologists, 2013
Diplomate EVPC – European Veterinary Parasitology College, 2011
PhD – University of Copenhagen (Equine Parasitology), 2007
DVM – Royal Veterinary and Agricultural University, 2001

Interests:
Diagnosis and control of gastrointestinal helminths of horses and anthelmintic resistance. Studies will aim at 1) understanding and developing new diagnostic measures of important parasites and their level of resistance to anthelmintic drugs, 2) developing and evaluating sustainable anthelmintic treatment regimens using objective measures, and 3) applying molecular approaches for understanding mechanisms for development of anthelmintic resistance.

Projects:
• Prepatent diagnosis of Strongylus vulgaris
• Objective evaluation of deworming regimens in horses – growth rates, disease incidence, and financial aspects
• The interaction between anthelmintic treatment and vaccination
• Characterizing the role of Strongylus vulgaris in referred colic cases
• Parasite material agreement study
• Transabdominal ultrasonography: a tool for monitoring Parascaris burdens
• In vitro efficacy of Bacillus thuringiensis crystal proteins against equine parasites

Graduate students, research staff and undergraduates:
• Ulla Andersen, PhD Candidate – Prepatent diagnosis of Strongylus vulgaris
• Jennifer Bellaw, MS Candidate – Objective assessment of equine parasitism
• Holli Gravatte, Research Analyst
• Emily Rubinson, MS Candidate – Deworming and inflammatory modulation
Undergraduate: Maci Stephens, Agriculture Biotechnology

Fifth stage larva of Strongylus vulgaris collected from the Cranial Mesenteric Artery of a horse. (Photo: Martin Nielsen)

Fluorescently-labeled Sarcocystis neurona parasites (green) adjacent to the infected cell’s nucleus (blue). (Photo: Dan Howe)

Bot (Gasterophilis intestinalis) insect larvae of horses. First, second and third instars found in the mouth and/or stomach (on left) and first instar in an egg attached to a horse hair (on right). (Photos: Gene Lyons)
Education:
DABT – Diplomate, American Board of Toxicology, 1980
PhD – University of Toronto (Pharmacology), 1970
MSc – University of Guelph (Pharmacology), 1966
MVB – University College, Dublin, 1964

Contributions:
1981: Drugs and the Performance Horse, 480 page text.
1983: Regulatory threshold for furosemide, still in place.
1985-Present: About 100 ELISA tests for equine medications; First company “spin-off” from UK sold to Neogen Corp.
2003: US Copyright on the unique biological mechanism of MRLS.
2011: Certified reference and internal standards for therapeutic medication regulation, licensed to Frontier Biopharm LLC.

Projects:
• Ongoing research on certified reference standards and internal standards licensed to Neo- gen Corp. and Frontier BioPharm.
• Creation of ELISA tests for drug detection and therapeutic medication regulation.
• Developing animal models of ocular, fetal and central nervous system parasitic disease and demonstrating the therapeutic efficacy of specific chemotherapeutics.
• Develop improved standards/assays for ergot alkaloid analysis, the group of toxins involved in fescue toxicosis.

Postdoctoral student and research staff:
• Charlie Hughes, Research Associate
• Sucheta Kudrimoti, Postdoctoral Scholar – Relationships between medication or medication residue concentrations and pharmacological effects in the contexts of resulting therapeutic responses and/or the regulatory significance of medication residues with respect to competitive events.

These deuterated internal standards are used to enhance the accuracy of analytical procedures. The use of internal standards today is considered essential for accurate quantitative measurements. The structures of internal standards differ from the corresponding analyte in that three or more hydrogen atoms in the molecule are replaced by deuterium (heavy hydrogen, the Ds in the figures). Known quantities of internal standards are introduced to the samples to be analyzed. Since the internal standards have the same chemical properties as their analogous analyte they can be used to correct for inconsistencies or losses of the analyte during an analytical procedure. (Photos: Thomas Tobin)
Education:
Dipl. ACT – 1987
PhD – Cornell University, 1987
DVM – University of Georgia, 1981

Projects:
• Studies on anti-Müllerian hormone in the mare and stallion.
• Down regulation of oxytocin receptors and luteal maintenance in mares.
• Bioactivity of 5 α-dihydroprogesterone in mares.
• Diagnostic methods related to placentitis and late abortion in mares.
• Nonsurgical control of reproductive behavior in the stallion.
• Role of estrogens during pregnancy in mares.
• Effects of subluteolysis on endometrial gene transcription.

