



Does Season Impact Old Horses' Immune Function?

Seasons impact horses in a variety of fairly obvious ways: Maybe your horse drops some weight in the winter due to the cold, blows up like a balloon on spring grass, gets a bit lazy in the summer heat, or becomes frisky as cooler fall temperatures arrive. But did you know that season can also impact horses in less apparent internal ways, such as their immune response? Researchers from the University of Kentucky Gluck Equine Research Center, in Lexington, recently sought to determine whether age can intensify those seasonal effects.

In a presentation April 30, Melissa Siard, a PhD candidate working under the direction of Amanda Adams, PhD, at the Gluck Center, presented findings from a study investigating season's impact on senior horses' immune function.



In the study, senior horses' inflammation levels increased in the spring and their lymphocyte proliferation increased in the fall.

Researchers know that season impacts horses' body weight, voluntary feed intake, and adrenocorticotrophic hormone (ACTH, which plays a role in pituitary pars intermedia dysfunction [PPID], or equine Cushing's disease) levels, among others.

They've discovered seasonal changes in other species, too. Siard said scientists have determined that baboons' C-reactive protein (an inflammatory cytokine; cytokines are "messenger molecules" by which cells of the immune system signal and instruct one another) and interleukin-6 (another inflammatory cytokine) levels are lower in December compared to July.

So she and her colleagues wanted to determine if aged horses experience similar fluctuations. The team sought to identify the relation between season and lymphocyte (cells that govern the body's immune response) proliferation and function. Further, because they knew that cortisol (the "stress" hormone) and ACTH levels vary seasonally, they investigated whether hormone levels impact immune function.

The team employed eight senior and eight adult horses for their study and collected blood monthly from each animal. They also tested the aged horses for PPID to compare affected and unaffected horses' immune responses.

For their first objective, the team found that:

- Both groups of horses collectively had higher lymphocyte proliferation (immune cells' ability to divide in response to a stimulus, such as a pathogen) in October and November and lower lymphocyte proliferation in May.
- Old horses' interferon-gamma (IFN- γ , another type of inflammatory cytokine) production was highest in March, June, and October and lowest in January, August, and December; adult horses' levels were

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highest in May and July and lowest in December;

- Older horses had higher average IFN- γ and tumor necrosis factor- α (TNF- α , another cytokine) production as well as a higher percentage of lymphocytes producing IFN- γ and TNF- α than adult horses;
- Old horses' TNF- α levels were highest in August and October and lowest in December and January; and
- There were no significant differences in immune response between old non-PPID and PPID horses.

Immune Function

Siard said these results indicate that both age and season impact horses' lymphocyte function. She said she suspects these impacts could be due to a number of factors, including stress hormone levels, vitamin D and melatonin levels, available forage sources, temperature, and more.

For their second objective, the team determined that:

- Cortisol levels did not vary significantly for old or young horses, but did vary seasonally with increases in April for old horses and in April and July for adult horses; and
- There was a trend toward age impacting ACTH levels, but both groups experienced a significant increase in ACTH levels in October.

These seasonal hormone changes suggest a possible relationship with immune seasonal changes. However, the researchers found few correlations between the hormones and immune markers, suggesting hormones do not play a strong role in regulating immune function seasonally.

Conclusions

Based on their results, the team reached several conclusions, Siard said, including:

- Senior horses had increased inflammation compared to adults;
- The older horses' inflammation levels increased in the spring and lymphocyte proliferation increased in the fall; and
- Adult horses did not have increased lymphocyte proliferation compared to seniors.

Siard said future research could help determine whether seasonality could impact senior horses' response to vaccination.

"The seasonality of lymphocyte function could indicate when horses are more likely to be susceptible to disease as well as when inflammatory disorders are more likely to flare up," she explained. "This research provides a foundational understanding of the fluctuations of the immune systems of senior horses, in hopes that we can better manage their health by predicting in advance when they may be immunocompromised." **UK**

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

MASTHEAD

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McCue, Squires Publish Equine Embryo Transfer Manual

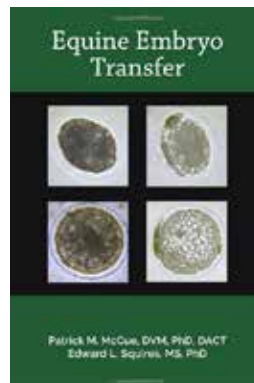
Patrick McCue, DVM, PhD, Dipl. ACT, a professor at Colorado State University (CSU), and **Edward Squires, MS, PhD, Dipl. ACT (Hon.)**, a professor at the University of Kentucky Gluck Equine Research Center, recently teamed up to publish a manual titled *Equine Embryo Transfer*.

