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Diagnosing Disorders of Sexual Development in Horses

Fertility issues in the horse can stem from multiple causes. One cause of infertility in mares is a disorder of sexual development (DSD) whereby the sex chromosome complement (genotype, or genetic code) is abnormal and does not agree with the external appearance of the horse (phenotype, or observable characteristics). One common DSD observed in horses occurs when the phenotype is female but the genotype is male. These horses are called XY mares and have a disorder known as XY DSD (or XY sex reversal). Most of them exhibit the absence of estrous cycles and abnormalities in the reproductive tract such as small, inactive ovaries. These signs are clues for the veterinarian to recommend a chromosomal analysis.

The Molecular Cytogenetics Laboratory at the University of Kentucky's Maxwell H. Gluck Equine Research Center offers equine practitioners chromosomal analysis service to diagnose DSD. Veterinarians submit blood samples for cytogenetic (chromosome) testing. The white blood cells are cultured and treated with various chemicals, fixed on a microscope slide,

and stained. The chromosomes from those cells are imaged using a microscope equipped with a camera attached to a computer. Computer software facilitates chromosome identification and placement into a diagram called a karyotype. Analysis of the karyotype reveals any abnormalities in the number and morphology (shape) of the chromosomes.

Horses have 64 chromosomes including 31 pairs called autosomes, plus two sex chromosomes: two X chromosomes in females and one X and one Y chromosome in males. But in XY mares the karyotype shows one X and one Y chromosome. That is, the outward female appearance of these horses belies the fact that, genetically, these "mares" are male. Other types of DSD include horses with only one X chromosome (XO mares) as well as individuals that, despite having two X chromosomes, are male-like in appearance. All of these horses are infertile.

While the karyotype explains the XY mares' abnormalities, it does not reveal why these horses did not develop as males even though they have a Y chromosome. To answer that question, the

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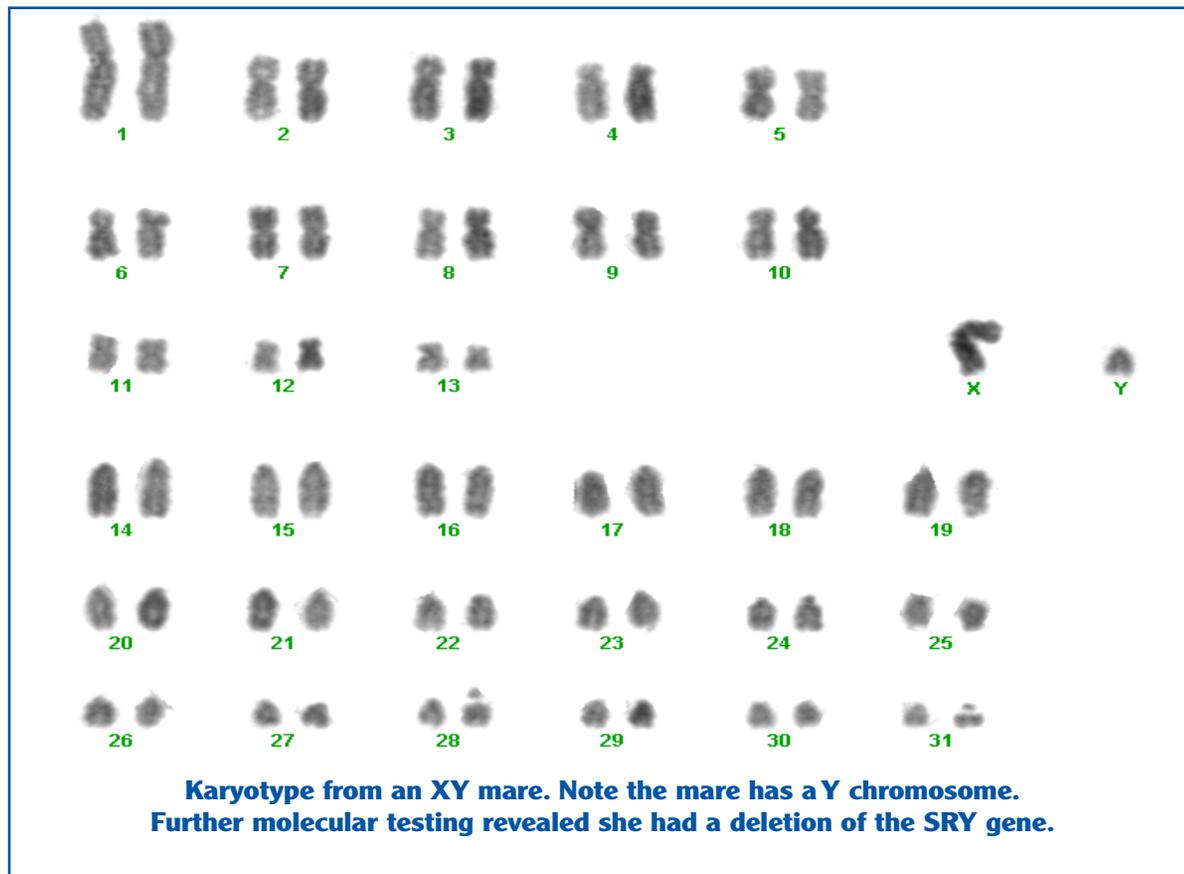
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lab uses genetic techniques to compare the XY mare's Y chromosome to that of a normal male horse. Results indicate the Y chromosomes of the XY mares studied are missing a large region (a deletion) that includes a gene called SRY (sex-determining region on the Y), which is essential in mammalian male development. The SRY gene produces a protein that initiates a series of events leading to development of testes in the male embryo. Without this critical gene, the XY mares develop as infertile females rather than normal

