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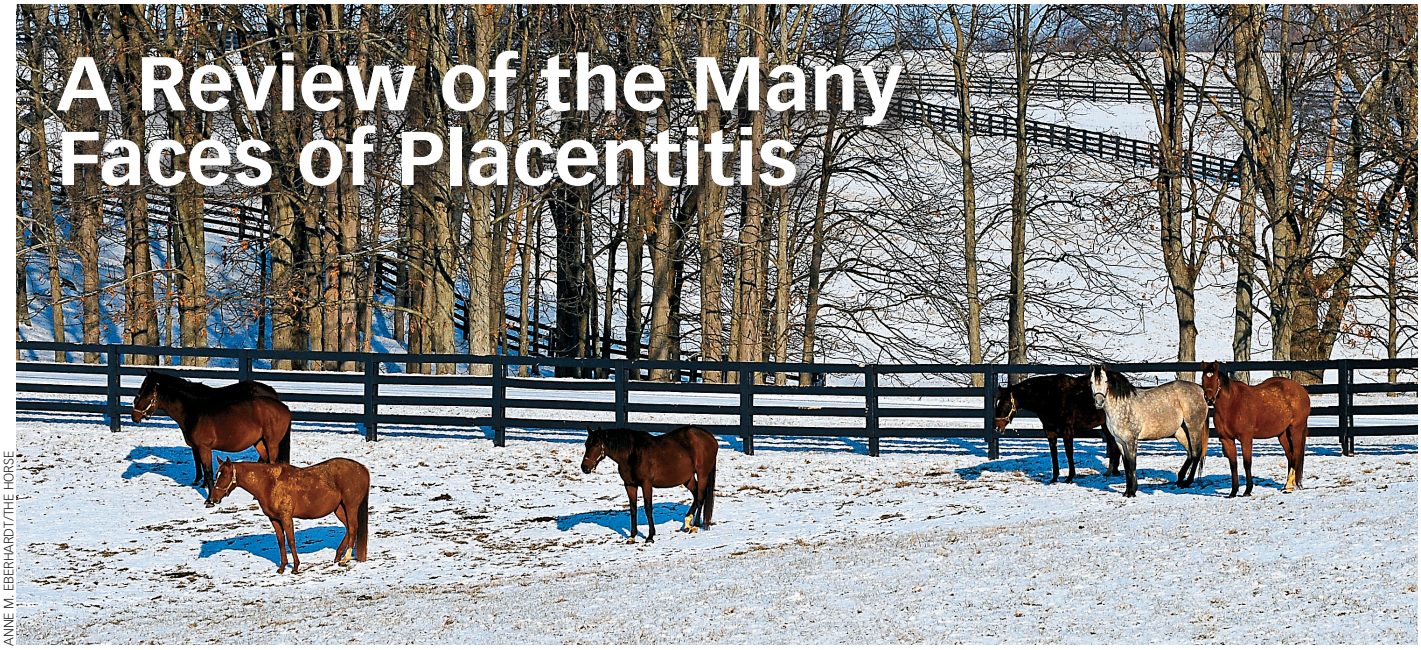

ANNE M. EBERHARDT/THE HORSE

Approximately 3-5% of Thoroughbred mares suffer late-term pregnancy losses due to placentitis, making it the leading cause of late-term abortion.

A Review of the Many Faces of Placentitis

Late-term abortions—those that occur between Days 210 and 300 of gestation—due to placentitis (inflammation of the placenta) can wreak both economical and emotional havoc on mare owners. Therefore, it's important that veterinarians understand the various causes of and treatment options for placentitis.

Igor Canisso, DVM, MSc, PhD, Dipl. ACT, Dipl. DECAR (European College of Animal Reproduction), reviewed key features of placentitis and offered real-life field diagnosis and treatment options to "abort abortion" during the 2015 American Association of Equine Practitioners Convention, held Dec. 5-9 in Las Vegas.

Canisso conducted his placentitis research while at the University of Kentucky's Gluck Equine Research Center, in Lexington, and he now works in the Department of Veterinary Clinical Medicine at The University of Illinois Urbana-Champaign's College of Veterinary Medicine,

"Approximately 3-5% of Thoroughbred mares suffer late-term pregnancy losses due to placentitis, making placentitis the leading cause of late-term abortion," he said.

The Jockey Club estimates that the annual Thoroughbred foal crop hovers around the 20,000 mark, which means approximately 600 to 1,000 Thoroughbred mares suffer late-term abortion each year.

During his presentation, Canisso described the four types of placentitis: ascending, nocardioform, diffuse (hematogenous), and multifocal.

"Ascending placentitis, resulting from infectious agents entering the uterus from the vagina and cervix and colonizing the caudal (back) pole of the chorioallantois, or cervical star, is the most common type," Canisso said. "Approximately 90% of cases are bacterial, primarily caused by *Streptococcus equi* subspecies *zooepidemicus*; however, mixed infections with a secondary fungal infection can also develop."

Ascending placental infection can spread directly to the foal via the umbilical cord. Infection also results in the production of prostaglandins and pro-inflammatory interleukins that cause placental insufficiency and retard intra-uterine growth. Researchers believe placentitis causes premature development of the fetal hypothalamic-pituitary-adrenal axis (an important component of the neuroendocrine system that controls or regulates many body processes),

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Faces of Placentitis ...

resulting in premature births around 310 days of gestation, instead of around the usual 342-day mark.

Nocardioform placentitis is also typically caused by bacteria, usually the Gram-positive *Crossiella equi* and *Amycolatopsis* spp. Uterine lesions are located primarily in the uterine body and at the base of the uterine horns and do not usually involve the cervical star. Research that Canisso and colleagues conducted involving the administration of *Crossiella equi* to mares (e.g., into the uterus), however, did not induce nocardioform placentitis.

