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## Inaugural Teri Lear Memorial Lecture Focuses on Animal Cytogenetics

On Oct. 12 Terje Raudsepp, PhD, a professor at the Texas A&M University College of Veterinary Medicine & Biomedical Sciences, in College Station, honored her late friend and research collaborator by presenting the inaugural Teri Lear Memorial Lecture.

Her lecture on “the science and art of animal cytogenetics” took place in conjunction with the University of Kentucky (UK) Gluck Equine Research Center’s 30th Anniversary Research Seminar.

Teri L. Lear, PhD, was an equine genetics researcher and associate professor at the Gluck Center who passed away last year. Lear was one of the foremost experts in equine cytogenetics (the study of chromosomes). During her time at the Gluck Center, she published many studies on equine genetics, trained masters and doctoral students, and was one of the leaders in the Horse Genome Project that resulted in the first description of a horse’s DNA sequence. Lear valued training graduate students, participating in conferences, and meeting scientists from around the world.

“My talk was aimed to show Dr. Teri Lear’s inspirational contribution to the science of equine cytogenetics and convey a message that chromosome analysis is and will remain an important approach for evaluating genetic soundness of breeding animals,” Raudsepp said. “My goal was to underscore that the era of genome sequencing has not diminished the value of cytogenetics.”

Raudsepp said improvements in the



PATRICK PFISTER/GLUCK EQUINE RESEARCH CENTER


Late equine genetics researcher Teri L. Lear, PhD, (here with her beloved horse Bisquette) passed away in 2016. Her colleague Terje Raudsepp, PhD, gave a lecture in her honor in conjunction with the Gluck Center’s 30th anniversary celebration.

accuracy of identifying chromosomal rearrangements and understanding their impact on animal health and reproduction have improved due to new molecular tools and emerging knowledge about animal genomes.

She said the most common reasons for submitting an equine sample for chromosome analysis is reduced fertility or infertility or sexual development disorders. She provided several examples from equine cytogenetics studies at Texas A&M in 2017 to illustrate chromosome analysis.

Raudsepp described specific groups of chromosome abnormalities, including X-monosomy (Turner syndrome), which is the most frequent chromosome abnormality in horses. She also explained autosomal trisomies (similar to Down syndrome in humans) and autosomal translocations. These are a concern to the horse industry because the syndrome can be passed down from generation to generation and result in subfertility issues.

“I brought an example of an autosomal translocation in one elite horse family,” she said. “I showed that the translocation was in a popular stallion and he passed it over to five out of his nine foals.”

The Teri Lear Memorial Fund was created to invite lecturers to the Gluck Center and support graduate student travel to scientific conferences. Gifts to the fund are considered tax-deductible. Mail checks, payable to the University of Kentucky with “Teri L. Lear Memorial Fund” in the memo, to UK Gluck Equine Research Center, Attn: Danielle Jostes, 108 Gluck Equine Research Center, Lexington, KY, 40546-0099. 

>Katie Lampert is a marketing and communications intern at the UK Gluck Equine Research Center.

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## New Website Features UK's Historic Parasitology Horse Herds

The UK Gluck Equine Research Center equine parasitology group has launched a new website—[horseparasites.ca.uky.edu](http://horseparasites.ca.uky.edu)—to increase awareness of two unique horse herds researchers have maintained at the university since the 1970s.

The website features the history of these equine parasitology research herds and is managed by Martin Nielsen, DVM, PhD, Dipl. EVPC, ACVM, associate professor and Schlaikjer Professor of Equine Infectious Disease at the Gluck Center.

“We felt it was time to tell this unique story,” Nielsen said. “My colleague, Dr. Eugene T. Lyons (PhD), established these herds back when drug-resistant parasites were not the common finding. Dr. Lyons knew how these herds would become extremely valuable down the road. What an incredible foresight.”

Website users can find videos and a complete list of peer-reviewed articles published to report four decades of research conducted using these herds, including:

- The epidemiology of important equine parasites and the impact of age, seasonality, and immunity on parasite burdens;
- Documentation of how parasites responded to traditional deworming schedules by becoming multi-drug-resistant;
- A chronicle of how drug resistance does not disappear once it has developed, regardless of whether the horses are dewormed;
- The development of new diagnostic methods for detecting important equine parasites, including a blood test for bloodworms, an ultrasound method for ascarids, and a smartphone-based automated egg counting system;
- Evaluation of novel deworming programs, such as various forms of combination deworming; and
- Molecular studies of the mechanisms behind drug resistance.

Nielsen also created the #HistoricHerds hashtag on Twitter to help disseminate information about these horses.

In addition to their value as a research resource, Nielsen introducing numerous undergraduate, graduate, and veterinary students to the historic herds each year. Handling the horses is a popular and useful weekly activity for these students.