Postdoctoral/Graduate students:
• Anthony Claes, DVM, Dipl. ACT, PhD Candidate – Studies on anti-Müllerian hormone in the mare and stallion
• Igor Canisso, DVM, Dipl. ACT, PhD Candidate – Studies on placentitis and late abortion in mares
• Alejandro Esteller-Vico, DVM, PhD, Postdoctoral Scholar – Studies on endocrinology and sperm biology in the horse

Education:
EMB – Certified Embryologist, American College of Embryology, 2010
NIH Postdoctoral Fellow – Colorado State University (Physiology), 1987
PhD – University of Florida (Animal Science), 1986
MS – University of Tennessee (Animal Science), 1980
BS – University of Tennessee (Animal Science), 1976

Interest:
Determining causes of reproductive losses in mares, including maternal-embryo or maternal-fetal interactions, mare reproductive loss syndrome, and most currently, effects of endophyte-infected fescue on pregnant mares. Overall goal is to reduce pregnancy losses and enhance pregnancy maintenance in mares.

Projects:
• Vascular changes associated with consumption of endophyte-infected fescue.
• In vitro assessment of ergot alkaloids, receptor agonists and receptor antagonists on equine peripheral and central arteries.
Edward Squires, MS, PhD, Dipl. ACT (hon.)
Professor, Executive Director of the Gluck Equine Research Foundation

Education:
Dipl. ACT (hon.) – 2003
PhD – University of Wisconsin, 1974
MS – West Virginia University, 1971
BS – West Virginia University, 1969

Interest:
Improving the reproductive efficiency of both mares and stallions, hormonal control of the cycle and development of reproductive techniques. Improving the quality of cooled and frozen semen.

Projects:
• Diagnostic methods related to placentitis
• Uterine artery rupture in mares
• Suppression of testicular function in stallions
• Effect of Omega 3 fatty acids on stallion semen
• Factors affecting freezability of stallions
• Infectious diseases of the stallion

Graduate students:
• Gabriel Davolli, MS Candidate – Infectious diseases of the stallion
• Julianne Kalmar Fischer, MS Candidate – Factors affecting freezability of stallion semen

Tom Swerczek, DVM, PhD
Professor

Education:
PhD – University of Connecticut (Comparative Pathology), 1969
MS – University of Connecticut (Nutritional Pathology), 1966
DVM – Kansas State University, 1964
BS – Kansas State University, 1962

Interest:
Nutritional Pathology. Factors that cause abortion in mares, including climatic and environmental changes that induce stress to pasture forages. Drought, excessive rainfall, frosts and freezes can induce nutrient imbalances.

Projects:
• Evaluation of bacterial endophytes of grass-and-legume forages as emerging causes of reproductive loss in horses.
• Develop diagnostic tests for tissues and blood to aid in diagnosis of fetal loss.
**REPRODUCTIVE HEALTH**

Mats Troedsson,  
DVM, PhD, Dipl. ACT, Dipl. ECAR  
Professor, Director of the Gluck Equine Research Center, and Chair of the Department of Veterinary Science

**Education:**  
Dipl. ECAR – 2002  
Dipl. ACT – 1993  
PhD – University of California – Davis, 1991  
DVM – Royal Veterinary College (Stockholm, Sweden), 1975

**Interest:**  
Equine reproductive health and biology. 1) The interaction between spermatoza and the uterine immune system with a particular note on its role in breeding-induced endometritis. 2) The role of seminal proteins in fertility. 3) Diagnostics and treatment of high-risk pregnancies.