"These results suggest that nocardioform placentitis is not simply induced by the presence of nocardioform microorganisms," said Canisso. "Some other unidentified factor might be involved."

Moving on to the remaining placentitis types, Canisso said, "Little is known about the pathogenesis (mechanism leading to infection) of either diffuse or multifocal placentitis. Diffuse placentitis is often diagnosed in association with either bacteria or fungi, including *Leptospira* spp."

Researchers believe *Leptospira* is the most important cause of diffuse placentitis, causing abortion by directly infecting the fetoplacental unit. As with ascending placentitis, inflammation and prostaglandin production likely play a role in either premature birth or abortion.

"Depending on the type of placentitis, mares may present with premature bag development and a vulvar discharge," said Canisso. "Alternatively, none of those signs are obvious before abortion."

Together with the classical clinical signs of placentitis, such as vaginal discharge and premature filling of the udder, lesions detectable on ultrasonography are also important for making a firm diagnosis of placentitis. The combined thickness of the uterus and placenta is also a valuable tool for identifying affected mares.

When placentitis is diagnosed early, it's possible to "baby" many affected mares through the remainder of their pregnancies with medical management.

"The three main goals are to control infection of the placenta and fetus; maintain quiescence (inactivity) of the muscular layers of the uterus called the myometrium; and block the production of pro-inflammatory molecules like interleukins," said Canisso.

Veterinarians can potentially achieve these goals using a combination of antibiotics, anti-inflammatory drugs (corticosteroids or pentoxifylline), and altrenogest (an anti-contraction medication used to stop labor).

Some foals are born septic or otherwise compromised to mares with placentitis, but this isn't necessarily always the case. Canisso wrapped up by describing a study in which racing records of foals born to Thoroughbred mares with a history of successfully treated placentitis were compared to those born to mares without placentitis. The foals were no different in terms of number of starts, wins/places/shows, and 2-year-old earnings. UK

>Stacey Oke, MSc, DVM, is a practicing veterinarian and freelance medical writer and editor based in Saratoga Springs, New York.

Simple Steps to Improve Pasture Management

Pasture management can be a full-time job. Many researchers, consultants, and farm supply store operators spend a significant portion of their time studying and surveying pastures to improve management techniques. However, improving horse pastures doesn't require a PhD. Farm managers new to pasture management can take simple steps to improve pastures and the quality and quantity of forage available to your horse. More experienced managers can take advantage of advanced concepts to reach their farm's maximum productivity. In this article we'll focus on three types of management options: simple, intermediate, and advanced.

Fertility

Nitrogen is essential for plant growth and cannot be stored in the soil; therefore, property owners must apply it regularly. For cool-season pastures, spring nitrogen

Masthead

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Pasture Management ...

applications increase spring growth and should only be applied to fields used for hay production or heavily stocked pastures, as spring nitrogen can result in excess pasture growth. Fall nitrogen helps stretch the grazing season into winter and encourages earlier green-up in the spring.

Note: If you live in an area of the country where bermudagrass predominates, apply nitrogen during late spring. Legumes such as red and white clover can capture nitrogen from the air and inject it into the soil (called nitrogen fixation). Maintaining clovers in pastures allows grasses to utilize this "free nitrogen" year-round. Apply other soil amendments, including phosphorus, potassium, and lime, as needed according to a soil test. Have pastures soil sampled every three to four years and hay fields every year.

Simple: One fall nitrogen application. Apply 40-60 pounds of actual nitrogen per acre in the fall (late September to late October in Kentucky).

Intermediate: Split fall nitrogen application. Apply 30-40 pounds of actual nitrogen per acre in mid-fall (around the first of September in Kentucky) and again six weeks later. Split applications mean more nitrogen is used for growth and less is lost to leaching or volatilization.

Advanced:Overseeding clovers into a pasture provides highly nutritious grazing for horses and free nitrogen to surrounding grasses. Generally, pastures with 30% clovers do not require nitrogen applications.

For more information regarding soil fertility in horse pastures, see Soil Sampling and Nutrient Management in Horse Pastures (AGR-200) at uky.edu/Ag/Forage/agr200.pdf.

Pasture Composition

What is in your pasture is as important as how much pasture you have. Healthy pastures can survive and maintain productivity though moderate periods of drought, heavy rain, and extreme summer temperatures. Mixed pastures can better adapt to changing conditions, as one species might perform better in one scenario than another. For example, Kentucky bluegrass greens up earlier in the spring than tall fescue, but tall fescue will stay green and grow longer into a hot dry spell in the summer. Therefore, a mixture of the two will provide more grazing than a pure stand of either. Weeds compete with grasses for space, sunlight, nutrients, and water. Weed competition will often shade out grass seedlings or grazed plants. Controlling weeds in a pasture will greatly improve forage quality and quantity.

Simple: Rest. Resting a pasture for several weeks can give grasses a chance to recover from grazing and better compete with weeds.

Intermediate: Overseed or herbicide application. Overseeding to introduce more grasses into thin pastures will thicken up the stand, while herbicides will reduce the weeds present, allowing grasses to grow and spread. Always read and follow label instructions when applying herbicides.

Advanced: Develop an herbicide/seeding schedule. Improving pasture composition requires removing weeds and replacing them with desirable grasses. Timing of herbicide applications and seeding vary depending on pasture species, time of year, and herbicide used; therefore, plan carefully to increase your chances of success. All herbicides require a waiting period after spraying and before seeding.

Find information on seeding or herbicide applications in Kentucky horse pastures at Establishing Horse Pastures (ID-147) at uky.edu/Ag/Forage/id1471.pdf or Broadleaf Weeds of Kentucky Pastures (AGR-207) at ca.uky.edu/agc/pubs/AGR/AGR207/AGR207.pdf.

