UK Gluck Center develops novel Equine Arteritis Virus test

The University of Kentucky Gluck Equine Research Center has developed a novel test to determine the likelihood of a long-term equine arteritis virus carrier state in stallions.

Gluck Center faculty members Professor Udeni Balasuriya, Professor Ernie Bailey and Peter Timoney, Frederick Van Lennep Chair in Equine Veterinary Science, developed the test to determine the genetic basis of a specific haplotype, a group of genes inherited from one parent. Their work was funded by a U. S. Department of Agriculture-Agriculture and Food Research Initiative grant.

Outbreaks of equine viral arteritis, which is caused by the virus, may result in significant economic losses to the equine industry due to pregnancy loss in mares, death in young foals and establishment of the carrier state in stallions. The virus is maintained in the equine population between breeding seasons by persisting in the carrier stallion.

“It is gratifying to see how Drs. Balasuriya and Bailey’s work has led not only to a better understanding of the nature of persistence of this important disease, but also to a test that can help identify those animals at risk for persistent infection,” said David Horohov, chair of the Department of Veterinary Science, director of the Gluck Equine Research Center and Jes E. and Clemetine M. Schlaikjer Endowed Chair.

Stallions possessing the susceptible haplotype, consisting of four specific nucleotide changes in the CXCL16 gene, are more likely to remain long-term carriers of the virus in their reproductive tract than horses that possess the resistant haplotype. Stallions that are resistant initially shed the virus in their semen following infection but in most cases cleared the virus from the reproductive tract within months following infection. Stallions possessing even one copy of the susceptible haplotype are at greater risk for becoming long-term shedders of EAV.

“Since surgical castration can be resorted to in stallions that are confirmed carriers of EAV, this test can help identify those horses that may spontaneously clear themselves of the virus, thus avoiding the loss of a valuable breeding animal,” said Kathryn Graves, director of the Genetic Testing at Gluck laboratory.

In addition, the test indicates which horses have the susceptible haplotype and therefore are at higher risk for becoming carriers if infected with EAV. In these cases, the risk of infection and becoming a carrier can be prevented through vaccination and implementation of appropriate management practices.

It is important to emphasize that despite the availability of this test, all colts and stallions negative for antibodies to EAV should be vaccinated against EAV in accordance with the manufacturer’s recommendations, irrespective of their genetic makeup for the CXCL16 gene.

The new test is available at the Genetic Testing at Gluck Gluck’s genetic testing laboratory. The cost is $100, and the test can be done from a mane or tail sample. More information, including a submission form, is available at http://www2.ca.uky.edu/gluck/AGTRL.asp.

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

The UK Gluck Equine Research & Service Report is produced by UKGERF and the Department of Veterinary Science. It is published twice a year on behalf of all equine researchers and veterinarians and others in the horse industry who are committed to the continued improvements in equine research and technology. Research material is meant to be shared. However, materials are copyrighted and require reprint permission from UKGERF.
Thirty-five countries gather for infectious diseases conference in Argentina

More than 400 attendees from 35 countries convened at the 10th International Equine Infectious Diseases Conference (IEIDC X) April 4-8 in Buenos Aires, Argentina, to present and discuss the latest topics and trends of infectious diseases in all species of equids.

Held every four years in a different country, the conference focuses on emerging, re-emerging, and other frequently-encountered infectious diseases that afflict many equine populations throughout the world.

The conference kicked off with a Practitioners’ Day, sponsored by the American Association of Equine Practitioners Foundation, and was followed by a second Practitioners’ Day session and the beginning of the “full conference” with the first day of oral abstract presentations. Oral and poster presentations focused on 10 topic areas: biosecurity, diagnostics, emerging and re-emerging diseases, gastrointestinal, neurological, other system diseases, parasitology, reproduction, respiratory, and working equids. A special session on the international movement of horses, which was chaired by Peter Timoney, MVB, MS, PhD, FRCVS, Frederick Van Lennep Chair in equine veterinary medicine at the University of Kentucky Gluck Equine Research Center, was also part of the conference.

The Practitioners’ Day sessions offered a broad overview and featured talks from the topic areas. A common theme throughout the presentations was that while there is a lot known in the realm of infectious diseases research, there is a lot more unknown and more studies are needed moving forward. Below is a recap of some of the selected presentations from the Practitioners’ Day sessions.

Macarena Sanz, DVM, MS, Dipl. ACVIM, PhD, an assistant professor at Washington State University, presented talks on Rhodococcus equi and equine coronavirus. She gave a brief overview of R. equi selected publications from the past three years. One study mentioned was conducted while she was a doctoral student at the Gluck Center. In that study, it was discovered that foals three weeks or older have a decreased susceptibility to R. equi. Sanz said there is a short window of time to react and treat foals once they are infected. One unanswered question that needs more discovery: What makes one foal susceptible to R. equi and another not?