males. Further molecular testing can identify this Y chromosome deletion.

Over the years, the Molecular Cytogenetics Laboratory has confirmed some form of DSD in 36% of the samples submitted from horses that exhibit DSD symptoms, with XY mares being the most common form. DSD has been observed in many horse breeds including Thoroughbreds, Arabians, Belgians, Quarter Horses, Oldenburgs, Tennessee Walking Horses, and Standardbreds.

The value of the initial karyotype in diagnosing these disorders is immense. With it, veterinarians and horse owners can make informed decisions about future care and use of affected horses. However, unanswered questions still exist in the realm of XY DSD in horses. What mechanism accounts for this deletion in the Y chromosome? What is the prevalence of this disorder and other DSDs in the general horse population? As the Molecular Cytogenetics Laboratory studies more affected horses using cytogenetic and genetic methods, the picture will become clearer.

For more information, contact Teri L. Lear, PhD, at equigene@uky.edu. [UK](http://www.uky.edu)

Rose B. McGee is a research assistant at the Gluck Equine Research Center and is completing her master's degree in equine genetics. Teri L. Lear, PhD, is an associate professor in the genetics/genomics group at the Gluck Center.

Freshman Sire Stud Fees

Historically, the Thoroughbred industry has made decisions based on instinct and experience. Compared to other industries, minimal statistical evidence exists to support these decisions, particularly in regard to setting freshman sire stud fees. However, the University of Kentucky College of Agriculture's agricultural economics program is helping provide state-of-the-art financial tools to the industry.

In a recent study published in the *Journal of Agribusiness*, authors C. Jill Stowe, PhD, an

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assistant professor in agricultural economics at UK, and Billy Ajello, a former undergraduate student in agricultural economics and recent Darley Flying Start graduate, analyzed the factors that determine freshman sire stud fees in the Thoroughbred industry to better inform owners and breeders about the decisions made on a daily basis and the impact they have on the industry.

Data on more than 600 incoming (freshman) sires from 1999-2009 were obtained from the *Blood-Horse MarketWatch*, the *Blood-Horse Stallion Registry*, and the *2009 American Produce Records*. Stowe and Ajello found that different measures of a freshman sire's own racing career, such as winning percentage and number of grade I stakes wins, are significant in determining stud fees, even though according to previous studies, these attributes are only marginally heritable (passed from one generation to the next). In addition, certain individual characteristics (such as age entering the breeding shed and where the sire stands at stud) and sire and dam quality measures are factors that help predict freshman sire stud fees.

Once these attributes were identified, Stowe and Ajello estimated the market values of each characteristic. The table on page 4 provides a general overview of the main results.

Finally, there is a small upward trend in stud fees over time; freshman stud fees increased an average of about \$175 in each of the 11 years.

With the exception of Kentucky Derby winners,

WEED OF THE MONTH

Common name: Curly dock

Scientific name: *Rumex crispus* L.