Rotational Grazing

Rotational grazing is a concept frequently used by other livestock operations, but less common in horse outfits. Rotations provide grasses with a chance to rest and recover from grazing and increase pasture productivity. In cool-season pastures, rotate horses out of a pasture when grasses reach 3-4 inches in height. Return horses to graze again when pasture has reached 8-10 inches (6-8 inches for predominantly Kentucky bluegrass pastures).

Simple: Rotate between existing pastures. Pasture rotations to don't have to be complicated; when able, give a pasture a rest (even just a few weeks

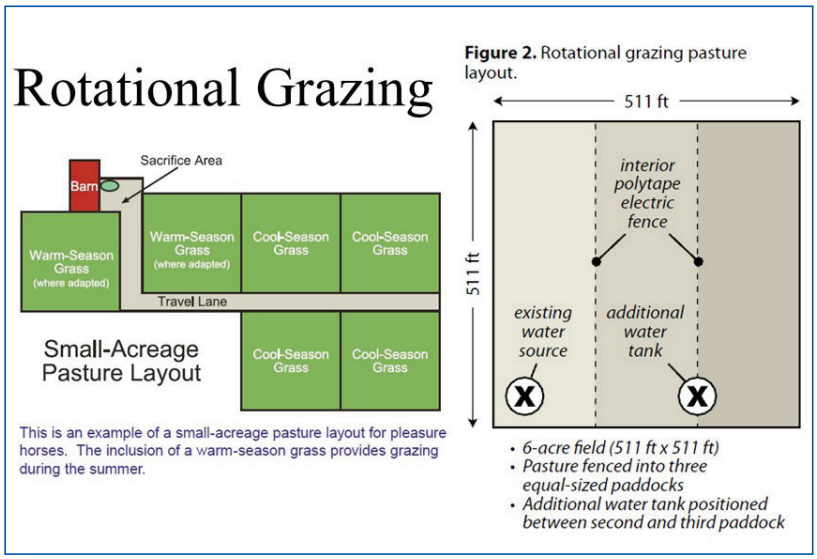

Figure 2. Rotational grazing pasture layout.

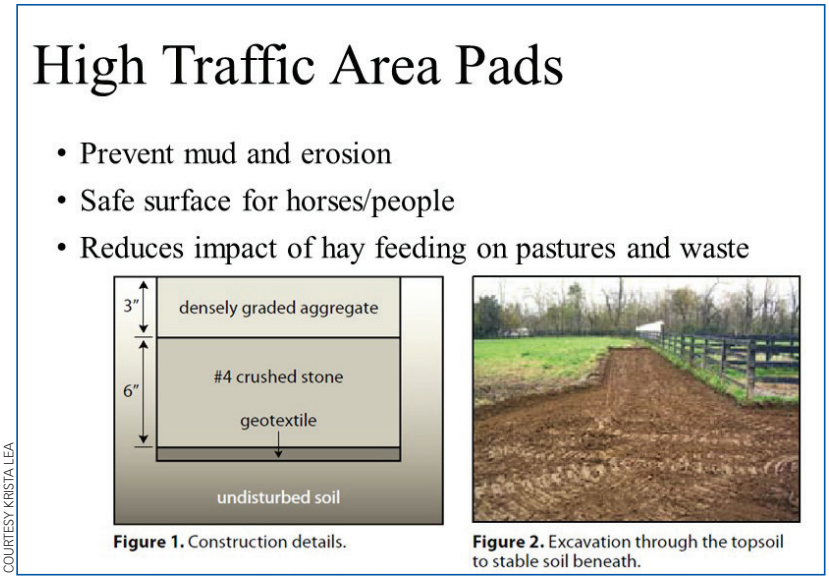

Figure 1. Construction details.

Figure 2. Excavation through the topsoil to stable soil beneath.

COURTESY KRISTA LEA

Pasture Management ...

helps), and use a different one during that time.

Intermediate: Subdivide pastures with temporary electric fence. This is particularly useful for large pastures. Set up fencing in a way that allows you to continue using the gate and water source already in the pasture. If your horses have never been around electric fencing, make sure to acclimate them to it by putting it partway across the pasture and letting them investigate for a few days before fencing off a portion completely.

Advanced: Setting up a grazing system includes multiple paddocks to move anals through and likely utilizes several types of forages. These systems require intensive management, but allow you to maximize pasture growth and use.

UK publication Rotational (ID-143) can be found at ca.uky.edu/agc/pubs/id/id143/id143.pdf.

Mud Management

Mud is a significant issue on horse farms large and small. Because horses are spot grazers, they will often overgraze some areas while leaving others untouched. High-traffic areas, such as gates, and water and feed areas, will also become bare. Bare areas will become muddy with sufficient rains, posing a danger to horses and humans alike. Additionally, these areas are unsightly and likely to suffer from erosion.

Simple: Tape off a high-traffic area with electric fence and allow the area to recover over time.

Intermediate: In addition to taping off the area, seeding perennial ryegrass in the early spring or early fall will provide some quick cover and reduce the muddy conditions. Perennial ryegrass will germinate in seven to 10 days, provide cover in just a few weeks, and survive one to two years, depending on grazing pressure.

Advanced: Installing a high-traffic area pad or drylot to provide wet weather footing in key areas can greatly reduce mud as well as feeding costs on a farm. High-traffic area pads consist of geotextile filter fabric and several layers of rock packed into a firm surface. This will form something similar to concrete, but not as hard or expensive. Use high-traffic area pads around gates, waterers, and feed and hay areas to reduce mud. Clear pads of manure on occasion to increase their longevity.

More information can be found in Temporary Fencing for Horse Pastures (ID-165) at ca.uky.edu/agc/pubs/id/id165/id165.pdf, High Traffic Area Pads for Horses (ID-164) at ca.uky.edu/agc/pubs/id/id164/id164.pdf, or Using Dry Lots to Conserve Pastures and Reduce Pollution Potential at ca.uky.edu/agc/pubs/id/id171/id171.pdf.