During her equine coronavirus talk, Sanz said there has not been a lot of research documented, but this is one of her currently-funded projects that she hopes she will have more data on soon.

Andrew Waller, BSc, PhD, head of bacterial pathology at the Animal Health Trust, gave an overview of strangles and its history. Strangles is seen worldwide, except for in Iceland, which has not imported horses for more than 1,000 years. It is the most frequently diagnosed contagious equine disease worldwide and fatality rates are up to 10% in some outbreaks.

John Prescott, MA, VetMB, PhD, an emeritus professor at the University of Guelph, discussed clostridial enterocolitis. During his talk, he said between 65-70% of equine colitis cases have no identified causes and have severe colitis characteristics of toxigenic (clostridial) infections. Moving forward, Prescott said a meta-genomic approach could be helpful in characterizing the microbes present in colitis feces to identify causative bacteria.

Other topics covered included rotavirus in foals, bacteria, viruses, and placentitis associated with reproductive activity; equine arboviral encephalitides; equine infectious anemia; equine protozoal myeloencephalitis (EPM); equine herpesvirus myeloencephalopathy (EHM); leptospirosis; hepatitis; glanders; salmonella; piroplasmosis; dourine; and equine vaccines and neurological diseases caused by viruses. The second Practitioners’ Day session concluded with three parasitology talks on anthelmintic resistance seen worldwide and the need for more diagnostic surveillance and tools to identify resistant animals.

The next conference will be held in Normandy, France in 2020. Specific dates will be announced early next year.

A recap of the social media coverage during the event is available on Storify at https://storify.com/JennyEvans/10th-international-equine-infectious-diseases-conf.

-N Jenny Evans

Nielsen publishes three parasitology papers in Equine Veterinary Journal issue

Martin Nielsen, DVM, PhD, Dipl. EVPC, Dipl. ACVIM, assistant professor of equine parasitology at the University of Kentucky Gluck Equine Research Center, had three papers published in the May 2016 issue of Equine Veterinary Journal.

The first paper, “Non-strangulating intestinal infarction associated with Strongylus vulgaris in referred Danish equine patients” evaluated the role of the equine bloodworm, Strongylus vulgaris, in various types of colic in referred Danish equine patients. “We used our serum ELISA specific for S. vulgaris on several hundreds of samples taken from horses admitted to the veterinary teaching hospital at the University of Copenhagen veterinary school,” Nielsen said. “We found a significant association with a certain type of colic involving non-strangulating intestinal infarction. That is dead (necrotic) sections of the intestine, which can be caused by the parasite due to...” (Continued on p.4)
health and well-being in this area. Their efforts have greatly contributed to our increased awareness and sensitivity to the health and safety needs of these athletes,” said David Horohov, chair of the Department of Veterinary Science, director of the Gluck Equine Research Center and Jes E. and Clementine M. Schlaikjer Endowed Chair.

Ducharme has focused much of his clinical and research effort on understanding the equine upper airway physiology during exercise. The focus of his studies has been on methods of identifying and quantifying dynamic upper airway obstructions, defining the anatomical structures and their function and developing surgical and other methods of treatment for upper airway diseases in the horse. He graduated from veterinary college at the University of Montreal in 1979 and completed his internship and residency at Cornell University’s College of Veterinary Medicine in 1982. He received his master of science degree from the University of Guelph and became a Diplomate of the American College of Veterinary Surgeons in 1985. Ducharme served as president and chair of the board of the American College of Veterinary Surgeons from 2005-2007.

“I feel so honored by this nomination to the UK Equine Research Hall of Fame. I consider this a team award. I have been so fortunate to have had great mentors to guide me, outstanding national and international colleagues to collaborate, support and challenge me, exceptional enthusiasm from technicians, graduate students and residents, who all have contributed good ideas toward improving diagnosis and treatment of the upper airway of horses,” Ducharme said. “I also was driven by the horses, which seemingly are always saying, ‘You got to do better! And, how hard can this really be?’ I have been fortunate to be able to listen to the many trainers and referring veterinarian’s views on the problems. I am also very privileged for support from the many equine research foundations which have supported our investigations, namely the Grayson-Jockey Club Research Foundation, the Southern California Equine Foundation and, for most of my career, the Harry M. Zweig memorial fund for equine research.”

Dyson is a world-renowned expert in equine orthopedics, with a particular interest in lameness and poor performance in sports horses. With a strong background as a rider, Dyson has an in-depth knowledge and understanding of performance problems in horses of all disciplines. Dyson has also made additional observations about how horses adapt their gait in the face of lameness under a variety of circumstances...
Hall of Fame cont.

and how the rider and tack can be influential. She has recognized the importance and limitations of diagnostic analgesia for localization of pain causing lameness. She has also validated the usefulness and limitations of ultrasonography, scintigraphy and MRI for routine diagnostic use. Dyson graduated from Cambridge University in 1980 with a bachelor of veterinary medicine degree in medicine and surgery and completed post graduate work at the University of Pennsylvania’s New Bolton Center. She returned to the United Kingdom in 1982 where she began working at Animal Health Trust.