**Projects:**  
• Interaction between semen and the uterus in horses.  
• Identification of seminal plasma proteins that affect fertility.  
• Inflammation of the uterus – role of inflammatory cytokines in infectious and breeding-induced endometritis.  
• Causes, diagnostics and control of high-risk pregnancies.

**Postdoctoral/Graduate students and research staff:**  
• Alejandro Esteller-Vico, DVM, PhD, Postdoctoral Scholar – Seminal plasma proteins  
• Carleigh Fedorka, PhD Candidate – Interaction between seminal plasma proteins and the uterus  
• Ana Gabriella Toro Mayorga, MS Candidate – Uterine pathology/biopsies  
• Kirsten Scoggin, PhD, Senior Scientist  
• Elizabeth Woodward, PhD, Postdoctoral Scholar – Breeding induced endometritis in the mare: The local innate immune response.
Gluck Equine Research Center

Awards and Recognitions

Competitive Grant Funding

Non-Competitive Grant Funding

Scientific Publications

Books/Chapters in Books

Refereed Journal Articles

Non-Refereed Articles

Presentations, Abstracts and Meetings Attended
Awards and Grants

Balasuriya, U.B.R. 2013. Land O’LAKES PURINA FEED LLC. The New Formulation of Purina® Equine Senior® Feed: To determine the effect of different levels of Nutritek, a Diamond V yeast fermentate additive on immune function in aged horses. PI. $83,948.

Adams, A.A. 2013. Cooperative research farms. Efficacy of a blended vegetable extract in combination with calcium butyrate or calcium butyrate alone to reduce stress and inflammation in geriatric horses. PI. $35,000.


Adams, A.A. 2013. Boehringer-Ingelheim. Do horses with Pituitary Pars Intermedia Dysfunction (PPID) respond as well to vaccination when compared to non-PPID, aged-matched horses? PI. $57,551.


Annual Meeting of the American Association of Veterinary Parasitologists, Chicago, IL, July 20-23.

Nielsen, M.K. Board Certified, American College of Veterinary Microbiologists (ACVM).

Squires, E.L. Elected editor of the proceedings of the 11th International Symposium on Equine Reproduction.


*Denotes graduate student or postdoctoral scholar:

Funding is important to equine research. The faculty obtained several grants, some of which were multi-year.

Competitive Grant Funding

Adams, A.A. 2013. Land O’LAKES PURINA FEED LLC. The New Formulation of Purina® Equine Senior® Feed: To determine the effect of different levels of Nutritek, a Diamond V yeast fermentate additive on immune function in aged horses. PI. $83,948.

Adams, A.A. 2013. Cooperative research farms. Efficacy of a blended vegetable extract in combination with calcium butyrate or calcium butyrate alone to reduce stress and inflammation in geriatric horses. PI. $35,000.


Adams, A.A. 2013. Boehringer-Ingelheim. Do horses with Pituitary Pars Intermedia Dysfunction (PPID) respond as well to vaccination when compared to non-PPID, aged-matched horses? PI. $57,551.


Squires, E.L. Elected editor of the proceedings of the 11th International Symposium on Equine Reproduction.


*Denotes graduate student or postdoctoral scholar:


Grants and Scientific Publications


Non-Competitive Grant Funding


Dwyer, R.M., N. Williams, and P.J. Timoney. 2013. Lloyd’s of London. Continued funding for the Lloyd’s Equine Disease Quarterly. $45,000.


Research results conducted by the faculty at the Gluck Center was published in various forms throughout 2013.

Books/Chapters in Books


Scientific Publications


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Non-Refereed Articles

Adams, A.A. 2013. The importance of nutrition in enhancing immunity in the aging horse. Equine Disease Quarterly 22(4):4


Scientific Publications


Presentations, Abstracts and Meetings Attended

Gluck Center faculty are guest speakers at veterinary conferences and meetings locally, nationally and internationally. The presentations are arranged by location; Many of the meetings held in the United States were international or national conferences or symposiums.