Summary

The money and effort required for pasture improvements might seem cumbersome; but they don't have to be. You can make many simple improvements to pasture situations, often with little investment or effort. But recognize that pasture improvements will never be complete; this is an ongoing process. Improving pasture management will reduce the need for stored feeds, such as hay and grain, while providing horses with quality forages, good footing, and a beautiful living space that you can enjoy, too. UK

>Krista Lea, MS, coordinator of UK's Horse Pasture Evaluation Program within the Department of Plant and Soil Sciences; and Ray Smith, PhD, professor and forage extension specialist within UK's Department of Plant and Soil Sciences, provided this information.

GRAD STUDENT SPOTLIGHT

NAME: EMMA ADAM

From: England
Degrees and institutes where received:
BSc (Hons), Kings' College, University of London 1990
BVetMed, MRCVS, Royal Veterinary College, University of London 1993
Dipl. ACVIM, Texas A&M 2004
DIpl. ACVS, University of Pennsylvania 2008

Emma Adam began pursuing her PhD at the University of Kentucky Gluck Equine Research Center under Jamie MacLeod, VMD, PhD, John S. and Elizabeth A. Knight chair and professor of veterinary science, in 2012. She chose the Gluck Equine Research Center to study the formation and repair of articular cartilage in horses, which is the source of many clinical questions and problems.

Adam's research looks at cartilage tissues in horses from different developmental stages and compares them to adult articular cartilage and to adult stem cells, with the goal of gaining a better understanding of what makes mature adult cartilage unique at a gene expression level.

"Degenerative joint disease (or osteoarthritis) is the No. 1 cause of retirement from an athletic career for horses," Adam said. "It is also a huge problem for the human population. Horses make great models to study this disease as well as being our primary treatment population."

Adam has been interested in cartilage research since her surgery residency, and she hopes to continue with this area of research throughout her career. Ultimately, she hopes the data captured will be able to contribute to methods to improve horse health and reduce breakdown injuries.

When asked what her most valuable takeaway lesson is from her time at the Gluck Center, Adam said, "Transparency and critical thinking. You must understand what it is you are working on, be scrupulously honest about what you are and are not able to deduce from your data." UK

UK Lecture Series Presents Conversation With Misdee Wrigley Miller

Misdee Wrigley Miller, winner of two American Saddlebred world horse championship titles and the first rider to win the three-gaited "grand slam," as well as a Team USA member at the 2014 World Equestrian Games in combined driving, spoke at the University of Kentucky (UK) Ag Equine Programs' Distinguished Industry Lecture Series Feb. 9 in the Gluck Equine Research Center's auditorium on the UK campus.

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Misdee Wrigley Miller is a two-time American Saddlebred world champion and represented the United States at the 2014 World Equestrian Games in combined driving.

Nearly 100 people turned out to hear the talk sponsored by Hagyard Equine Medical Institute.

Wrigley Miller is a fourth-generation horsewoman who owns and operates Hillcroft Farm with her husband in Paris, Kentucky, as well as a farm in Sarasota, Florida, where they raise American Saddlebred and Thoroughbred horses.

In addition to her accomplishments in the Saddlebred world, including being named a United States Equestrian Federation Equestrian of Honor in 2015, Wrigley Miller has competed in the top echelons of the sport of combined driving. In 2014, she was part of the U.S. team representing the United States in the Alltech FEI World Equestrian Games in Normandy, France, where they finished fourth.

The Distinguished Industry Lecture Series began in the fall of 2009 and has become a signature UK Ag Equine Programs event. It is designed to showcase important figures from the equine industry in an informal setting.

Previous series speakers include Keeneland's Nick Nicholson, accomplished equestrienne Nina Bonnie, Keeneland's Ted Bassett, Zenyatta owners Jerry and Ann Moss, Olympian Reed Kessler, a double header featuring both Thoroughbred trainer Graham Motion and three-day eventer Buck Davidson, and reiner Shawn Flarida.

The event was recorded and can be viewed on the College of Agriculture, Food and Environment's YouTube channel at https://youtu.be/6Ksu2HLlFFg. UK

>Holly Wiemers, MA, APR, is communications director for UK Ag Equine Programs.

THE GRASS GUIDE

PERENNIAL RYEGRASS (*Lolium perenne*)

Life cycle: Warm-season perennial
Native to: Southeast Africa
Uses: Pasture and hay
Identification: Smooth or rough leaf blades attached to the stem with a hairy collar, seedhead has three to six spikes with triangular seeds

Like other warm-season perennial grasses, bermudagrass grows best in hot, humid climates, making it an important species in the Deep South.

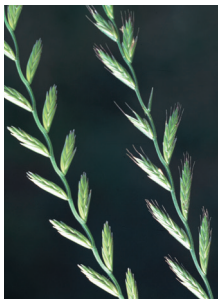
Bermudagrass shows increased winter kill north of Tennessee and Missouri, but commercial breeding has improved winter hardiness in some varieties. This grass has average nutrient quality, but its persistence even in close grazing or cutting makes it an ideal forage for horse pastures.

UK CAFE PHOTOS

Perennial ryegrass leaves vary from narrow and fine like Kentucky bluegrass to broad and coarse like tall fescue. In all cases, leaves have a very waxy or shiny appearance. Perennial ryegrass has a distinct purpling at the base.