“Our department has been privileged to have funding sources to sustain these herds for 40 years,” Nielsen said. “However, state and federal funding sources are diminishing year by year, and we are seeking philanthropic support to sustain these unique resources for the future. Dr. Lyons started this incredible journey, and my mission is to make sure that it continues. We need this research now more than ever.”

To support future parasitology research at UK, visit [uky.networkforgood.com/causes/8423-let-the-germs-get-the-worms-fund](http://uky.networkforgood.com/causes/8423-let-the-germs-get-the-worms-fund). [UK](http://uky.edu)

>Jenny Evans, MFA, is the senior veterinary science marketing and promotion specialist at the UK Gluck Equine Research Center.

## Masthead

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### The Horse: Your Guide To Equine Health Care

**Erica Larson**, News Editor

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## Six Steps to Keep Aging Performance Horses Healthy

Riding, owning, and loving a senior horse can be bittersweet. You've had years, maybe decades, of experiences together, and while he's still spry at the moment, you know that, eventually, old age will catch up to him. The good news is decades of research and experience have provided veterinarians with more tools and tactics to keep aging horses healthy and active longer than ever. It just takes a little senior horse health knowledge, medical support, and a good care team.

At the University of Kentucky's senior horse care mini-symposium, held Sept. 28 in Lexington, Marian G. Little, DVM, described a stepwise approach to maintaining aged performance horses' health and wellness. Little is a Paris, Kentucky-based technical services veterinarian for Luitpold Pharmaceuticals Inc.'s Animal Health Division.

A 2015 National Animal Health Monitoring System survey confirmed what many equine industry members had long observed: The percentage of the horse population aged 20 years and older has increased to 11.4%, up from 7.6% and 5.6% in 2005 and 1998, respectively, Little said. This means there's a growing need for care tailored to senior horses, many of which are still actively competing and/or teaching novice riders.

She said the multiple goals behind senior horse wellness programs include:

- Extending the "health span" as well as the lifespan;
- Maximizing performance years (which is beneficial for both financial and sentimental reasons, she said, because owners have often invested a substantial amount of time, money, and emotions into older horses);
- Keeping the horse at his original performance level and, at some point, a lower level; and
- Maintaining a good quality of life.



Keeping senior horses in a regular work program can help delay the onset of age-related changes, such as muscle wasting and exercise intolerance.

Little said these goals can be achieved when the horse's care team:

- Knows what's normal for the horse—chances are, any variation is either normal aging or signs of an age-related medical problem. Of course, it's essential to know the difference between those, as well, she said. For example, those gray hairs speckled on your horse's face and his slight swayback are probably normal signs of age. The extra-long haircoat that

never seems to shed completely is not normal—it's a hallmark sign of pituitary pars intermedia dysfunction (PPID), one of the most common senior horse health problems. "Owners should be alert to any physical or behavioral changes that are 'different' and could indicate a medical problem unrelated to typical aging," she said;

- Takes steps to delay the onset of age-related changes, such as muscle wasting and exercise intolerance. Keeping senior horses in a regular work routine at a level that doesn't overexert them can help in both respects;
- Recognizes and intervenes in age-related disease early. "Owner recognition of disease can be challenging," Little said, but veterinarians can help explain what to watch for; and
- Is proactive and begins managing horses for their senior years in their teens.

An easy way to manage those tasks is for veterinarians to offer—and owners to make use of—wellness programs tailored to aged performance horses. Little outlined six key components of such plans and how they help keep senior horses in the game.



Ask your veterinarian for a list of "call ifs," such as subtle performance or attitude changes, to identify and treat health problems early.

## Aging Performance Horses

### 1. Vets: Educate Clients

Little reiterated that owners might not have a good understanding of the normal challenges and health problems horses face as they age.

“Clients are often unaware that aging results in less resiliency in the face of environmental stressors,” she said. “Thus, good husbandry is key.”

She encouraged veterinarians to educate owners on changes that typically occur with age:

- Older horses benefit from longer warmups and cool downs before and after exercise due to loss of flexibility;
- Their thermoregulatory abilities wane, underscoring the importance of adequate shelter from cold and shade from sun;
- Some horses lose their pecking order status to younger herd members and

might need to eat meals alone; and

- Seniors require appropriate nutrition to address issues such as tooth loss and impaired nutrient absorption. They also seem to prefer warmer water over ice-cold.

Veterinarians can also advise clients on clinical signs to watch for that could suggest a problem.