Targeted toward veterinary practitioners and students, the manual is based on a combination of basic science, applied research, and clinical experience gained from the commercial equine embryo transfer program at CSU and other programs around the world.

In the preface, McCue and Squires write, "It is our hope that experienced practitioners will find useful tips in this manual to enhance embryo collection success or post-transfer pregnancy rates. New graduates and current students may utilize the manual to gain a basic understanding of reproductive principles as well as clinical techniques."

Chapter topics range from a brief history to future directions of equine embryo transfer. The manual contains all the information needed to set up and succeed in an equine embryo transfer program. The manual's format and size allows the technician or veterinarian to have it in the clinic or laboratory as a readily available reference guide.

The 172-page manual was published by Teton NewMedia and can be purchased on Amazon. **UK**



>Jenny Evans, MFA, is the interim executive director of the Gluck Equine Research Foundation and marketing and promotion specialist senior at the Gluck Equine Research Center.

Emerging Equine Diseases: What You Should Know

Not long ago, we didn't know that some now-common equine diseases even existed. Potomac horse fever, hendra virus infection, and contagious equine metritis, among others, were all once considered emergent diseases. Today there are likely many more conditions just waiting to make their first appearance or spread across an international border into a previously unaffected country.

At the recent 2015 University of Kentucky Equine Showcase, held in Lexington, Peter J. Timoney, FRCVS, PhD, shared some important insight into emerging equine diseases. Timoney is a professor and former department chair and director of the University of Kentucky Gluck Equine Research Center, also in Lexington.

What is an Emergent Disease?

Emergent diseases are those that are recorded for the first time in a population (such as Potomac horse fever or hendra virus) or those that might have been around for a period of time, but had not been diagnosed (like mare reproductive loss syndrome or contagious equine metritis), Timoney said.

Factors contributing to disease emergence include:

- Microbial change and adaptation;
- Host susceptibility to infection;
- Climate change;
- Altered ecosystems;
- Changing population demographics,
- International movement and trade; and
- Land use and economic development.

And, of course, Timoney

said, "horses are not exempt when it comes to emergent diseases."

Emergent Infectious Diseases in Horses

Since 1969, many diseases—most of which are commonplace today—have been documented for the first time in horses around the world. And, Timoney said, "the list will continue to grow. Of that, there's no question."

Some of the emergent diseases identified since the late 1960s only affect breeding animals (such as mare reproductive loss syndrome and contagious equine metritis), while others can affect any horse, young or old (such as Potomac horse fever and coronavirus).

More importantly, some

emergent diseases are zoonotic, meaning they can be transmitted between horses and people and, thus, are important to public health. Such conditions include acute equine respiratory syndrome and equine granulocytic ehrlichiosis, Timoney said.

Mitigating Emergent Disease Risk

"The horse is a global traveler and, consequently, can be responsible for spreading a disease over a much larger geographic area than was initially the case," Timoney said. "The threat posed by an emergent disease being introduced into a country's equine population is significant."

He explained that market forces have contributed to horses becoming an international commodity and, thus, have increased the risk of disease spreading over international borders.

"Countries at greatest risk, obviously, are those with a significant import/export trade in semen as well as live animals," said Timoney, and that includes the United States. So how can we reduce the risk of a new disease being imported into our home nation?

"Monitoring, surveillance, and prompt reporting of suspect cases of foreign animal, emergent, or re-emergent diseases to the appropriate authorities is of critical significance in safeguarding the health integrity of a nation's equine industry," Timoney said.

The equine practitioner plays a key role in any surveillance program. He said field veterinarians are on the "front line" when it comes to identifying suspect emergent disease cases and are critically important as "first-responders" when faced with such cases.