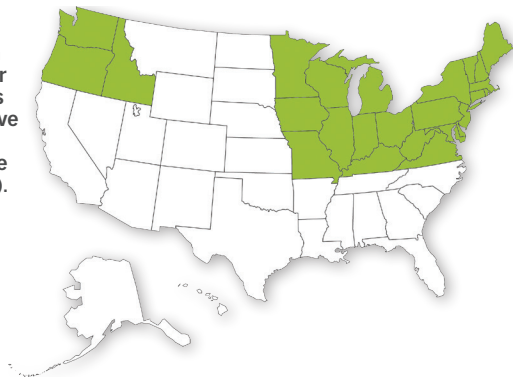
Due to high forage yields and average quality, bermudagrass also makes excellent horse hay. It can handle traffic and can be used for erosion control in hilly pastures.

To the untrained eye, bermudagrass shares a striking resemblance to another warm-season perennial, nimblewill, which is common in Kentucky, West Virginia, and Virginia. Nimblewill is bitter and will not be grazed by livestock, so be sure to properly identify the plant before making significant management decisions. UK



Perennial ryegrass (left) is similar to annual ryegrass (right) in that spikelets (containing seed) are alternating on the stem. However perennial ryegrass does not usually have awns (fine hairs extending from the ends of each seed).

>Krista Lea, MS, coordinator of UK's Horse Pasture Evaluation Program within the Department of Plant and Soil Sciences; and Ray Smith, PhD, professor and forage extension specialist within UK's Department of Plant and Soil Sciences, provided this information.



Animal Genetic Testing and Research Lab Gets New Name

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One of the many genetic diseases Genetic Testing at Gluck tests for is dwarfism in Miniature Horses.

The University of Kentucky Animal Genetic Testing and Research Laboratory has been renamed Genetic Testing at Gluck to better align with its mission to offer the highest quality DNA testing combined with personalized customer service while discovering the genetic basis for traits and diseases in horses.

Part of the Department of Veterinary Science in the College of Agriculture, Food and Environment, Genetic Testing at Gluck relocated to the UK Gluck Equine Research Center in 2009 after being housed in the Dimock Animal Pathology Building for 23 years. The lab was also formally known as the Parentage Testing Laboratory and before that as the Horse Bloodtyping Laboratory. It is one of three laboratories associated with public universities in the United States. The other two are at the University of California, Davis, and Texas A&M University.

"The Genetic Testing at Gluck laboratory will continue the tradition of providing both excellent service and research expertise to the equine community," said David Horohov, PhD, chair of the Department of Veterinary Science, director of the Gluck Equine Research Center, and Jes E. and Clementine M. Schlaikjer Endowed Chair.

Under the leadership of Kathryn Graves, PhD, the lab offers genetic tests including DNA typing, parentage analysis, and color gene and disease mutation testing. The lab serves more than 40 horse breed registries by confirming parentage prior to registration and offering customized services to meet the needs of each association. However, many individual owners and breeders use the lab's testing services, as well. The lab is the only one still offering traditional blood typing for parentage. Blood typing services also include antibody screening and cross-matching for neonatal isoerythrolysis (NI, in which a mare's antibodies attack her foal's red blood cells).

DNA technology began replacing blood typing for parentage verification around 1994, providing owners with a more convenient sample submission process involving mane hair samples instead of blood samples.

"The laboratory has been part of the evolving technology in genetic identification of horses during its 30 years of existence, from labor-intensive blood typing to the streamlined and automated genotyping using DNA from a few hairs," Graves said.

With the sequencing of the horse genome in 2007 came the development of more tests for genetic diseases such as junctional epidermolysis bullosa (JEB, commonly found in Saddlebreds), overo lethal white syndrome (OLWS, a concern in Paint horses), and dwarfism (a mutation found in Miniature Horses). The test for JEB was developed at the lab while the test for dwarfism was discovered at the Gluck Center in the laboratory of Ernie Bailey, PhD.

Other tests available at the Genetic Testing at Gluck laboratory can determine the presence of mutations in genes linked to coat color, such as the E locus gene, which controls the presence of red or black hair; the Agouti gene, which determines whether a horse is bay or black; the cream dilution gene, responsible for palominos and buckskins; champagne dilution; silver; gray; sabino; and tobiano. The mutations responsible for the champagne, tobiano, and sabino color patterns were discovered at the Gluck Center in Bailey's laboratory.

"Exciting possibilities exist for the discovery of additional variations in the genome that extend beyond color mutations, including genes that affect performance, growth, temperament, and disease susceptibility," said Graves. "Technology is moving forward at a rapid pace, which will allow us to mine genetic information faster and more affordably."

While the main focus of Genetic Testing at Gluck is on horses, the lab also offers canine DNA genotyping and parentage testing and hereditary juvenile cataract mutation testing.

"We plan to take advantage of every opportunity to expand the tests we offer and most importantly to continue our research efforts to discover new mutations in horses and other animals here at the Gluck Center," Graves said.

For additional information on the tests offered, including pricing and how to submit samples, visit ca.uky.edu/gluck/AGTRL. UK

Genetic Testing at Gluck: Did you know …

… A mare can develop harmful antibodies in her colostrum (first milk) that destroy her foal's red blood cells after it nurses?

As foaling season approaches, you can make sure your mare's colostrum will be safe by having her blood tested through the neonatal isoerythrolysis (NI) testing service at Genetic Testing at Gluck laboratory.

For additional information on the tests offered, including pricing and how to submit samples, visit ca.uky.edu/gluck/AGTRL.

UK Student Entrepreneurs Take First Place at Georgia Bowl

A team of University of Kentucky students captured first place the weekend of Feb. 6 at the Georgia Bowl intercollegiate entrepreneurship competition hosted by Georgia Tech, in Atlanta.

Team Race Assured, comprising Julia Fabiani, an undergraduate student in equine science and management; Ben Martin, a graduate student in finance and agricultural economics; and Stefanie Pagano, a graduate student in biomedical engineering, earned a $2,500 cash prize for their efforts.

Race Assured is a service that provides a blood test that can potentially predict injuries in horses well before serious problems occur.