### 2. Keep Health Records

Little stressed the importance of owners maintaining records to monitor trends in senior horses’ health over time. Include information such as:

- Dates of vaccine administrations and Coggins tests;
- Monthly body weight and body condition score (BCS);
- Laboratory test results, including complete blood counts (CBC) and adrenocorticotropic hormone (ACTH, used in PPID diagnostics) levels;
- Workout data, noting any changes in

exercise abilities and recovery time;

- Hoof-care records;
- Diet and water consumption;
- Overall performance status;
- Behavior changes; and
- Regular photographs to monitor things that might be difficult to appreciate when owners see a horse every day or veterinarians only see them a few times a year, such as conformation changes or subtle haircoat alterations.

### 3. Schedule Regular Veterinary Exams

This, Little said, is key to maintaining senior performance horses’ health. She recommended beginning regular (at least annually, if the horse’s individual needs don’t dictate more frequent checks) thorough wellness exams starting when horses are about 15 years old.

“Approach these with the level of detail you would a prepurchase exam,” she told veterinarians in attendance.

These visits don’t have to be solely for wellness checks. She recommended planning them to coincide with spring and/or fall vaccine administration.

In addition to evaluating the horse’s general parameters (i.e., BCS, muscling, endocrine status, parasite load via fecal egg counts, dental health, sheath or udder cleanliness, etc.), Little encouraged practitioners to keep a keen eye out for some of the most common medical issues that impact senior horses. Such ailments include:

- Lameness (the No. 1 problem facing healthy senior horses, she said; see the sidebar on page 5 for tips on combating it);
- Weight loss;
- Colic and other gastrointestinal disorders;
- Eye problems;
- Tumors (including melanoma) and other skin issues;
- Endocrine disorders;
- Chronic respiratory problems (i.e., heaves, or equine asthma); and
- Exercise intolerance.

### 4. Incorporate Well-Horse Geriatric Screens

While your veterinarian is conducting a well-horse exam, ask him or her about collecting samples for laboratory screenings.

“Don’t wait for problems,” Little stressed. “Get baseline values when your horse is healthy, so you’ll know what is considered normal for your

## GRAD STUDENT SPOTLIGHT

### JAMIE NORRIS

From: Roswell, Georgia

Degree and institution where received: BS in Animal Science with an equine specialty, University of Kentucky

Jamie Norris worked in information technology for 10 years; he discovered his interest in research during his undergraduate studies. He chose UK, more specifically the Gluck Equine Research Center, for his doctoral program because he wanted to use his experience with computers to study equine parasitology.

“In this field, the University of Kentucky has many resources simply found nowhere else,” Norris said.

Currently under the direction of Dan Howe, PhD, professor and molecular parasitologist at the Gluck Center, Norris is researching apicomplexan parasites, specifically *Sarcocystis neurona*, which is a unicellular eukaryote found in possums. *S. neurona* is the primary cause of the neurologic disease equine protozoal myeloencephalitis (better known as EPM) in horses.

Norris is also beginning to study host-specificity and the genetics involved in closely related parasite species being able to (or not being able to) infect completely different host organisms.

Norris is in the first year of his doctoral studies and research.

“Research can be extremely fun and rewarding if you approach it from the right direction.” he said.

Norris plans to graduate in 2021 or 2022 and hopes to pursue a research position somewhere in Scandinavia. He is interested in studying reindeer, also known as caribou in North America. He wants to study reindeer in Scandinavia. **UK**



UNIVERSITY OF KENTUCKY

>Alexandra Harper, MBA, is the operations and communications coordinator for the UK Ag Equine Programs.

## Aging Performance Horses

horse before a problem occurs.”

She said a well-horse geriatric screen should include:

- A CBC and blood chemistry;
- Resting/baseline ACTH levels (for moderate to advanced signs of PPID);
- Serum amyloid A levels (which can indicate infection and inflammation in the body); and
- Fecal egg counts.

If horses are overweight or have a history suggestive of equine metabolic syndrome or PPID, Little suggested

adding either resting insulin levels or the dynamic oral sugar test to assess insulin status and determine whether a horse suffers from insulin dysregulation. If a horse is underweight or has unexplained muscle loss (i.e., topline loss), she suggested conducting a thyrotropin-releasing hormone stimulation test to check for PPID, which can help detect PPID early, when clinical signs might be subtle.

### 5. Provide Adequate Nutrition

Horses' nutrition needs usually change as they age. Ensuring their dietary requirements are met remains

a crucial part of keeping them healthy and active.

Little recommended having a veterinarian perform dental exams at least twice a year to make sure horses can chew the food they're offered properly.

She also stressed the importance of ensuring older horses have a safe place to eat where they're not chased away before they finish their food. Even horses that spent their whole lives as the dominant ones in the pasture might eventually find themselves further down the pecking order.

Finally, she recommended owners work with their veterinarians or equine

## Lameness: Stopping Senior Horses in Their Tracks

Although it plagues horses of all ages, owners and veterinarians responding to a survey identified lameness as the No. 1 problem affecting otherwise healthy older horses, said Marian Little, DVM, a Paris, Kentucky-based technical services veterinarian for Luitpold Animal Health. Lameness is the most common cause of loss of use, and some studies suggest that more than 50% of horses over the age of 15 scored Grade 3 out of 5 lame on the American Association of Equine Practitioners' lameness scale.