Other factors crucial to a

Disease	Causal Agent(s)	Where and When Reported
Equine granulocytic ehrlichiosis	<i>Anaplasma phagocytophilum</i>	United States in 1969
Equine encephalosis	Encephalosis virus	South Africa in 1970
Contagious equine metritis	<i>Taylorella equigenitalis</i> and possibly <i>T. asinigenitalis</i>	Ireland and the United Kingdom in 1977; United States in 1978
Getah virus infection	Getah virus	Japan in 1978
Potomac horse fever (equine neorickettsiosis)	<i>Neorickettsia risticii</i>	United States in 1984
Enterocolitis	<i>Clostridium difficile</i> , <i>C. perfringens</i> A, B, C, and D	United States in 1987; Europe and the United States (re-emergence) in 1993
Nocardioform placentitis	<i>Crossiella equi</i> , <i>Amycolatopsis kentuckyensis</i> , <i>A. lexingtonensis</i> , <i>Cellulomonas cellulans</i>	United States in 1986 and (re-emergence) in 2003
Acute equine respiratory syndrome	Hendra virus	Australia in 1994
Proliferative enteropathy	<i>Lawsonia intracellularis</i>	Canada in 2000
Mare reproductive loss syndrome	Eastern tent caterpillar	United States in 2001
Airway disease	<i>Nicoletella semolina</i>	Europe in 2004
Equine amionitis and fetal loss	Processionary caterpillar	Australia in 2004
Cryptococcal infections	<i>Cryptococcus gattii</i>	Canada in 2005
Equine coronavirus enteritis	Coronavirus	Japan in 2011
Theiler's disease	Theiler's disease-associated virus	United States in 2013

Emerging Equine Diseases

successful disease surveillance program include:

- A good understanding of endemic and transboundary diseases;
- Prompt reporting of suspected cases of emergent diseases;
- Laboratory confirmation of an emergent disease case as soon as possible—don't wait, Timoney stressed; and
- Constant vigilance for the presence of an emergent disease.

He also noted that it's important for horse owners to "become educated. Don't expect someone else to be your sole source of information."

Timoney encouraged owners to undertake a thorough import-risk analysis prior to bringing horses, semen, embryos, and other related items into the country and to utilize pre-export and post-import quarantines and testing.

Take-Home Message

Many equine diseases have emerged since the late 1960s, and it's probable that scientists will discover many more in the future. While we might not necessarily be able to prevent their spread, we can certainly take steps to reduce their likelihood of jumping international borders. **UK**

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

Integrated Parasite Control: How to Strike a Balance

Deworming protocols have changed radically over the past decade, thanks to research into how to best manage parasite control within herds and individual horses. One of the pioneers of this research is Martin Nielsen, DVM, PhD, Dipl. EVPC, Dipl. ACVM, professor at the University of Kentucky's Gluck Equine Research Center. He described current parasite control recommendations and emerging technologies in this field during the 2014 American Association of Equine Practitioners Convention, held Dec. 6-10 in Salt Lake City, Utah.

For a parasite control strategy to be effective, the owner and practitioner must balance treatment and surveillance. "Monitoring of dewormer efficacy is required for herd health," Nielsen began. "Egg counts are here to stay!"

He first listed individual worm types and described some significant points about each for horse owners and veterinarians to consider:

- **Ascarids (roundworms)** This year's foals are infecting next year's foals, said Nielsen, because ascarid eggs are environmentally resistant (i.e., capable of withstanding fairly warm summer temperatures and cold extremes in winter). Of the deworming drugs used, ivermectin and moxidectin are ineffective for controlling these worms; pyrantel salts might or might not work; and benzimidazoles are still doing a pretty good job, he said.

- **Small strongyles (cyathostomins)** There are 50 different small strongyle species, the larvae of which encyst in the walls of horses' large intestines. Ivermectin and moxidectin do not control these worms as effectively as they did in the past, and Nielsen said we are now seeing shorter egg reappearance intervals after deworming. On a majority of farms, neither pyrantel salts nor benzimidazoles are effective against small strongyles.

- **Tapeworms** These parasites are present in 20-80% of horses, depending on geographic location, and can cause spasmodic colic in the cecum (the part of the gut between the small and large intestines) and impaction of the ileum (the last segment of the small intestine before the cecum). Veterinarians

GRAD STUDENT SPOTLIGHT

KRISTIN M. PFAHL

From: Slippery Rock, Pennsylvania

Degrees and institute where received:

BS, Biology, Slippery Rock University

MS, Veterinary Science, University of Kentucky, August 2015



Kristin Pfahl, MS, has lived in Lexington, Kentucky, since May 2004 when she came to work for Carol McLeod, DVM. In September of that year, Pfahl was hired at the University of Kentucky Veterinary Diagnostic Laboratory. She began working toward her master's degree in 2009 at the UK Gluck Equine Research Center under Udeni Balasuriya, BVSc, MS, PhD, professor of virology.