The UK squad bested six other teams representing five major universities: Georgia Tech, two teams from the University of Texas (Austin), the University of Tennessee, the University of Arkansas, and the University of Manitoba (Canada).

Thanks to its first-place finish, Team Race Assured will receive a recommendation to be accepted into Rice University's global competition, which is the world's largest competition for startups.

The UK team's project was spun out of research developed by David Horohov, PhD, director of the Gluck Equine Research Center and chair of the Department of Veterinary Science, as well as the Jes E. and Clementine M. Schlaikjer Endowed Chair and professor in the College of Agriculture, Food and Environment.

"It is both gratifying and exciting that our students have received this recognition," said Horohov. "Having watched their interest and enthusiasm for this project grow throughout the semester, I am not surprised they were successful in the competition."

The three students brought the project to the UK Venture Studio bootcamp, and after 10 weeks the team elevated the concept into a business plan. Their ultimate goal is to start the company and launch Race Assured in Lexington.

The Venture Studio and bootcamp is part of UK's Von Allmen Center for Entrepreneurship and Lexington Office of the Kentucky Innovation Network, within the Gatton College of Business and Economics. To learn more or to get involved, click on their homepage for upcoming events in the Venture Studio: gatton.uky.edu/vace. The studio is located in Room 124 of the new Gatton College building.

"We are very proud of Julia, Ben, and Stefanie and what they have accomplished," said Von Allmen Center commercialization specialist and UK Venture Studio director Mariam Gorjian, who serves as team coach. "This demonstrates the growing entrepreneurial spirit and savvy which is increasingly evident on our campus."

Source: Carl Nathe, University of Kentucky Public Relations; in UK Now, Feb. 9. 2016

UKVDL offers *Rhodococcus equi* testing

The University of Kentucky Veterinary Diagnostic Laboratory offers real-time polymerase chain reaction (PCR, a type of DNA analysis) assay testing for *Rhodococcus equi*. The test can detect the VapA virulence gene (plasmid) in *R. equi* bacterial isolates by PCR.

R. equi is a common cause of bacterial pneumonia in foals from birth up to 4 to 6 months old.

The UKVDL test offered to help diagnose *R. equi* in foals includes:

1. Foal necropsy (includes all ancillary testing, everything listed below), $80
2. Cytology, transtracheal aspirate (TTA)/bronchoalveolar lavage (BAL), $65

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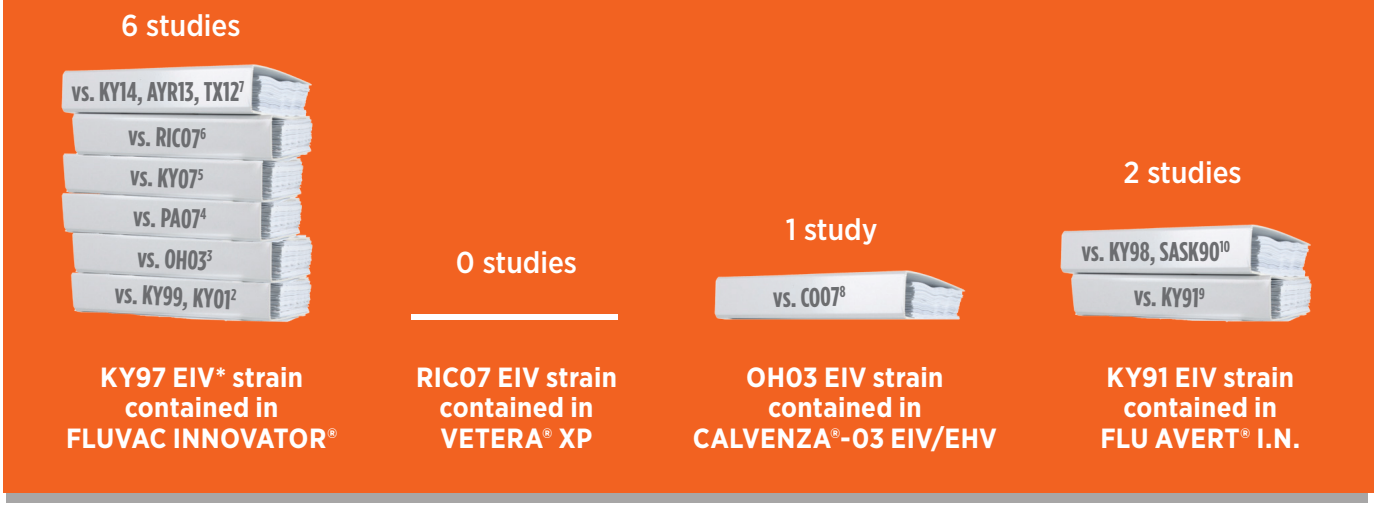

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** World Organization for Animal Health
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5. Real-time PCR, TTA/BAL other respiratory specimen*, $27 per specimen.

*This includes the detection of *R. equi* and presence of the VapA virulence gene (plasmid).

A one-time $10 accession fee will be accessed per case.

These services are associated with the lab's Cytology and Necropsy testing.

A **cytology** test at most labs involves a smear prep and a simple cell count by a lab technician. UKVDL's full cytology includes slide preparation and any necessary special staining by the lab's clinical pathology section and a full report by a pathologist board-certified or board-eligible by the American College of Veterinary Pathologists. These reports can be up to two pages long and include a summary diagnosis and recommendations for further investigation (e.g., take a biopsy, other studies).

UKVDL's **necropsy** service price is capped for any and all tests run, with the exception of toxicology ($200 maximum is included). For example, at a capped fee of $90 on a dead/aborted foal, the lab's client receives a full gross necropsy; histopathology with special stains as needed; any and all microbiology (bacteriology, mycology, virology, molecular biology) no matter the number of tissues, cultures, or sensitivities; parasitology and clinical pathology as needed; serology (e.g., heart blood test for lepto antibodies); and any testing referred out to other labs. The bottom line is if animals are dying, the UKVDL spares no expense to do whatever is necessary to arrive at a definitive diagnosis. This will help the lab's clients understand exposed animals' potential health risks and also serve as a broad-based disease surveillance system for animal diseases in Kentucky.