INTERNATIONAL

Adams, A.A. Reviewer for a DGS Germany Grant: VE 225/8-1 (Vervuert / Leipzig), “Comparative effects of diet on inflammatory responses of subcutaneous and visceral adipose tissue and liver in ponies and horses.”


Bailey, E. Panelist. 5th International Scientific Conference on Turkmen Horse and Horse Breeding. Ashgabat, Turkmenistan, April 26-28

Bailey, E. International Foundation of Animal Genetics (IFAG) Executive Committee Meeting. Oxford, United Kingdom, May 5-6


Balasuriya, U.B.R. Ad hoc grant reviewer, National Science Center, Poland.

Balasuriya, U.B.R. Organizing Committee, XIIIth International Nidovirus Symposium. Salamanca, Spain, June 1-6

Ball, B.A. Abnormalities of the equine estrous cycle. Zoetis Symposium. Guadalajara, Mexico, June 26-29

Ball, B.A. Endocrinological evaluation of the prospective and breeding stallion. Zoetis Symposium. Guadalajara, Mexico, June 26-29

Ball, B.A. New diagnostic methods in endocrinology. Zoetis Symposium. Guadalajara, Mexico, June 26-29

Ball, B.A. Testicular and epididymal injuries and abnormalities. Zoetis Symposium. Guadalajara, Mexico, June 26-29

Ball, B.A. Ultrasonographic and endoscopic examination of the stallion. Zoetis Symposium. Guadalajara, Mexico, June 26-29

Canisso, I.F., B.A. Ball, K.E. Scoggin, and M.H.T. Troedsson. Alpha-fetoprotein is highly expressed and appears to be increased in the foetal fluids of mares with placentitis. Reprod Dom Anim (48) 116. European Society for Reproduction in Domestic Animals. Bologna, Italy.


Chambers, T.M. ISIRV Second International Symposium on Neglected Influenza Viruses. Dublin, Ireland, March 8

Howe, D.K. Moving Sarcocystis neurona into the “omics” era. Finally. Opening session Keynote presentation. 2nd International Meeting on Apicomplexan Parasites in Farm Animals. Kusadasi, Turkey, Oct. 31-Nov. 2

MacLeod, J.N., Z. Zeng, M. Hestand, S. Coleman, L. Orlando, and T. Kalbfleisch. Annotated protein-coding genes that are missing from EquCab2. 10th International Equine Genome Workshop. Furnas, S. Miguel, Portugal, July 10-13

MacLeod, J.N. Cartilage Repair in Axolotl Salamanders. 11th World Congress of the International Cartilage Repair Society. Izmir, Turkey, Sept. 15-18


Nielsen, M.K. Parasite control in horse establishments. Three seminars for veterinarians. Copenhagen, Denmark, March 18-20

Nielsen, M.K. Parasites and pathogenicity. Discussion Seminar hosted by Virbac Animal Health. Copenhagen, Denmark, March 20
**Presentations, Abstracts and Meetings Attended**

**Nielsen, M.K.** AAEP parasite control guidelines: Putting new strategies to work in your practice. American Association of Equine Practitioners. Webinar, May 15


**Squires, E.L.** Australian Veterinary Conference. Armidale, Queensland, Australia, Feb. 20-21

**Squires, E.L.** Brazilian congress on Animal Reproduction. Uberlandia MG, Brazil, June 3-8

**Timoney, P.J.** Panelist. Clinical outcomes of equine herpesvirus-1 infection in racing and breeding horses. Istanbul, Turkey, Jan. 9

**Timoney, P.J.** Equine rhinopneumonitis: Selected features of a multisysyndromic disease. Turkish Jockey Club of Breeders, Trainers and Owners. Istanbul, Turkey, Jan. 9

**Timoney, P.J.** Equine viral arteritis: Predictable and unpredictable behavior of an intriguing pathogen. Ghent University School of Veterinary Medicine. Brussels, Belgium, March 5