Pfahl has worked part-time to complete research for her master's degree, which focuses on evaluating and validating a commercially-available competitive enzyme-linked immunosorbent assay (cELISA) for detecting antibodies specific to equine arteritis virus (EAV). EAV causes equine viral arteritis (EVA), which is an upper respiratory tract and reproductive disease in horses. EVA negatively impacts the breeding industry by causing abortions in pregnant mares and establishing carrier states in stallions.

Exported horses as well as those at public auctions require EVA testing. The virus neutralization test, which detects virus antibodies, is most common and recommended by the World Organisation for Animal Health. This test requires large amounts of time and finances, however, and is not standardized between laboratories.

"The purpose of my project was to further validate a new test method that is already commercially available but not widely accepted," Pfahl said. "The cELISA test method has a faster turnaround time, it can be standardized, and it is less expensive than the virus neutralization test, among other benefits."

Pfahl said she chose to pursue a master's degree in veterinary science so she could apply the knowledge and understanding of virology to her career as a veterinary diagnostician.

"This project has really emphasized to me the importance of applied research to the improvement of veterinary diagnostic testing," she said.

After completing her degree, Pfahl will relocate to California. There she hopes to continue working at a diagnostic laboratory or within the biotechnology industry. **UK**

>Hannah Forte is a communication intern with UK Ag Equine Programs and the Gluck Equine Research Center and an undergraduate student majoring in community and leadership development at UK.

Integrated Parasite Control

have not reported resistance of tapeworms to praziquantel and pyrantel salts because there are no methods to measure resistance, Nielsen said.

■ **Large strongyles** These are now very rare because of all dewormer classes' efficacy against them.

Nielsen notes that there is no single drug to treat all parasite categories. Therefore, owners and veterinarians must perform routine fecal egg counts to know which parasites are not being well-addressed by parasite drugs used on their farm.

Veterinarians and horse owners frequently ask whether any of the current larvicidal approaches are effective in controlling small strongyles in the face of widespread parasite resistance in herds they manage. Are there ways they should be adjusting their approach, or is it a lost cause?

In one recent study, Nielsen said researchers in Tennessee evaluated the two available larvicidal treatment regimens—moxidectin and the five-day double dose of fenbendazole—in a population of horses harboring small strongyles that were resistant to a single dose of fenbendazole. The group found that the five-day fenbendazole regimen was 33.4% effective for treating encysted small strongyles in the intestinal lining, as compared to 61.7% with moxidectin. While moxidectin efficacy was within the expected range, the fenbendazole regimen's efficacy was significantly below historic levels. This trend is likely to be found elsewhere, Nielsen noted.

The best way to battle this trend is to know where your horses stand with serial testing. "To accurately determine fecal egg count reduction testing (FECRT), it is necessary to do both a pretreatment and follow-up egg count 10-14 days after treatment," Nielsen said. Many people are only looking at pretreatment egg counts, yet post-treatment egg counts are important for evaluating drug efficacy, he explained.

Nielsen also pointed out that performing egg counts for a clinical diagnosis on a sick horse is useless: "The mere presence of parasite eggs and/or larvae in the feces does not equate with parasitic disease," he said. A negative fecal egg count does not necessarily mean the horse is worm-free, just that the adult worms are not laying eggs at that time. And, just because a horse has a positive fecal egg count doesn't mean that a parasite infection is the reason for an illness.

He finished with a few take-home messages:

- Parasite drug resistance is not an individual diagnosis. Many individuals within a herd must be tested to confirm resistance.
- Twenty percent of horses excrete 80% of the total egg output in a herd. Egg counts are very useful for identifying high strongyle egg shedders within a herd of adult horses.
- Obtain egg counts in foals at weaning age. "They can have ascarids, strongyles, or both," Nielsen said. "In a majority of situations there is no single anthelmintic that would effectively treat both, so testing is required in order to select the correct dewormer."
- Research results suggest that the cutoff point in fecal egg

Parasite and Growth Rates in Foals—and More

Dr. Martin Nielsen shares cutting-edge information about equine parasite control in this seminar. Does your dewormer work? Find out at TheHorse.com/35723.

WEED OF THE MONTH

Common name: Hemp dogbane

Scientific name: *Apocynum cannabinum* L.

Life Cycle: Perennial

Origin: North America

Poisonous: Yes

Hemp dogbane, sometimes called Indian hemp, grows throughout most of North America. This creeping perennial broadleaf weed can reach 5 feet tall. Mature plants are woody at the base. This species is frequently found in pastures and rangeland. It reproduces from seeds and buds on creeping, horizontal roots and from crown buds of the parent plant. Hemp dogbane forms colonies of plants from the creeping roots.