Contact Erdal Erol, DVM, MSc, PhD, UKVDL head of microbiology, with any questions at 859/257-8283 or erdal.erol@uky.edu. UK

>Craig Carter, DVM, PhD, Dipl. ACVPM DSNAP, Director of the University of Kentucky Veterinary Diagnostic Laboratory provided this information.

UK's Craig Carter Assumes National Leadership Role

MATT BARTON

Craig Carter, DVM, PhD, Dipl. ACVPM, director and professor of epidemiology at the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL), recently took the helm of the American Veterinary Epidemiology Society (AVES) as president for a five-year term.

James H. Steele, DVM, MPH, founded the AVES in 1964 to recognize global leaders in infectious disease epidemiology and public health and to foster research to combat infectious diseases in both animals and humans. The society has recognized more than 70 world-renowned scientists through awarding the K.F. Meyer/James H. Steele Gold Headed Cane Award, which Carter received in 2011, primarily for his work on zoonotic diseases.

"I consider it such a great honor and privilege to serve as the president of the American Veterinary Epidemiology Society for the next five years," said Carter. "Since leaving my ambulatory practice in Texas, I have worked as an epidemiologist in service, research, and teaching roles in the university, military, and international consulting environments for over 30 years. Dr. Jim Steele—founder of the AVES and the CDC division of epidemiology—was my graduate professor, mentor, and dear friend for many years until his death at 100 years young in 2013."

Carter was recruited from Texas A&M University to the UK College of Agriculture, Food and Environment in 2005 to build an epidemiology program to provide for the early detection of animal disease outbreaks such as mare reproductive loss syndrome. In 2007 he was appointed to his current position at UKVDL where he oversees lab operations, conducts research, and works with his graduate students.

One of Carter's goals for the AVES is to attract more bright students into careers in epidemiology. Sponsored by Hartz Mountain Corporation, the AVES hosts its annual meeting each year as part of the American Veterinary Medical Association (AVMA) meeting. The 2016 meeting will be held in July, in San Antonio, Texas. A celebration of the 100th anniversary of the U.S. Army Veterinary Corps will also be held at Fort Sam Houston, in San Antonio, in conjunction with the AVMA meeting. Carter's military career spanned from 1967-2008, retiring as a full colonel in the U.S. Army Reserve Veterinary Corps.

Carter said he has thoroughly enjoyed his many years as a faculty member at UK.

"Now nearing the end of my career, I delight in this opportunity to give something back to the AVES and to a scientific discipline that has been so good to me and the world." UK

>Ashley Cox is public relations and marketing intern with University of Kentucky Public Relations.

Equine Lymphosarcoma

Lymphocytes are an important component of the equine immune system. Like all cells within the body, lymphocytes have the potential to undergo neoplastic (cancerous) transformation that results in uncontrolled regulation and growth.

Lymphosarcoma is the proliferation of neoplastic lymphocytes. Equine lymphosarcoma is relatively common, but the exact incidence is unknown. The majority of cases occur in horses aged 4 to 15 years, but cases have been described in horses of all ages.

Epidemiologic studies suggest no apparent gender or breed predisposition. Like many equine cancers, the cause of lymphosarcoma is rarely identified, but certain bacteria and viruses have been implicated in its development.

Four anatomical categories are frequently utilized for classification of lymphosarcoma: multicentric (generalized or within multiple locations), thymic (mediastinal, within the chest cavity), alimentary (intestinal), or cutaneous (skin or extranodal).

Clinical signs can develop abruptly or over several months. Signs can develop due to organ dysfunction directly related to infiltration by neoplastic lymphocytes; physical obstruction caused by neoplastic masses; or from neoplastic byproducts (paraneoplastic syndrome). Depression, weight loss, subcutaneous edema, fever, anemia, and lymphadenopathy (swollen lymph nodes) are the most commonly observed clinical signs, but signs can vary based on the affected organs.

Multicentric, thymic, and cutaneous forms can compress the airways and esophagus and result in respiratory or swallowing abnormalities. The intestinal form can result in colic, diarrhea, and weight loss. Cutaneous nodules can be observed in or under the skin; these masses can be influenced by hormones, thus could wax and wane in size. Various paraneoplastic syndromes have been described in horses and include: hypercalcemia, pseudohyperparathyroidism (a disorder characterized by elevated levels of blood calcium resulting from production of a parathyroid hormonelike substance by a tumor.), pruritus and alopecia (itching and hair loss), and immune-mediated hemolytic anemia and thrombocytopenia (low platelet counts).

Veterinarians might suspect a diagnosis of cancer after visualization of cutaneous nodules, transrectal palpation of abdominal masses, or detection of masses by radiology, ultrasonography, or surgery.

Clinical differentiation of neoplasia from nonneoplastic lesions is difficult. A definitive diagnosis of lymphosarcoma is made by microscopic visualization of neoplastic lymphocytes in body fluids, fine needle aspirates, surgical biopsies, or necropsy samples.

The majority of horses diagnosed with lymphosarcoma either die or are humanely euthanized within months after developing clinical signs. Horses with the cutaneous form typically have longer survival times in comparison to those with other forms. Treatment is infrequently attempted, but temporary improvement might occur following surgical excision, or treatment with hormones, chemotherapeutics, immunomodulators, and corticosteroids.