**Timoney, P.J.** Equine grass sickness – Significant features of an enigmatic disease. Chilean Thoroughbred Breeders and Owners Association. Santiago, Chile, March 14

**Timoney, P.J.** Prevention and control of equine infectious diseases. Chilean Thoroughbred Breeders and Owners Association. Santiago, Chile, March 14

**Timoney, P.J.** Panelist. OIE Ad hoc Group on International Horse Movement for Equestrian Sport. Paris, France, Oct. 28-30

**Timoney, P.J.** Organizing Committee, Section Chair for the First International Havemeyer Foundation Workshop: Infectious Diseases of Working Horses and Donkeys. Addis Ababa, Ethiopia, Nov. 18-22

**Timoney, P.J.** Role of institutions in disease control: research institutions. First International Havemeyer Foundation Workshop: Infectious Diseases of Working Horses and Donkeys. Addis Ababa, Ethiopia, Nov. 18-22


**Tobin, T.T.** Presentation to Marmoom Equine Research Laboratory staff. Dubai, United Arab Emirates, Feb. 14

**Tobin, T.T.** Presentation to Marmoom Equine Research Laboratory staff. Dubai, United Arab Emirates, July 3-8

**Tobin, T.T.** Presentation to Marmoom Equine Research Laboratory staff on aspects of equine performance optimization and medication regulation. Dubai, United Arab Emirates, Dec. 1-15

**Troedsson, M.H.T.** Cooled, shipped and frozen semen. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** Endometritis. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** High risk pregnancies. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** Ovarian abnormalities. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** Reproductive endocrinology and physiology of the mare, hormone therapy. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** Sperm transport, normal pregnancy development, and management of twins. Eickemeyer/Ansager Dyrehospital Short Course. Jylland, Denmark, March 21-22

**Troedsson, M.H.T.** Ultrasound examination of the pregnant mare. Eickemeyer/Ansager Dyrehospital Workshop. Jylland, Denmark, March 21-22

Troedsson, M.H.T. Placentitis. Brazilian Association for Equine Practitioners, ABRAVEQ, Annual Meeting. Campinos, Brazil, June 21-23

Troedsson, M.H.T. Equine endometritis. Brazilian Association for Equine Practitioners, ABRAVEQ Annual Meeting. Campinos, Brazil, June 21-23


Adams, A.A. Resveratrol: A Sirtuin-1 Activator that promotes healthy aging in animals and humans. Academy VMA. Nashville, TN.

Bailey, E. USAID research proposal reviews (panel member). Technical Evaluation Panel for Climate-resilient and Disease-resistant Livestock. March 26

Bailey, E. What genomics can tell us about performance. Equine Affaire. Columbus, OH, April 12

Bailey, E. What genomics tells us about horse breeds. Equine Affaire. Columbus, OH, April 12


Balasuriya, U.B.R. Validation of real-time PCR assays for equine viral and bacterial pathogens. Center of Excellence for Emerging Zoonotic Animal Diseases (CEEZAD), Annual Meeting, Lied Lodge and Conference Center. Nebraska City, NE, April 23


Ball, B.A. New diagnostic methods in reproductive endocrinology in the horse. Countryside Hospital for Animals. Covington, GA.


Canisso, I.F., B.A. Ball, M.H.T. Troedsson, E.S.M. Silva, and G.M. Davolli. Decreasing pH of mammary gland se-
Presentations, Abstracts and Meetings Attended

cretions is associated with parturition and is correlated with electrolyte concentrations in prefoaling mares. 59th Annual AAEP Convention. Nashville, TN, Dec. 7-11


Chambers, T.M. NIAID review panel for Centers of Excellence for Influenza Research and Surveillance (CEIRS). Bethesda, MD, June 3-5


Dwyer, R.M. Organizing Committee, Extension Disaster Education Network Agrosecurity Symposium. Washington, DC. April 21-24


Gautam, A., S. Dangoudoubiyam, and D.K. Howe. Functional characterization of the surface antigens (SnSAGs) in Sarcocystis neurona. 65th Annual American Midwestern Conference of Parasitologists. West Lafayette, IN, June 6-8


Horohov, D.W. Panelist. Zoetis KOL Pulmonary Disease in Canines & Equines, Oct. 1-3

Horohov, D.W. Panelist. Zoetis Innovation Advisory Board.