“As a lameness clinician, I feel humbled and honoured to have been elected to join an elite band of scientists in the UK Equine Research Hall of Fame. I owe a huge debt of gratitude, not only to the friends and colleagues with whom I’ve had the privilege to work, but of course also to the horses, which provide endless challenges. I have been constantly inspired to try to improve the welfare of these fantastic athletes,” Dyson said.

Stover’s research focuses on understanding the pathophysiology of catastrophic musculoskeletal injury in performance horses. Her research contributions have had an international impact and have influenced decisions on approaches to training and rehabilitation, horseshoeing, track surface types and preparation, diagnostic approaches and fracture repair techniques for improving racetrack safety for horses and jockeys. Her research on comparative orthopedics covers many areas with a primary focus on bone development and remodeling, the response of bone tissue to exercise and the pathogenesis of fractures and ligament injury. Stover graduated from Washington State University in 1976 with a doctorate in veterinary medicine and completed an internship and residency in equine surgery at UC Davis. After working in private practice in Washington, she returned to UC Davis, where she provides equine lameness and surgical care. Stover obtained a doctorate in comparative pathology from UC Davis and is a Diplomate of the American College of Veterinary Surgeons.

“I have been privileged to collaborate with multidisciplinary teams of talented students, residents and colleagues. Their passion to understand how the musculoskeletal system works has underpinned our 25-year journey to prevent orthopedic injuries and improve the welfare of racing and performance horses. Much remains to be done, and I am grateful to the mentors who encouraged me to push the envelope and to UC Davis, the California Horse Racing Board and the equine industry—veterinarians, owners, trainers and funding organizations like the Grayson-Jockey Club Research Foundation, the Southern California Equine Foundation and others—who trusted us with resources to pursue our goals,” Stover said. “I am humbled to be recognized, and on behalf of the JD Wheat Veterinary Orthopedic Research Lab team, I thank the UK Equine Research Hall of Fame for this honor.”

Equine Research Hall of Fame nominees can be living or deceased, active in or retired from the field of equine research. Established in 1990, the UK Equine Research Hall of Fame honors international scientific community members biennially who have made equine research a key part of their careers, recognizing their work, dedication and achievements in equine research.


-Jenny Evans

Student entrepreneur Team Race Assured finishes fourth in finals competition

The University of Kentucky’s student entrepreneur team Race Assured placed fourth at the Idea State U finals competition April 22-23 at the Griffin Gate Marriott in Lexington. The team of Julia Fabiani, an undergraduate in equine science and physiology; Stefanie Pagano, a graduate student in biomedical engineering; and Ben Martin, a graduate student in finance and agricultural economics, received $7,500 for their win in the business plan category.

The Race Assured team presented a business plan for a blood test, which can potentially predict injuries in horses well before serious problems occur. The team also won the Georgia Bowl intercollegiate entrepreneurship competition hosted by Georgia Tech.

The competition included presenting their business plan or model to a panel of judges, a written proposal, marketing video, display and elevator pitch. The

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“Parasight System” featured on cover of International Journal for Parasitology

The Parasight System, a smartphone based fecal egg diagnostic and intestinal parasite management tool for veterinarians, was featured on the July cover of International Journal for Parasitology. The development of the Parasight System is a collaboration between MEP Equine Solutions, the UK’s College of Agriculture, Food and Environment and Gluck Equine Research Center, the U.S. Department of Agriculture (via a Small Business Innovation Research Grant), and Zoetis.

“We are very proud about this recognition. The International Journal for Parasitology is the leading scientific journal in medical and veterinary parasitology, and their acceptance of our article and decision to feature our technology is a clear sign of our work being acknowledged by our peers,” said Martin Nielsen, DVM, PhD, Dipl. EVPC, Dipl. ACVM, associate professor at the Gluck Center.

The featured article is titled “Automated parasite fecal egg counting using fluorescence labelling, smartphone image capture and computational image analysis,” by Paul Slusarewicz, Stefanie Pagano, Christopher Mills, Gabriel Popa, K. Martin Chow, Michael Mendelhall, David Rodgers, and Martin K. Nielsen.

According to the journal’s website, the International Journal for Parasitology publishes the results of original research in all aspects of basic and applied parasitology, including all the fields covered by its specialist editors, and ranging from parasites and host-parasite relationships of intrinsic biological interest to those of social and economic importance in human and veterinary medicine and agriculture. The journal is sponsored by the Australian Society for Parasitology.