Life Cycle: Perennial

Origin: Eurasia

Poisonous: Yes, but rarely



Curly Dock

Curly dock is a stout, deep-rooted simple perennial that generally stands two to four feet at maturity, depending on the site of growth. This weed is found throughout the United States and grows well in alfalfa, disturbed sites (such as construction areas), cultivated fields, ditches, and especially in compacted, overgrazed pastures.

Curly dock reproduces from seeds and shoots that form on the root crown. This weed spreads by its lightweight seeds, which are carried by wind and water for long distances. Curly dock overwinters as a rosette (a circular arrangement of leaves).

An identifying characteristic of curly dock is the papery sheath at each node on the stem. Leaves are mostly basal (forming at the base) and narrow, and the leaf margin is curly or wavy. Flowers are greenish and inconspicuous. Fruits are brown and are triangular-shaped achenes (small, dry, one-seeded fruits).

Mowing is usually an ineffective method for controlling curly dock because of the plant's deep taproot. Control with herbicides can be challenging and usually requires multiple treatments. Consult your local Cooperative Extension Service personnel (www.csrees.usda.gov/Extension) for a list of herbicidal controls in your area.

William W. Witt, PhD, a professor in the plant and soil sciences department at the University of Kentucky, provided this information.

the market places the highest value on standing at stud in the state of Kentucky. In other words, freshman sires standing in Kentucky command a premium over (statistically) similar freshman sires in other states. Based on these estimates,

this premium is worth more than \$600,000 in a year's stud fee revenue for a sire that covers 100 mares in a season.

The results in this study serve as a useful guide to Thoroughbred owners and breeders in their

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daily decision making. It is important to remember, however, the data was from the time period just prior to changes the industry experienced as it adjusted to a significant market correction exacerbated by the economic recession of 2008 and 2009. As the market stabilizes, researchers should re-estimate the results to accommodate any relevant changes.

The complete version of this article can be found in the *Journal of Agribusiness* (Spring 2010, vol. 28, issue 1, pages 19-30). For a copy of the entire study, contact Jill Stowe at jill.stowe@uky.edu. [UK](http://www.uky.edu)

Jill Stowe, PhD, is an assistant professor in agricultural economics at the University of Kentucky.

Compared to freshman sire A, if freshman sire B...	B's first-year stud fee exceeds A's by...
...earns \$100,000 more on the track	\$487.50
...wins 10% more of his races	\$668.85
...wins a 2-year-old grade I stakes race	\$3,890.48
...wins the Kentucky Derby	\$8,843.31
...wins any other grade I stakes race	\$2,269.63
...stands in the state of Kentucky	\$6,080.96
...enters stud one year earlier	\$896.26
...has a dam that is a stakes winner	\$765.80
...has a sire whose stud fee is \$10,000 higher	\$115.67

Horses as Healers in UK Hippotherapy Course

Horses are an integral part of Kentucky's culture. They possess qualities of balance, coordination, speed, reflex, strength, endurance, and stamina. However, outside the racetrack or the pasture, horses can also be healers. Faculty and students at the University of Kentucky College of Health Sciences, in partnership with Lexington's Cardinal Hill Rehabilitation Hospital, harness the healing power of specially trained horses to help improve the lives of physically and mentally challenged humans.

Hippotherapy, from the Greek "hippos," meaning "horse," literally means treatment or therapy aided by a horse. Specially trained physical, occupational, and speech therapists use this therapy for clients who have movement dysfunction. Clients with a variety of diagnoses can benefit from hippotherapy, including those with cerebral palsy, multiple sclerosis, developmental delay, traumatic brain injury, stroke, autism, and learning or language disabilities.

The horse provides sensory input to the rider through its variable, rhythmic, and repetitive walk. The movement responses in the rider are similar to human movement patterns of the pelvis while walking. The variability of the horse's gait enables the therapist to grade the degree of sensory input to the client and then use this movement in combination with other clinical treatments to achieve desired results.

Studies have shown that hippotherapy can improve people's balance, posture, mobility, and function. Hippotherapy might also affect psychological, cognitive, behavioral, and communication functions for clients of all ages. It also provides those with life-threatening illnesses a reprieve from traditional medical treatments. The riders develop a beneficial relationship with their horse through grooming, caring for, and getting to know the animal.

Hippotherapy at the UK College of Health Sciences was developed as an elective course in 2000 by Janice Kuperstein, PhD, MSED, associate professor of physical therapy in the Department of Rehabilitation Sciences.

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In the eight years Kuperstein taught the class, she estimates 120 patients received treatment.