Hemp dogbane has small white flowers in its terminal.

Leaves and stems contain a white, milky sap. This plant has more branching than other milkweed plants, and the leaves contain few, if any, hairs.

Hemp dogbane is poisonous to horses, with the leaves being toxic at all times. Dried leaves in hay are also toxic. The toxic substance is a glycoside and might cause digestive disturbances, diarrhea, and overall weakness.

Controlling hemp dogbane in pastures is very difficult. Mowing is generally ineffective, and treatment with herbicides might require multiple applications. Consult your local Cooperative Extension Service personnel for a list of herbicidal controls in your area. **UK**

>William W. Witt, PhD, professor emeritus in Plant and Soil Sciences, provided this information.

counts for treatment should be somewhere between 100 to 500 eggs per gram (epg).

■ We cannot eliminate worm burdens entirely: "An immune system that coevolves with parasites is best, as the worms stimulate and improve the immune system," Nielsen said.

One recently applied technique for monitoring ascarid burdens in foals is abdominal ultrasound. Nielsen's team completed a study in which they used this technique with good results. Nielsen also described a technology called the Parasight system, which can quantify egg counts in a smartphone photo of a fluorescent-stained fecal sample. This will be available in the near future, he said.

Because internal parasites are here to stay, an integrated parasite control program is critical to providing science-based preventive health care. This relies on vigilant monitoring through once or twice yearly fecal egg count reduction testing balanced with deworming programs designed to treat the specific needs of each individual horse and farm. **UK**

>Nancy S. Loving, DVM, owns Loving Equine Clinic in Boulder, Colorado, and has a special interest in managing the care of sport horses.

Gluck Center Collaborates With UK Libraries, Keeneland Library for Arabian Roots Exhibit

A new exhibit at William T. Young Library traces the heritage of the modern Thoroughbred horses bred in Kentucky to a stock of Arabian horses imported to England between the late 17th and early 18th centuries. As part of the University of Kentucky Libraries and the UK College of Arts and Sciences' continued focus on the Year of the Middle East, "Arabian Roots: The Pedigree of Kentucky Thoroughbreds" illustrates prominent sires' bloodlines and shows links to Central Kentucky horses. The exhibit opened April 27.

"Arabian Roots" includes wall panels along with display cases featuring artifacts and books on some of the Central Kentucky sires. The exhibit panels show the evolving Thoroughbred from the Darley Arabian through William T. Young's famed Storm Cat. The physical exhibit, which runs through July 31, is located in Core 1 of The Hub in Young Library.

"Arabian Roots" also includes a virtual exhibit that can be found in UKnowledge, the university's institutional repository at http://uknowledge.uky.edu/world_yome_arabian_roots.

A satellite exhibit with additional artifacts is also on display in the John A. Morris Library at the Maxwell H. Gluck Equine Research Center.

All exhibits and events are free and open to the public.

"Arabian Roots" was developed by UK Libraries, The Keeneland Library, and the Gluck Equine Research Center in collaboration with the Pyramid Society and the International Museum of the Horse. **UK**

>Whitney Hale is an information specialist senior in the University of Kentucky public relations office.

Arabian Roots
The Pedigree of Kentucky Thoroughbreds

PHYSICAL EXHIBIT RUN DATES
April 27 - July 31, 2015
William T. Young Library
Core 1 of the Hub

VIRTUAL EXHIBIT URL
http://uknowledge.uky.edu/world_yome_arabian_roots

EXHIBIT OPENING RECEPTION
April 27, 2015 at 1:00 PM
William T. Young Library
Core 1 of the Hub

EXHIBIT RESEARCH GUIDE
http://libguides.uky.edu/arabian_roots

EXHIBIT OVERVIEW
The exhibit highlights the centrality of Arabian horses to the history of the Thoroughbred breeding industry, features prominent early Thoroughbred sires, and spotlights select celebrated Kentucky Thoroughbreds.

EXHIBIT DEVELOPED BY:
University of Kentucky Libraries
The Keeneland Library
Maxwell H. Gluck Equine Research Center

IN COLLABORATION WITH:
The Pyramid Society
International Museum of the Horse
Special Collections Research Center Digital Lab



Arabian Sires
The Foundation of Thoroughbred Breeding

Arabian horses have always been, and still are, the best horses in the world from their descent of the finest horses in Europe, in Africa, and in Asia.