-Jenny Evans

Author donates portion of children’s book proceeds to UK’s Gluck Center

In the summer of 2013, longtime horse owner and then graduate student Kristen Halverson called the University of Kentucky Gluck Equine Research Center for advice and questions she had regarding equine protozoal myeloencephalitis (EPM), a neurological disease caused by the parasite Sarcocystis neurona, which inflicted her off-the-track Thoroughbred, Nino Tempo.

“A very kind doctor from your organization helped me answer a myriad of questions regarding EPM and the necessary steps to enhance treatment,” Halverson said of her conversation with Dan Howe, PhD, professor at the Gluck Center.

Halverson later wrote the children’s book, The Tale of Josephine Rose: A Horse’s Magical Neigh, which was published in February by Dog Ear Publishing. She is donating a portion of all book proceeds to Howe’s research program.

“Kristen’s sense of benevolence is why the Gluck Center exists and what allows our faculty, staff, and students to succeed in helping horses and horse owners,” Howe said.

She said the generosity Howe showed stuck with her and she wanted to find a way to help raise awareness for such an important disease that needs more research funding.

“I am still most grateful for his willingness to take time out of his busy day to help a student from a different educational institution,” Halverson said.

Halverson describes The Tale of Josephine Rose: A Horse’s Magical Neigh as “a heartfelt story based on my own horses that is about acceptance, kindness, and courage.”

Halverson and her husband, who live in northeast Iowa, purchased a new Clydesdale, Josephine Rose, and she witnessed some bullying amongst the other horses not accepting the Clydesdale. She took those personal experiences, along with her passion for the welfare of the horse, to help raise more awareness about EPM. Halver-

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Ashley Steuer, DVM, a PhD student in the University of Kentucky Department of Veterinary Science, has been named the Zoetis Resident in Veterinary Parasitology. Steuer will be the first student to participate in a dual residency and PhD program in parasitology in the department.

Steuer, who earned her DVM from the University of Tennessee in May, will begin her PhD studies and residency training in August. Martin Nielsen, DVM, PhD, Dipl. EVPC, Dipl. ACVM, associate professor at the UK Gluck Equine Research Center, will serve as her primary advisor for both her PhD and residency efforts. For the residency part, Steuer and Nielsen will work closely with Craig Carter, DVM, PhD, Dipl. ACVPM, director at the UK Veterinary Diagnostic Laboratory, and his team at the UKVDL where Steuer will read diagnostic samples submitted to the lab.

“The goal is to educate well-rounded DVM parasitologists that can be competitive candidates for parasitology positions at universities and veterinary schools around the world,” Nielsen said. “We are particularly excited to host this program because it allows us to graduate an equine-focused candidate.”

As part of the combined residency and PhD program, Steuer will also receive training in diagnostic parasitology to prepare her for taking the board examination in veterinary parasitology with the American College of Veterinary Microbiologists.

The position is supported by the National Center for Veterinary Parasitology (NCVP) at Oklahoma State University for four years.

-Jenny Evans

UK Veterinary Science graduate student named Zoetis resident in veterinary parasitology

The University of Kentucky Gluck Equine Research Foundation has established the Teri L. Lear Memorial Scholarship Fund. Lear, PhD, was an equine genetics researcher and associate professor at the UK Gluck Equine Research Center. She died May 14 after a long battle with cancer.

Lear became one of the foremost experts in cytogenetics of the horse, published numerous studies on equine genetics, trained MS and PhD students, and was one of the leaders in the Horse Genome Project—a project that resulted in the first map of a horse’s genetic sequence.

Lear loved training graduate students, participating in conferences, and meeting scientists from around the world. The fund will support invited lecturers to the Gluck Center and graduate student travel to scientific conferences.

Gifts to the fund are tax-deductible. Checks, made payable to the University of Kentucky and designated “Teri L. Lear Memorial Scholarship Fund” in the memo, can be mailed to UK Gluck Equine Research Center, Attn: Jenny Evans, 108 Gluck Equine Research Center, Lexington, KY 40546-0099.

Teri L. Lear Memorial Scholarship Fund established

The Teri L. Lear Memorial Scholarship Fund

All gifts to this fund are tax-deductible. A receipt will be provided by the University of Kentucky Development Office.

I/We would like to contribute to the Teri L. Lear Memorial Scholarship Fund.

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Please make your check payable to the University of Kentucky and designate “Teri L. Lear Memorial Scholarship Fund” on the check. If you would like to make a gift of securities, please contact Marci Hicks at 859-257-8783 for transfer information.

-Jenny Evans

Horse’s Magical Neigh, cont.

son said the underlying message is also about respect and appreciating differences. “In some tones, it has helped people feel more accepted after reading the book,” Halverson said.

The book is available on Amazon. Halverson also has a Facebook page at face-

book.com/ahorsesmagicalneigh/ for anyone interested in following along with upcoming book events.

-Jenny Evans
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