In short, it's a major problem for aging performance horses.

In the general horse population, researchers estimate about 60% of lameness problems are due to degenerative joint disease (DJD) and/or osteoarthritis (OA, end-stage DJD), Little said. That figure is likely to be higher in senior performance horses, she added.

Simply put, DJD occurs when horses' cartilage wears down and ultimately leads to bony changes in the joint. It can develop secondary to a single traumatic injury (called traumatic arthritis) or over time due to repetitive wear and tear. Unfortunately, she added, it's not a question of if DJD/OA will occur in equine athletes, but when.

Early clinical signs of joint discomfort can include:

- Behavioral issues;
- Poor performance;
- Unwillingness to work;
- Subtle gait changes;
- Joint heat, pain, swelling, and stiffness; and
- Lameness.

More advanced clinical signs include chronic joint enlargement, decreased range of motion, and palpable bony abnormalities, she added.

Because there's currently no way to reverse OA, "you have to get ahead of this problem," she said. "Be proactive. Consult your veterinarian if you observe any clinical signs of DJD," even if your horse hasn't reached senior status yet.

While DJD and OA aren't curable, veterinarians do have a multitude of treatment options that can help reduce pain and lameness while slowing disease progression, such as:

- "Traditional" therapies, including polysulfated glycosaminoglycan, corticosteroid joint injections, hyaluronic acid, and non-steroidal anti-inflammatory drugs;
- Surgery, typically arthroscopy to manage cartilage defects;
- Regenerative medicine, including interleukin-1 receptor antagonist protein (better

known as IRAP), platelet-rich plasma, stem cells, or a combination of the three;

- Alternative therapies, such as acupuncture, chiropractic, and massage;
- Nutraceuticals, though she said many aren't backed by research; and
- Rest, "probably the most important, yet underutilized therapy," Little said.

One important consideration for using corticosteroids to treat DJD/OA in seniors is laminitis. Veterinarians and researchers know that, in some cases, corticosteroid administration can induce laminitis. Although there's not much research on this phenomenon's prevalence, "it can become an elevated concern when very high doses are administered or a horse suffers from an underlying endocrine disorder, like EMS or PPID," Little said. "Old horses or those affected by endocrinopathies might be more at risk," but questions remain as to why some horses develop laminitis while others don't.

She cautioned, however, that "the dose that can be safely administered to a racing Thoroughbred may be different from that given to an aged, obese Warmblood." She advised veterinarians to assess horses'

insulin status, particularly if they have a history of obesity, laminitis, or PPID, before settling on a corticosteroid and/or dose.

Finally, she shared easy steps owners can take to slow lameness onset in senior sport horses:

- Keep the horse in regular work (at an appropriate level for his physical condition) and turned out as much as possible;
- Extend warmup and cool-down periods to reduce the likelihood of injury during work (Little said PPID horses might be more prone to tendon and suspensory ligament injuries than their unaffected counterparts);
- Choose an experienced farrier who can recognize the signs of subclinical laminitis;
- Watch for subtle changes in gait or willingness to perform, which could indicate DJD/OA; and
- Understand that medical therapies might be necessary to help horses maintain soundness.

"There's no 'one-size-fits-all' solution for soundness as your horse ages," Little said. She urged owners to discuss their horse's needs with their veterinarian and farrier to develop an individualized treatment plan.

— Erica Larson



## Aging Performance Horses

nutritionists to ensure the feed senior horses are consuming meets their dietary needs.

### 6. Identify Problems and Intervene Early

The last step to keeping aged performance horses going is to identify ailments and implement treatment early.

“Construct a specific list of criteria where medical intervention is necessary—the ‘call ifs’—based on each horse’s specific history,” Little told veterinarians. For aged performance horses, such issues might include changes in:

- Attitude or behavior;
- Performance level;
- Body condition or hair coat;
- Appetite;
- Manure and/or urine output;
- Respiratory effort; and
- Gaits or lameness.

### Take-Home Message

Keeping senior horses performing to the best of their abilities isn’t rocket science. It just takes effort, education, a team approach, and a little bit of luck over the years.

She urged veterinarians to promote lifelong wellness plans to clients and educate them on how to best keep their aged horses healthy. Likewise, she encouraged owners to be proactive with their old horses’ health care and to ask questions of their veterinarians as they arise.

“Make it a team approach,” she said. “Don’t go it alone.”

>Erica Larson is the news editor for *The Horse*.