"Imported Arab Horses"
Two millennia after the domestication of the first horses, the Arabian appeared, becoming one of the oldest, recognizable breeds in present art and the archaeological record.

From the earliest history of the breed, Arabians were valued for their endurance, brilliant performance in warfare, and elite status among horses.

"Queen's Luck" Breeding
No horse has had as great of effect on the history of light horse breeds as has the Arabian breed.

Kentucky Thoroughbreds
Storm Cat
By Storm Cat, 1985
Race Record: 8-4-2-0

Storm Cat showed great promise as a 2-year-old, but his racing career ended early due to injuries. He finished first or second in seven of his eight starts in 1985.

Storm Cat claimed victory at the Young America Stakes at Meadowlands, and placed second by a nose to Sasso in the breeders' Cup Juvenile.

After sustaining injuries that year, Storm Cat recovered from racing to Overbrook Farm in Lexington. In his early years at stud, he commanded moderate stud fees.

As his offspring registered from wins and his sons proved successful stallions in their own right, Storm Cat's stud fee rose to \$500,000.

Storm Cat was the leading sire in North America in 1999 and 2000. As of 2013, he had sired 8 champions, 18 winners of group or graded stakes races, and 110 stakes winners around the world with earnings exceeding \$125 million.

He is descended on both sides of his pedigree from the Darley Arabian. Storm Cat died at the age of 30 at Overbrook Farm. A tapestry depicting William T. Young and Storm Cat hangs in William T. Young Library's art gallery.

UK Veterinary Diagnostic Lab Part of Larger Animal Health Monitoring Network

With the recent poultry and canine influenza outbreaks, the University of Kentucky College of Agriculture, Food and Environment's Veterinary Diagnostic Lab (UKVDL) has been on high alert. But the lab is always in-the-know on animal disease situations, including equine diseases, throughout the state and the country.

The UKVDL is part of a larger

network—the National Animal Health Laboratory Network (NAHLN)—that tracks disease progress and performs diagnostic tests on thousands of samples each year. The network is a cooperative effort between two federal agencies within the U.S. Department of Agriculture—the Animal and Plant Health Inspection Service and the National Institute of Food and Agriculture—and the American Association of Veterinary Laboratory Diagnosticians.

"The NAHLN is a strategic partnership of veterinary labs around the country," said Craig Carter, DVM, PhD, Dipl. ACVPM, director of the UKVDL. "The

network enables labs to test for diseases that pose serious threats to animal health, such as the recent avian influenza epidemics as well as foot-and-mouth disease, classical swine fever, mad cow disease, and many others."

Carter said the network is a vital early warning system for emerging and foreign animal disease, diseases that can be accidentally or deliberately introduced to the United States from abroad. Without an early warning system, foot-and-mouth disease, for instance, could easily cost U.S. agriculture more than \$125 billion in decreased revenues for corn and soybeans and more than 150,000 lost

UK Veterinary Lab

jobs over the course of an outbreak.

“Being able to quickly identify disease, warn of its presence, and stop the spread is a very important part of ensuring a safe, stable, and nutritious food supply in the United States,” Carter said. “As part of the larger network, we’ve helped

establish a framework for animal health monitoring that provides critical information sharing and an emergency response system that can protect animal agriculture.”

The early detection of animal diseases can also help protect human health. For example, avian influenza virus has the potential for mutating into a strain that can infect people.

“By keeping a watchful eye on animal disease in Kentucky and elsewhere in the United States, we can also increase consumer confidence in animal agriculture and ensure positive relationships with our global trading partners,” Carter said. **UK**

>Aimee Nielson is an agriculture communication specialist at the University of Kentucky.

UK Lecture Series Conversation With Reiner Shawn Florida Held April 27

Shawn Florida, National Reining Horse Association’s (NRHA) leading rider, all-time money earner, and a member of the NRHA Hall of Fame, spoke at the University of Kentucky Ag Equine Programs’ Distinguished Industry Lecture Series April 27 in the Gluck Equine Research Center’s auditorium.

The talk was moderated by the College of Agriculture, Food and Environment’s equine industry advisory committee chair and long-time program supporter Norm Luba.



Shawn Florida

It was live-streamed on the college’s YouTube channel, and an archived version of the talk is available at youtube.com/watch?v=R6T1Bwf6oCo.

Sponsored by Hagyard Equine Medical Institute, the event was free and attracted approximately 75 attendees.

Florida is the first-ever Five Million Dollar Rider. He has five NRHA open futurity championships to his name and has won the All-American Quarter Horse Congress futurity 11 times.