The University of Kentucky Veterinary Diagnostic Laboratory diagnosed 57 cases of equine lymphosarcoma from September 2009 to September 2015. Diagnoses were made from 30 surgical biopsies, 23 necropsies, and four cytologic examinations. These cases represented 51 horses of seven different breeds. The age of affected animals ranged from a fetus at 300 days of gestation to a 27-year-old gelding; the mode was three years of age and included six cases. Cases were composed of 21 multicentric, 15 cutaneous, 13 lymphoid (lymph node, spleen, or thymus), and five alimentary lymphosarcomas. Additionally, one case was diagnosed from thoracic effusion (fluid) and two cases from abdominal effusions. UK

CONTACT—Alan Loynachan, DVM, PhD, Dipl. ACVP—alan.loynachan@uky.edu—859/257-8283—University of Kentucky Veterinary Diagnostic Laboratory, Lexington, Kentucky

This is an excerpt from Equine Disease Quarterly, funded by underwriters at Lloyd's, London, brokers, and their Kentucky agents.

COURTESY UNIVERSITY OF KENTUCKY

Showcase and Short Course

More than 185 attendees came to the University of Kentucky Equine Showcase and Kentucky Breeders' Short Course, held Jan. 29-30 at the Fayette County Extension Office. Topics were presented by researchers in the UK Ag Equine Programs as well as veterinarians from Hagyard Equine Medical Institute and Rood & Riddle Equine Hospital.

Annual Career Fair Unites College Students, Equine Industry

The University of Kentucky Ag Equine Programs will host its eighth annual UK Equine Career and Opportunity Fair from 4:30 to 7 p.m. on March 1 at Spindletop Hall, in Lexington.

The free event provides college students the chance to meet prospective equine industry employers and to learn about potential volunteer, internship, and part-time and full-time employment opportunities. In addition to booths from area equine businesses, attendees can participate in sessions led by industry professionals, who will offer tips and one-on-one career advice.

"I always love this event," said Elizabeth LaBonty, MS, lecturer and internship coordinator in UK's Equine Science and Management undergraduate degree program. LaBonty's equine careers class is planning the event. "The students work so hard putting it together, and the interaction between students and the industry is always rewarding to watch."

Informational sessions will allow participants to explore opportunities related to graduate school, careers in the Thoroughbred and sport horse industries, as well as marketing and business careers. Food and drinks will also be provided, as will a shuttle to and from campus for UK students.

"The UK Equine Career and Opportunity Fair is an outstanding opportunity for students to network and learn about the vast array of opportunities available within the equine industry. There will also be focused career track sessions led by several industry experts," said Olivia Lowe, a junior Equine Science and Management student who is helping plan the event.

Some of the confirmed participants include Central Kentucky Riding For Hope, Hagyard Equine Medical Institute, Keeneland, Kentucky Equine Management Internship, Kentucky Equine Humane Center, Kentucky Horse Park, Kentucky Quarter Horse Association, Life Adventure Center of the Bluegrass, Makers Mark Secretariat Center, New Vocations, Rood and Riddle Equine Hospital, UK Ag Equine Programs, UK Animal and Food Science Graduate Association, and the United States Equestrian Federation.

Students and potential employers who would like more information about the UK Equine Career and Opportunity Fair can contact Elizabeth LaBonty at 859/257-2226 or via email at equine@uky.edu. There is also an event Facebook page, University of Kentucky Equine Career Fair, which provides up-to-date information. For more information about UK Ag Equine Programs, visit www2.ca.uky.edu/equine. UK

>Holly Wiemers, MA, APR, is communications director of UK Ag Equine Programs.

Upcoming Events

March 1, 4:30-7 p.m.
UK Ag Equine Programs Career & Opportunity Fair, Spindletop Hall

March 12
Fayette Co. Farm Bureau Auction, Fayette Co. Farm Bureau Office

UK Ag Equine Programs Welcomes Executive in Residence Susan Lephart

Susan Lephart, PhD, a seasoned professional specializing in nonprofit organizations, research foundations, grant funding, and programmatic transitions, has joined the University of Kentucky Ag Equine Programs' team as an executive-in-residence and research coordinator.

In her role, which began Feb. 21, Lephart will provide leadership support to further develop and implement the organization's new strategic plan and its emerging initiatives. She will also provide community outreach and will engage in sponsorship support and fundraising for infrastructure and facilities.

"It is an honor and a privilege to work with the outstanding team of the UK Ag Equine Program, and I look forward to partnering with their existing leadership to further develop and implement the proposed 2015-2020 strategic plan that they have worked so thoughtfully to create," Lephart said. "In getting started, I am most excited about my role in helping to implement the strategic plan inclusive of relevant metrics for each of the identified goals. My three priorities in this new position are the emerging initiatives identified within the strategic plan, along with community outreach to leverage resources that will advance and market the program to more of an international level, and engaging in sponsor support and fundraising for much-needed programmatic facilities and infrastructure.


JOSHUA FRANZOS
Dr. Susan Lephart

"Additionally, my background and passion for research and all things equine makes this such a synergistic fit for me, so I will naturally be interested in the continuing successes and growth of the outstanding research program for which the program is so well-known," she said.

"Susan has worked over the past 16 years in various positions within nonprofit organizations," said Rick Bennett, PhD, College of Agriculture, Food and Environment's associate dean for research and director of the Kentucky Agricultural Experiment Station. "She created a nonprofit foundation which focused on advancing the careers of promising research scientists through private funding of orthopedic research. As executive director of that foundation, she provided oversight of grant funding at several academic institutions and has provided guidance in developing assessment tools, strategic planning, and programmatic transitions. Her wealth of experience will be a great asset to our programs."

Lephart earned her doctorate in exercise physiology/sports medicine from the University of Pittsburgh, her master's in health and physical education from East Tennessee State University, and her undergraduate in health and physical education from Furman University. UK

>Holly Wiemers, MA, APR, is communications director of UK Ag Equine Programs.