## Scientists Study ‘Silent’ EIA

Historically, standard tests for equine infectious anemia (EIA) have been pretty straightforward: positive for an infected horse or negative for an uninfected one. But in a recent study researchers found that horses can carry the EIA virus (EIAV) for up to two years without being seropositive on a Coggins (AGID), ELISA, or Western blot blood test.

This “silent” form of EIAV might sound terrifying, but researchers found such cases only on farms where seropositive horses lived together with seronegative horses over a long period.

“I do not believe we would find the same situation if there were only seronegative horses,” said researcher Adriana Soutullo, PhD, of the Laboratory of Agricultural Diagnostics and Research in the Ministry of Production of the Santa Fe Province, and of the Immunology Laboratory at the Faculty of Biochemistry and Biological Sciences at Litoral National University, both in Argentina.

Soutullo collaborated with a team of North and South American researchers, including Sheila Cook, PhD, and Frank Cook, PhD, of the UK Gluck Equine Research Center.

Seropositive horses seem to be able to transmit the virus to other horses without making those horses’ blood samples turn positive in standard tests, she said. Those seronegative

## UKVDL Disease Mapping Initiative Featured Map

### Antimicrobial Resistance and Susceptibility

Antimicrobial resistance (AMR) is a microorganism’s (like bacteria, viruses, and some parasites) ability to stop an antimicrobial (such as antibiotics, antivirals, and antimalarials) from working against it. As a result, standard treatments become ineffective and infections persist and can spread to others.

AMR is a real concern to the veterinary and human health world.

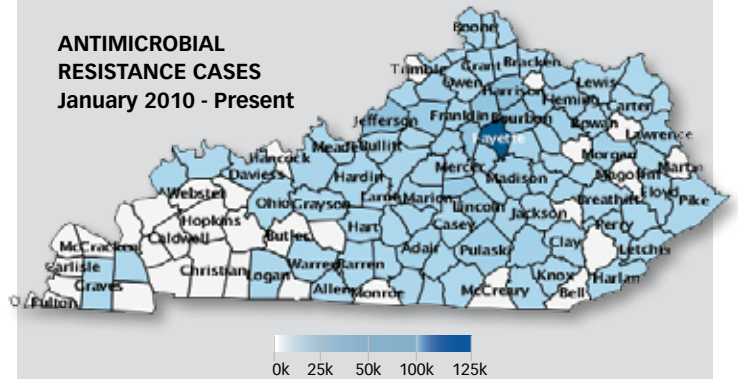
The University of Kentucky Veterinary Diagnostic Laboratory’s (UKVDL) new antimicrobial resistance and susceptibility map allows users to look at resistance patterns in Kentucky’s animal population that have been tested at the lab. This can help veterinarians narrow down the best antimicrobials to use for treatment.

Data is available from Jan. 1, 2010, to present.

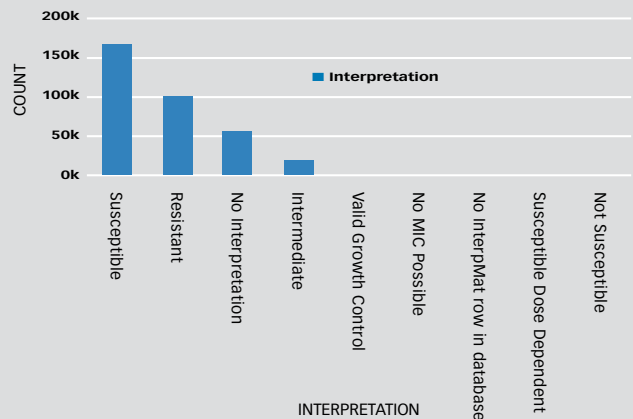
Individuals with questions or concerns about disease outbreaks can contact UKVDL at 859/257-8283. [UK](#)

>Jacqueline Smith, PhD, MSc, BSc, Dipl. AVES, UKVDL epidemiologist and adjunct professor of epidemiology at Lincoln Memorial University, is the founder of the UKVDL Disease Mapping Initiative, a database designed to record all infectious disease cases submitted to the UKVDL.

#### ANTIMICROBIAL RESISTANCE CASES January 2010 - Present



#### CASE RESULTS



See each month’s featured map at [vdl.uky.edu/FeaturedMap](http://vdl.uky.edu/FeaturedMap)

## 'Silent' EIA

horses might eventually seroconvert into seropositive horses—as long as two years later.

In their study, Soutullo and colleagues conducted EIAV testing on 59 apparently clinically healthy horses of various breeds from five stables in Argentina's Santa Fe area. They used two kinds of tests: blood tests and molecular tests.

The blood tests (AGID and ELISA tests) revealed that 26 of these apparently healthy horses (44%) were positive for the EIA virus, Soutullo said.