Additionally, he was an individual and team gold medal winner at the 2002 World Equestrian Games in Jerez, Spain, riding for Team USA. In 2010 he was the high scoring rider in the World Equestrian Games team competition and led Team USA to the gold medal.

Florida knew from a very early age what he wanted to do when he grew up. In 1988 he graduated from high school and went to work for his brother, Mike Florida, who had an established and successful business as a reining trainer. In 1989 Florida branched out on his own.

Notoriously superstitious—always showing in a green shirt—Florida’s stated focus is on working hard at home and being the best horseman he can be. His official website is thegreenshirt.com.

The Distinguished Lecture Series began in fall 2009 and has become one of UK Ag Equine Programs’ signature events. 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, and a double header featuring both Thoroughbred trainer Graham Motion and three-day eventer Buck Davidson. **UK**

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

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UK Equine Farm and Facilities Expo to be Held June 2

University of Kentucky (UK) Ag Equine Programs will host an Equine Farm and Facilities Expo from 3:30 to 8 p.m. EDT Tuesday, June 2 at McPeek Racing's Magdalena Farm in Lexington.

Horse owners and farm managers will have the opportunity to walk through a vendor trade show and see a range of equipment and supplies for horse farms of all sizes. UK specialists will provide hands-on instruction about practical aspects of equine operation management. There will also be farm tours.

"The expo provides horse owners the chance to attend an informative event on the grounds of a working horse farm," said Ray Smith, PhD, forage extension specialist for the College of Agriculture, Food and Environment. "We appreciate Kenny McPeek for hosting this event and for opening the farm's gates to the public."

Nick Carter, Fayette County agriculture and natural resources extension agent, said the expo is a unique opportunity for owners of farms of all sizes to learn about a range of topics. "There are not many other venues around that allow horse owners this kind of opportunity," he said.

UK experts will lead demonstrations on subjects including footing for where horses work, pasture weed management, and landscape decisions on horse farms. In addition, McPeek will share what he looks for in a Thoroughbred yearling. There will also be a number of informational booths staffed by UK specialists.

McPeek Racing specializes in the selection, management, and training of Thoroughbred racehorses. McPeek serves on UK Ag Equine Programs' board and has been training racehorses since 1985.

The farm is located at 2651 Russell Cave Road in Lexington. Learn more about it at <http://mcpeekracing.com>.

Admission to the expo is free, and a meal will be provided. Reservations are appreciated. Contact the Fayette County Extension office at 859/257-5582 to reserve a spot. For more information about this and other UK Ag Equine Programs events, visit ca.uky.edu/equine or e-mail equine@uky.edu. **UK**

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

UK Ag Equine Programs presents
in conjunction with McPeek Racing
7th Annual Equine Farm & Facilities Expo

Tuesday, June 2, 2015, 3:30-8 p.m.
meal provided

Magdalena Farm, 2651 Russell Cave Road, Lexington

RSVP appreciated to Fayette County Extension Office (859)257-5582 dL_CES_fayette@uky.edu



McPeek Racing specializes in selection, management and training of Thoroughbred racehorses. Kenny McPeek serves on the board of UK Ag Equine Programs and has been training racehorses since 1985.

Agenda:
 3:30-5 p.m., *Registration & Trade Show*
 4-5 p.m., *Farm Tours*
 5 p.m., *Welcome, Kenny McPeek, "What I look for in a yearling"*
 5:45 p.m., *Meal and Announcements*
 6:30-8 p.m., *Educational Stations:*

- Dr. Bob Coleman, "Footing for where your horses work"
- Dr. J.D. Green, "Pasture weed management"
- Mr. Ryan Martin, "Landscape decisions on horse farms"




Now You Can Follow us on Twitter, Too



The University of Kentucky College of Agriculture, Food and Environment has several equine-related social media pages with the latest news and events information.

The UK Ag Equine Programs recently joined Twitter. Follow us at UKAgEquine.

The UK Maxwell H. Gluck Equine Research Center is also on Twitter at UKGluckCenter.

Got Facebook? Like these pages administered by us:

University of Kentucky Ag Equine Programs: UK Ag Equine Programs is an overarching framework for all things equine at the University of Kentucky, including the undergraduate degree program, equine-related student organizations, equine research, and outreach activities.

University of Kentucky Maxwell H. Gluck Equine Research Center: The mission of the Gluck Center is scientific discovery, education and dissemination of knowledge for the benefit of the health and well-being of horses.