“Therapy in this environment encompasses multiple body systems, such as the sensory experience, cardiopulmonary challenges, and balance,” Kuperstein said. “An excellent hippotherapy horse can become almost a partner in your therapeutic intervention. I have seen horses adjust their own bodies when they sense a client is unsteady or even stop working when they sense that a client has had enough, and sometimes this is in response to extremely subtle cues that the therapist might not notice initially.”

In 2008 Kuperstein handed over the program’s reins to Joan Darbee, PhD,

lecturer in physical therapy in the Department of Rehabilitation Sciences, who now teaches the hippotherapy course located at the Central Kentucky Riding for Hope barn at the Kentucky Horse Park.

Physical therapy students who participate in the elective course meet traditional educational goals, but they also gain a unique perspective on the value of community engagement, volunteerism, and advocacy, and, of course, they learn another role for horses in the “Horse Capital of the World.” **UK**

Ann Blackford is an information specialist in the president’s office at the University of Kentucky.

UK Horticulture Helps WEG Bloom

When the budget for the Alltech FEI World Equestrian Games was cut in July, one area that took a hit was funding for decorative plants and ornamentals around the Kentucky Horse Park. The University of Kentucky’s College of Agriculture Department of Horticulture stepped up to help by gathering donations and growing what they could to make the event beautiful.

“Our department recognized how important the Games are to this city, to this state,” said Robert Houtz, chair of the UK Department of Horticulture. “We knew we had the resources and dedicated people who could help beautify the Games.”

UK student farm workers collaborated with research analysts Janet Pfeiffer and Kirk Ranta, UK Extension floriculture specialist Sharon Bale, and UK Horticulture Research Farm manager Darrell Slone to gather about four tractor-trailer loads of various

plant materials that made their way to Lexington’s Kentucky Horse Park for the Games.

“We emptied greenhouses and borrowed plants from UK Physical Plant Division,” Bale said. “We sent broom corn, foddershocks, field corn, morning glories, beans ... so many items that officials could put together to create beautiful displays of Kentucky plants.”

“Our department recognized how important the Games are to this city, to this state. We knew we had the resources and dedicated people who could help beautify the Games.”

Robert Houtz

Bale said they sent more than 70 containerized, full-grown hydrangeas, 1,000 pots of petunias, several 30-inch pots with varied arrangements,

85 pots of periwinkles, 100 pots of sweet potato vines, and a variety of other items harvested from UK College of Agriculture farms. Nancy Cox, MS, associate dean for research, director of the Kentucky Agricultural Experiment Station, and administrative leader for UK’s Equine Initiative, said, “We’ve supported the Games in many important ways since their inception, and this is just another way the UK College of Agriculture tries to be a good partner.”

“It takes a village to rise to this type of challenge, and horticulture received help from other areas in the college, such as biosystems and agricultural engineering, plant and soil sciences, the farm crew at Maine Chance Farm and, of course, we had help from Ted Walker in facilities management to get the items from the farms to the Games,” Bale explained. “Really, everything we asked for, we received; you can’t ask for anything more.” **UK**

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

Feeding Broodmares in Fall and Winter

For many years horse owners and veterinarians thought the nutrient needs of pregnant mares increased only at the end of gestation. But new research shows that pregnant mares' nutrient needs increase as early as the fifth month of gestation.

Early October is an excellent time to evaluate broodmares' body conditions and to determine whether adjustments are necessary prior to the next breeding and foaling season. The Henneke system evaluates horses' body condition scores (BCS) on a scale of 1 to 9; where 1 is extremely thin and 9 is extremely fat. A body condition of 5 is considered moderate.

Many research studies have documented that reproductive efficiency is impaired if mares have BCS below 5 at the onset of the breeding season. Therefore, one of the goals of broodmare feeding programs should be to have mares in a body condition of at least 5 by the end of fall.

Evaluate body condition by palpating the amount of fat in several areas on the horse: The neck, shoulder, ribs, withers, behind the shoulder, and above the back and tailhead. A horse in moderate body condition will have enough fat cover that the ribs are easily felt but not visible. There should be enough fat cover on the withers, back, tailhead, pelvis, and shoulder so the body parts blend to together smoothly. Remember to evaluate the amount of fat cover manually, as a



Many breeders want their mares to begin winter with a BCS of 6, or moderately fleshy.

thick hair coat can be deceiving. The size of the abdomen (belly) is not an indicator of body condition and is often enlarged due to pregnancy or prior pregnancies.