However—and to the researchers' surprise—18 of the 33 remaining, seronegative horses (55%) tested positive in molecular testing (PCR), she added. Over the next two years, the scientists continued to test these seronegative horses regularly. Some seroconverted during this time, but others did not. More in-depth testing confirmed these horses did, in fact, harbor EIAV DNA sequences in their bodies. In other words, they carried the EIA virus without developing the changes in the blood that would create the markers that cause positive blood tests.



ALEXANDRA BECKETT/THEHORSE

In the study, blood tests revealed that 26 of 59 apparently healthy horses were EIA-positive. However, 18 of the 33 horses that tested negative on blood tests were EIA-positive via molecular testing.

"But our study results shouldn't cause owners to worry," Soutullo said. "We don't know if these horses have sufficient virus loads to allow transmission of the infectious disease. I think that the horses that are most likely to transmit the disease are those in the acute stage."

Soutullo said the most likely scenario is that horses might be seronegative on an AGID test during the first few months of infection before seroconverting.

Owners and practitioners can limit risks of EIAV spread mainly by good hygiene during veterinary care, Soutullo added.

"The principal recommendation I can make is to always change the needle and syringe when performing injections," she said. **UK**

>Christa Lesté-Lasserre, MA, is a freelance writer based in Paris, France.

## Reseeding Success: How Kentucky Farms Improve Pastures Through Renovations

Owners can take many small steps to improve pastures each year: practicing weed control, overseeding grasses, rotational grazing, fall nitrogen applications, and regular soil testing. But sometimes these things simply aren't enough. Pastures can struggle to recover from heavy grazing, extreme weather conditions, or persistent weed pressures.

Over the last few years, the UK Horse Pasture Evaluation Program has worked with farm managers frustrated by the lack of substantial improvements despite following all the standard pasture management recommendations. The solution—completely re-establishing pastures—might sound daunting, but those who have tried it have seen the results and reaped the rewards.

Complete re-establishment involves killing a pasture before reseeding with a mixture of desirable grasses. Of course,

there is both cost and risk involved; however, when carried out properly, re-establishment can transform a pasture and be worth the investment.

The standard practice is to kill the existing pasture with glyphosate (two applications, beginning in late summer, are ideal), but it can also be accomplished by tilling the land or planting a row crop such as corn or soybeans. Then, reseed the pasture by drilling quality grass seed in the fall. Rest is essential for success—re-established pastures will likely be out of the grazing rotation for six months or more, but the end result is a highly productive pasture for many years to come.

Now is the time to begin considering complete re-establishment and making plans for it during the upcoming summer. The UK Equine Pasture and Forage Working Group has planned the annual Pastures Please!! meeting to cover re-establishment and much more.



KRISTA LEA

This Central Kentucky pasture was killed in summer 2017 and reseeded with a Kentucky bluegrass/orchardgrass/novel fescue mixture in early September. By October, the pasture was well-established and will provide excellent grazing to horses next spring.

This free meeting will take place Jan. 22, 2018, at the Fayette County Extension Office at 1140 Harry Sykes Way in Lexington, Kentucky. Refreshments will be available at 5:30 p.m. with the program beginning at 6 p.m. Find more information about the event on page 10. **UK**

>Krista Lea, MS, is coordinator of UK's Horse Pasture Evaluation Program.



A woman wearing a brown cowboy hat, a dark turtleneck, and blue jeans with a large silver belt buckle is riding a brown horse with a white blaze on its face. They are in a dirt paddock with a wooden fence and a barn in the background. The sky is overcast.

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## Equine Influenza Beyond Equines

The human “influenza season” in North America is now about to begin again, while in South America spring is approaching and their influenza season is almost over. The influenza season happens every year during autumn, winter, and early spring months, and the influenza viruses that circulate each season tend to be the usual suspects: influenza A/H1N1, A/H3N2, and influenza B viruses.

However, there are many other influenza viruses in the world. The ‘H’ and ‘N’ varieties (called “subtypes”) of influenza A viruses now go up to H18 and N11 with the recent discovery of new subtypes in bats. Most of these subtypes are rare in mammals but common in wild waterfowl. The only influenza subtypes that have been confirmed to infect horses naturally are H3N8 and H7N7, and the horse-adapted H7N7 viruses appear to have disappeared from horses nearly 40 years ago.

Does this mean that horses cannot be infected by influenza viruses from other species of animals? The answer is no, possibly they can be. Transmission of influenza viruses between different species definitely occurs. Humans, swine, dogs, cats, whales, seals, and sometimes other mammals such as mink have occasionally been infected by influenza viruses from birds. This was long thought to happen only rarely, but since 1997 in southeast Asia there have been annual occurrences of humans contracting bird flu subtypes such as H5N1 or H7N9 and these cases are often lethal. Almost all of these cases have been dead-end transmissions, meaning that each case appears to be a separate event with very little sign that they are capable of spreading from human to human.