Kalbfleisch, T.S., J.D. Rebollo-Mendez, Z. Zeng, M.S. Hestand, S.J. Coleman, and J.N. MacLeod. Mapping the original sanger sequencing reads from “Twilight” to the reference equine genome assembly they produced. Plant and Animal Genome XXI. San Diego, CA, Jan. 11-16


Presentations, Abstracts and Meetings Attended


MacLeod, J.N. Scientific Advisory Board, Morris Animal Foundation.


Sanz, M. Rhodococcus equi – a new model for a better understanding of an old disease. ACVIM Forum. Seattle, WA, June 14


Squires, E.L. Select Breeders Annual Meeting. Chesapeake City, MD, Nov. 18-20

Timoney, P.J. Informational sources of foreign animal diseases and international communication systems for reporting equine infectious disease events. American Horse Council Convention. Washington, DC, June 16

Timoney, P.J. Panelist. Equine Diseases Communication Center with reference to the National Equine Health Plan, American Horse Council. Washington, DC, June 16

Timoney, P.J. Paradigm shift in the frequency and nature of EHV-1 neurologic disease events. 117th Annual USAHA Meeting. San Diego, CA, Oct. 19

Timoney, P.J. Panelist. 117th Annual USAHA Meeting, Equine Herpesvirus-1 Workshop, San Diego, CA, Oct. 19


Tobin, T.T. Presentation to the Racing Medication and Testing Consortium on behalf of the National HBPA. Denver, CO, Sept. 17


Presentations, Abstracts and Meetings Attended

STATEWIDE

Note: Many of the meetings held in Kentucky were international or national conferences or symposiums.

Adams, A.A. Resveratrol: a Sirtuin-1 Activator that promotes healthy aging in animals and humans. Southeast KY VMA. Corbin.

Adams, A.A. Novel therapies for equine metabolic syndrome: Do they work? UK Ag Equine Showcase. Lexington, Jan. 18


Adams, A.A. Overview of the Gluck Equine Research Center. Presented at the Fort Harrod Back Country Horsemen Meeting. Harrodsburg, April 4


Adams, A.A. UK Equine Programs Field Day. Lexington, June

Adams, A.A. Asbury Draft Horse Day Educational series. Wilmore, September

Balasuriya, U.B.R. Application of reverse genetics and equine genomics to study virus-host interactions: Equine arteritis virus as a model. Department of Microbiology, Immunology and Molecular Genetics. University of Kentucky Medical Center. Lexington, April 2


Ball, B.A. Ovarian problems in mares. 4th Annual Kentucky Breeders’ Short Course. Lexington, Jan. 19

Ball, B.A. New diagnostic approaches for placentitis in the mare. Department of Veterinary Science Equine Diagnostic and Research Seminar. Lexington.


Chambers, T.M. Role of the horse in interspecies transmission of influenza viruses. 9th KY Innovation & Entrepreneurship Conference. Lexington, Aug. 29


Dwyer, R.M. Emergency preparedness: Is your VMA part of the problem or the solution? Heartland Veterinary Conference. Lexington, Aug. 23-24

Dwyer, R.M. Organizing Committee, Kentucky Pre-veterinary student meeting with Associate Dean of Admissions, Auburn College of Veterinary Medicine, Lexington, Sept. 26

Dwyer, R.M. Organizing Committee, Kentucky Pre-veterinary student meeting with Student Recruiter, Tuskegee School of Veterinary Medicine. Lexington. Oct. 10


Graves, K.T. Why is my horse that color? Understanding coat color genetics. UK Ag Equine Showcase. Lexington, Jan. 18