University of Kentucky Horse Pasture Evaluation Program: The University of Kentucky Horse Pasture Evaluation Program is a service program offered to horse farms in Kentucky with the goal of overall improved pasture management. Regardless of breed or discipline, the programs goals are to: provide detailed pasture management recommendation to horse farm owners and managers; help improve pastureland to increase quality and quantity of pasture as a feed source and reduce the need for stored feeds such as hay and grain; and assess the potential risk of fescue toxicity of individual pastures to pregnant broodmares.

Kentucky Equine Networking Association (created by the Kentucky Horse Council and University of Kentucky): The mission of the Kentucky Equine Networking Association (KENA) is to provide an educational and social venue for equine professionals and other horse enthusiasts from all disciplines to share ideas and business strategies, and obtain current knowledge on horse and farm management with the principal objective of enhancing individual horse ownership and the horse industry at large.

Saddle Up SAFELY: Saddle Up SAFELY is a rider safety awareness program sponsored by UK HealthCare, UK College of Agriculture, Food and Environment and many community organizations. It aims to make a great sport safer through education about safe riding and horse handling practices.

The Equine Genetic Toolbox

Kathryn Graves, PhD, associate professor and director of the Animal Genetic Testing and Research Laboratory at the University of Kentucky, spoke about genetic testing at the 6th Annual Kentucky Breeders' Short Course, in Lexington, Kentucky. Genetic testing encompasses any test that detects differences at an individual's DNA level. This includes parentage, heritable disease, and trait testing.

DNA is made up of four nucleotides, or basic structural units, labeled A, C, G, and T. Microsatellites are DNA segments made of short, repetitive nucleotide sequences (e.g., CACACACA). Researchers can use microsatellites to study parentage, because each one has a number of possible variants (alleles) based on the number of repeats. The Animal Genetic Testing and Research Laboratory uses 17 microsatellites to generate DNA profiles for individual horses as well as to confirm parentage.

Scientists can also use microsatellites to find mutations by comparing the alleles of microsatellites present in affected versus



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Breeders can use color gene tests to produce horses with desirable coats.

normal horses for a disease mutation or color variation. The closer a marker is to the gene, the greater the linkage (association). The researcher can then use the gene map to look for genes near markers and to sequence the gene.

Another type of marker is a single nucleotide polymorphism (SNP)—a single base change in the DNA sequence that can have profound effects on phenotype (all of an organism's observable characteristics). Many SNPs are responsible for coat color variants but can also be associated with other traits such as fertility, body type,

muscle function, dwarfism, and more.

During her presentation Graves spent a substantial amount of time discussing coat color genetics in particular. She broke down the genes and characteristics of various coat colors, as well as the homozygotes (an organism with identical pairs of genes, or alleles, for a specific trait) of mutations. She also discussed cloning and the reasons for its use. She said cloning can be used to recover a valuable breeding animal, create a breeding animal from a gelding or infertile mare, recreate a successful performance animal, or to reproduce an animal because of emotional attachment.

Graves concluded by explaining that genetic testing is still in its early stages. She said that, moving forward, it is important to not try to eliminate genetic disease genes in horses too quickly. There is the danger of eliminating good traits accidentally by removing all

carriers of an undesirable trait. Tests for complicated traits, such as performance, and complex diseases, such as laminitis or developmental disorders, are on the horizon. However, the current tests available are useful tools to avoid producing horses with heritable diseases, and breeders should use them if one of those diseases is present in their breed.

They can use the color gene tests to produce horses with coat colors that make them more marketable or to avoid problems caused by some of the coat color mutations that are deleterious when homozygous. The bottom line is that breeders need to take advantage of the genetic tools available to increase their chances for the best possible outcomes. **UK**

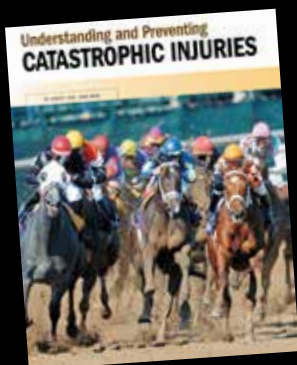
>Hannah Forte is a communication intern with UK Ag Equine Programs and the Gluck Equine Research Center and an undergraduate student majoring in community and leadership development at UK.

UPCOMING EVENTS

June 2, 3:30-8 p.m.

Equine Farm and Facility Expo, McPeck Racing Farm, Lexington, Kentucky

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