Can bird flu viruses infect horses? The answer is most likely yes. One piece of evidence is that the H3N8 subtype was not always circulating in horses; it first appeared in 1963, and its genetic ancestors seem to have been bird flu viruses. In 1989 in northern China a strain of bird flu was positively confirmed to cause a large-scale disease outbreak in horses. Its subtype was also H3N8. Was that coincidence or is there some unique characteristic of the H3N8 subtype that makes it more apt to



ISTOCK.COM

About 15-20 years ago, H3N8 horse flu infected dogs in the United States and has persisted in dogs ever since.

infect horses? Those questions remain unanswered.

We know that the molecular receptors present on the surface of horse tracheal respiratory cells are a little different from other species, which could be a

contributing factor to the specificity of the influenza viruses that infect horses. Work in the author’s laboratory suggests that this not the entire explanation and other factors must be involved.

A related question is whether influenza viruses can be transmitted from horses to other mammals. That answer is definitely yes. About 15-20 years ago, H3N8 horse flu infected dogs in the United States and has persisted in dogs ever since. Can it jump from dogs back into horses? Maybe, although once the virus adapted to dogs, it became much less adapted to horses.

Are humans at risk of infection from equine influenza viruses? Experimental infection of human volunteers conducted 50 years ago suggests that infection can happen but the result is mild or even subclinical. Humans with horse

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## Equine Influenza

exposure do sometimes develop antibodies against equine influenza virus. The only report of a suspected naturally occurring clinical disease from equine influenza virus in a human never actually demonstrated the presence of equine influenza virus in that patient.

The message for readers is: Transmission of influenza viruses from one species to another can happen and sometimes does happen. If your horse is sick with the flu, take elementary biosafety precautions such as washing hands and clothes or equipment that came in contact with that horse, as soap will kill influenza viruses. And if you are sick with the flu, it is probably best not to cuddle your pets.

CONTACT—Thomas M. Chambers, PhD—[tmcham1@uky.edu](mailto:tmcham1@uky.edu)—859/218-1126—UK Maxwell H. Gluck Equine Research Center [UK](#)

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## Concussion or Injury? There's an App for That



Saddle Up Safely, an awareness program sponsored by UK HealthCare; the UK College of Agriculture, Food and Environment; and other community organizations, recently launched its safety app.

The app includes eight PDF safety booklets; rider safety, trailering, and trail riding checklists; a return-to-riding protocol; and an injury and concussion assessment tool.

The return-to-riding protocol can help assist riders returning to horse-related activities after a concussion or other serious injury. It offers activity level and exercise recommendations by rehabilitation stage to help ensure riders do not engage in horse-related activities before they are ready.

The injury and concussion assessment tool can help users determine the severity of an equestrian's accident. Through a series of questions and based upon the rider's responses, the app will prompt the rider to seek medical attention immediately, if necessary. While the app should not be used in place of a visit to a medical professional, it can help riders determine when additional assistance is needed.

"We are excited about the ability to make the Saddle Up Safely information more accessible for the people that will use it most," said Fernanda Camargo, DVM, PhD, associate professor and UK equine extension specialist. "The app has a sideline concussion assessment tool that should be used by every coach and instructor, especially after a fall. This tool will help the rider determine if they should get back in the saddle or seek medical attention.

"Our concussion assessment is a modified SCAT (sports concussion assessment tool) that was presented at the 5th International Conference on Concussion in Sports, held in Berlin in 2016," she added.

The Saddle Up Safely app is available for free on Androids and iPhones.

Saddle Up Safely seeks to educate current and future riders about the simple steps they can take to prevent accidents. Through Saddle Up Safely and UK HealthCare, the hope is to make a great sport safer and more enjoyable for all riders and equine enthusiasts.

For more information on Saddle Up Safely, visit [saddleupsafely.org](http://saddleupsafely.org) or [Facebook.com/SaddleUpSafely](https://Facebook.com/SaddleUpSafely). [UK](#)

>Alexandra Harper, MBA, is the operations and communications coordinator for the UK Ag Equine Programs.

## UK Extension Agents Host 11th Annual Pastures Please!! Workshop



The 2018 program will focus on reestablishing pastures and weed control.

University of Kentucky Ag Equine Programs will host its 11th Pastures Please!! pasture maintenance workshop from 6 to 8 p.m. EST on Monday, Jan. 22, 2018, at the Scott County Extension Office, 1130 Cincinnati Road, in Georgetown.

The event is free, and McCauley's Feeds will provide snacks prior to the event.

Horse owners, farm owners, and farm managers will have the opportunity to listen to several informative talks from forage extension specialists about seeding, weeding, pasture maintenance, and general pasture management.