Horohov, D.W. Can inflammatory markers predict fitness and impending injury? UK Ag Equine Showcase. Lexington, Jan. 18

Horohov, D.W. The effect of training and nutritional sup-
Presentations, Abstracts and Meetings Attended

plementation on exercise-induced pro-inflammatory cytokine gene expression in two year old Thoroughbreds. Darley Flying Start. Lexington, Jan. 21


Horohov, D.W. Healthy horses: Medicine, science and research careers. Future Farmers of America National Meeting. Louisville, Oct. 30

Horohov, D.W. and E.L. Squires. Organizing Committee, Equine Endocrine and Genetic Disorders Symposium. Lexington, Nov. 21


Janes, J. Wobbler Syndrome: What we know and remaining questions. UK Ag Equine Showcase. Lexington, Jan. 18


Lear, T.L. Recognizing genetic diseases in clinical practice. Equine Genetics and Endocrinology Symposium. UKVDL. Lexington, Nov. 21


Squires, E.L. Organizing Committee, UK Ag Equine Showcase and 4th Annual Kentucky Breeders’ Short Course. Lexington, Jan. 18-19

Squires, E.L. Control of sexual behavior in stallions. 4th Annual Kentucky Breeders’ Short Course. Lexington, Jan. 19

Squires, E.L. Hormonal use in mares. 4th Annual Kentucky Breeders’ Short Course. Lexington, Jan. 19

Squires, E.L. UK Ag Equine Programs Career Fair. Lexington, March 5

Squires, E.L. Organizing Committee, Kentucky Equine Networking Association. Lexington, Jan. 24, March 14, May 9, July 11, Sept. 12 and Nov. 14

Troedsson, M.H.T. What happens when sperm meets egg? 4th Annual Kentucky Breeders’ Short Course. Lexington, Jan. 19


Walter, J.C., A. Esteller-Vico, M.H.T. Troedsson, E.L. Squires, and B.A. Ball. Development and validation of enzyme immunoassay for the measurement of circulating testosterone in the horse. 32nd Annual Symposium in Reproductive Science and Women’s Health, University of Kentucky. Lexington, May 16-17

2013 Donors: Gluck Equine Research Center

Thank you to our 2013 donors who generously supported research and activities at the Gluck Center.

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- Darley Stud Management LLC
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- Geoffrey C. Hughes Foundation, Inc.
- Indiana Horsemen’s Benevolent & Protective Association
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- Lloyd’s Underwriter Funds
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- Pennsylvania HBPA Inc.
- Mr. Thomas A. Tisbo
- University of Florida

**Gold**
- American Endowment Foundation (on behalf of Dr. & Mrs. Walter Zent)
- Ashford Stud/Creek View Farm
- ChemSolutions LLC
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- Dr. Kristina G. Lu and Dr. Peter Morresey
- Dr. Carol M. McLeod
- Minnesota HBPA Inc.
- Nebraska Horseman’s Benevolent & Protective Association
- Newmarket Equine Hospital
- Rood and Riddle Equine Hospital

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- Ms. Katrina H. Becker
- Mr. Robert M. Bouse
- Mr. and Mrs. Wayne Chatfield-Taylor
- Mr. Kyle W. Cooper
- Dr. Claire Latimer Embertson
- Dr. Rolf M. Embertson
- Dr. John J. Etchart
- Fleetwood Bloodstock (on behalf of Tim McMurry)
- Dr. Darrilyn G. Fraser
- Ms. Frances M. Hartwell
- Mrs. Martha K. Hoff
- Mr. and Mrs. Steven A. Holland
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- Mr. Jackie D. Huckabay Jr.
- Mrs. Michelle C. Huckabay
- Ms. M. LaDonna Hudson
- Mr. Stanley H. Jones
- Ms. Mary Ann Jubin
- Kentucky Thoroughbred Farm Managers’ Club
- Dr. Christina J. McManus
- NVA Acquisition LLC
- Mrs. Nancy K. Polk