Because some mares will lose body condition during the coldest part of the winter, managers might want mares to begin winter with a BCS of 6, which is moderately fleshy. Similarly, if a mare is known to lose weight during lactation, the owner or manager might also want to keep her body condition above 5.

If a mare is slightly overweight, her reproductive efficiency will not be affected. In fact, if she is moderately fleshy at the onset of winter, she will have a small buffer of expendable body fat that can be used during severe cold or during early lactation. However, there is no benefit

to a mare being extremely fat.

Body condition is affected primarily by calorie consumption. If a mare consumes the same amount of calories as she uses, her body condition will remain the same. In order to increase body condition, she needs to consume more calories than she expends. Nutritionists call this positive energy balance. There are two ways to manipulate energy balance: Change calorie use or change calorie intake.

In addition to needing calories for gestation and lactation, broodmares also need calories for daily activities such as walking to food and water, and to regulate body temperature. If a mare is thin, provide an environment with shelter and easily accessible food to help reduce her calorie use. However, to make a significant change in

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energy balance, it is almost always necessary to change her diet.

The first step in changing an underweight broodmare's diet is to evaluate her forage (pasture or hay) intake. Increase forage quality or quantity if it is low. If this does not produce the desired change in body condition, then increase concentrate intake. The amount of extra concentrate needed for weight gain in any mare depends on her size, her initial and target body condition, and her current diet.

In general, changing the BCS of a Thoroughbred-type mare from 4 to 6 usually takes about 3-5 pounds of extra concentrate per day for 60 days. For example, if a mare maintains a BCS of 4 with unlimited access to hay/pasture and 3 pounds of concentrate, you will need to feed her 6-8 pounds of concentrate per day to change her body condition to a 6 in about two months. Once she reaches her target body condition, the amount of concentrate can usually be reduced.

Large concentrate intakes have been associated with an increased risk of colic. Therefore, if a mare is somewhat thin in October, adjust her diet immediately, but slowly, to promote weight gain before mid-December, and avoid very high concentrate intakes.

If a mare is condition scored in October and determined to be too fat, then adjust her diet to reduce calorie intake. For example, Quarter Horse, Arabian, and Morgan mares often can maintain adequate body condition during the fall and winter on good quality forage and a minimal amount

of concentrate. To achieve weight loss, create a negative energy balance where calorie intake is less than calorie use. The first step is to reduce concentrate intake or forage quality. Horse owners should also consider ways to increase calorie expenditure, such as placing food and water far apart to encourage exercise.

Once body condition is adjusted in the fall, feed the broodmare to maintain body condition while meeting the needs of her stage of pregnancy.

Give mares access to good-quality hay when pasture availability declines in late fall. Many different types of hay are suitable for broodmares, but the transition in feeding programs is easiest if the nutrient composition of the hay is similar to the nutrient composition of the pasture.

The nutrient composition of hay is influenced by type (legume or grass) and stage of maturity at harvest. In general, legume hays (alfalfa, clover, etc.) are higher in protein and calcium and lower in fiber than grass hays (timothy, orchardgrass, Bermuda grass). Legume hays are usually more palatable as well. Stage of maturity is determined by how mature the plant was at harvest, not the time of year it was harvested.

Many factors affect the amount of hay and concentrate that should be fed to an individual mare. In mid-gestation a mare might be fed 20-25 pounds of hay and 3-8 pounds of concentrate. As she reaches the end of gestation, she might receive between 15-25 pounds of good quality hay and 5-10 pounds of concentrate per day. In most cases the amount of concentrate needed is

reduced when the quality of the hay is high.

These are guidelines for mares that normally weigh 1,100-1,300 pounds. Smaller or larger mares will need different feeding programs, and the program should always be adjusted to make sure the mare has at least a moderate body condition. Work with a veterinarian and/or equine nutritionist to establish a feeding program suited to your broodmare's individual needs. [UK](#)

Laurie Lawrence, PhD, is a professor in the department of animal and food sciences at the University of Kentucky.

HORSE SAFETY CAMPAIGN RELEASES NEW BROCHURE ON HORSE-RELATED INJURIES

UK HealthCare, in partnership with the University of Kentucky Colleges of Agriculture and Public Health and 40 community, equine, and medical organizations, has continued its five-year educational campaign, Saddle Up Safely, with the development of a horse-related injury brochure.