"The Pastures Please!! program has impacted a multitude of people involved in the equine industry by teaching pasture management methods and practices that extend the grazing season and reduce the need for purchased forage," said Michelle Simon, Scott County Extension agent. "The 2018 program will focus heavily on re-establishment and weed control, both of which provide environments for healthier, better producing horses. Every horse owner is encouraged to attend."

Ray Smith, PhD, forage extension specialist from UK's Department of Plant and Soil Sciences, added, "Attending this meeting will give farm managers the skills required to improve the quality and productivity of pastures."

Please RSVP to your local county agent or to the Scott County Extension Office at 502/863-0984 or [dl\\_ces\\_scott@email.uky.edu](mailto:dl_ces_scott@email.uky.edu).

For more information about this or other UK Ag Equine Programs events, visit [ca.uky.edu/equine](http://ca.uky.edu/equine). [UK](#)

>Maddie Regis is the communications and student relations intern with UK Ag Equine Programs.



## 'UK at the Half' Features Ag Equine Programs Director

Mick Peterson, PhD, director of Ag Equine Programs at UK's College of Agriculture, Food and Environment, was featured during "UK at the Half," which aired during the radio broadcast of the Oct. 27 exhibition basketball game between UK and Thomas More College.

Peterson talks about his journey to UK, the Gluck Equine Research Center and how UK's equine-related programs prepare graduates for careers in the horse industry.

"UK at the Half" airs during the halftime of each UK football and basketball game broadcast and is hosted by Carl Nathe, of UK public relations and marketing. **UK**

>Kathy Johnson is the UK News Bureau director.

To hear the Oct. 27 "UK at the Half," visit [UKATH-2017-18-#8\\_mixdown.mp3](#)

## Upcoming Events

**Dec. 15, 12:30 p.m.**

Equine Science and Management  
Graduation Reception  
E.S. Good Barn

**Feb. 2-3, 2018**

UK Equine Showcase and Kentucky Breeders' Short Course  
Fayette County Extension Office  
Register at [2018ukshowcaseshortcourse.eventbrite.com](#)

## UK Ag Equine Programs to Host 2018 Equine Showcase, Breeders' Short Course

The UK Ag Equine Programs will host its 7th Annual UK Equine Showcase and the 9th Annual Kentucky Breeders' Short Course Feb. 2-3, 2018, both at the Fayette County Extension office, 1140 Harry Sykes Way, in Lexington.

The UK Equine Showcase will highlight the university's equine programs and relevant industry findings with an emphasis on safety and horse welfare. It will run from 1 to 5 p.m. on Feb. 2. The Kentucky Breeders' Short Course, an in-depth program on horse management issues with a focus on reproductive issues, will run from 8 a.m. to 2:30 p.m. on Feb. 3, with lunch provided.

"The University of Kentucky, as a land grant institution, has from its founding been tasked with engagement with the citizens of the Commonwealth and support of Kentucky Agriculture," said Mick Peterson, PhD, director of UK Ag Equine Programs. "The equine industry plays a unique role in the Kentucky economy, and we are proud to join with our partners within

the industry by presenting current research. Our Friday Showcase event will focus on safety and horse welfare."

David Horohov, PhD, chair of the UK Department of Veterinary Science and director of the Gluck Equine Research Center within the College of Agriculture, Food and Environment, added, "This year's UK Breeder's Short Course on Saturday will have a focus on equine reproduction with presentations from UK faculty, local veterinarians, and other experts in the field. The topics will range from nutritional

considerations for the broodmare through assessment of stallion semen and recent advancements in diagnosis and management of reproductive diseases. This program continues our commitment to provide the local industry with the latest information on advances in equine theriogenology."

Both programs are open to veterinarians, owners, and managers of all horse breeds or anyone with an interest in learning more about equine reproduction and horse management. Continuing education credit for veterinarians and veterinary technicians is pending approval by the Kentucky Board of Veterinary Examiners.

Additionally, UK is accepting sponsor participation for the event. Display

opportunities are available to participating organizations. Please e-mail [equine@uky.edu](mailto:equine@uky.edu) for details.

To register online visit [2018ukshowcaseshortcourse.eventbrite.com](#). The Equine Showcase's registration rates are \$50 per person or \$40 each when two or more people from the same organization register at the same time. Early registration rates for the Kentucky Breeders' Short Course are \$75 per person or \$65 each when two or more people register at the same time. Attendees can enroll in both the showcase and the short course for \$100 per person or \$90 each when two or more people from the same organization register. Registration will close Jan. 26, 2018.

College students are eligible for a reduced rate to the showcase and short course, but student space is limited and on a first-requested, first-served basis. Students or UK faculty interested in attending either or both days should e-mail [jenny.evans@uky.edu](mailto:jenny.evans@uky.edu).

For more details about this event and other information about UK Ag Equine Programs, visit [ca.uky.edu/equine](#). **UK**

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



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