"As the official medical provider for the 2010 FEI Alltech World Equestrian Games, we have a passion for serving the horse community, and are grateful to have so many partners



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that believe in the campaign's mission to raise awareness of horseback rider safety across the state and beyond," said Julia Martin, MD, associate professor of Emergency Medicine at UK HealthCare.

In a research study by John Mayberry, MD, and colleagues at the Oregon Health Center in Portland, riders with 50 hours or less of riding experience were found most likely to be injured while riding. The study also recognized that more advanced riders were more likely to be seriously injured while riding and less likely to wear a helmet.

In the fight to reverse these statistics, Saddle Up Safely's newly published booklet lists basic tips for riders, trail ride checklists, helmet-fitting information, and safety tips for minor injuries, sprains and fractures, head injuries, and chest and abdominal injuries. Rehabilitation and therapy resources also are available.

Martin stressed that this educational campaign is more important than ever before: The recent UK HealthCare survey found 60 percent of Kentucky horseback riding respondents did not wear any safety apparel the last time they rode.

To visit the campaign website, share tips about experiences involving horse and rider safety, and read the blog hosted by Fernanda C. Camargo, DVM, PhD, equine extension professor at the University of Kentucky, visit www.saddleupsafely.org. **UK**

Julie Meador is a public relations specialist for UK HealthCare.

UK's Gluck Equine Research Center Continues to Improve Horse Health

Six of the 10 major vaccines to protect against equine infectious diseases were developed at the University of Kentucky's Maxwell H. Gluck Equine Research Center. But that's not the only major research accomplishment the world-renowned Gluck Center has contributed to the equine and veterinary fields.

The 81,000-square-foot facility on Nicholasville Road in Lexington is the only scientific institute in the United States that has nearly all its faculty conducting full-time equine health and disease research.

"Since its establishment in 1987, the Gluck Center has endeavored to build upon and enhance the historical reputation of the Department of Veterinary Science in the field of equine diseases," said Peter Timoney, FRCVS, PhD, the Frederick Van Lennep Chair in Equine Veterinary Science at the Gluck Center, former Gluck Center director, and former chair of the department of veterinary science.

Researchers at the College of Agriculture's Gluck Center have:

- Developed diagnostic serological tests for contagious equine metritis (CEM), Tyzzer's disease, equine protozoal myeloencephalitis (EPM), equine herpesvirus myeloencephalopathy, strangles, and equine viral arteritis;
- Developed enzyme-linked immunosorbent assay (ELISA) test for drug detection;
- Demonstrated the usefulness of artificial lights and progesterone/estradiol treatments for hastening the onset of the breeding season;
- Determined the genetic basis for and developed tests for inheritance of certain coat color traits;



The University of Kentucky's Gluck Equine Research Center

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- Provided leadership in sequencing the complete genome of the horse and structural characterization of horse genes; and
- Performed the definitive experiments that identified the cause of mare reproductive loss syndrome.

“Landmark discoveries have been made in vaccine research and production, sequencing of the equine genome, parasite control, and reproductive management,” said Mats Troedsson, DVM, PhD, Dipl. ACT, director of the Gluck Center and chair of the department of veterinary science at UK.

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

The Gluck Center also is a World Organization for Animal Health (O.I.E.)-

designated world reference laboratory for equine rhinopneumonitis, equine influenza, and equine viral arteritis.

“Major emphasis has been placed on making the Gluck Center one of the preeminent equine research institutions in the world based on the quality of its varied research programs and the expertise and international reputation of its faculty,” Timoney said. “Over the years, the center has served as a clearing house for information, especially on how best to prevent and control some of the most economically damaging equine diseases.”

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. For more information on the Gluck Center, visit www.ca.uky.edu/gluck. 

Jenny Blandford is the Gluck Equine Research Foundation assistant at the Gluck Center.

Mature Hay Bedding Could Cause Tall Fescue Toxicity

With budgets tight, a number of horse farm managers have reduced costs by using a hay harvest of overmature grass pastures for bedding.

On the surface it makes sense to bed stalls with this stemmy hay. But be cautious when using it for pregnant mares in their last trimesters. Some horses eat their bedding, especially if it is hay, and levels of ergovaline (an alkaloid produced by a fungus that lives inside the plant) above 200 ppb (parts per billion) in the hay can cause fescue toxicity in pregnant mares. UK’s surveys show that Central Kentucky horse pastures often contain more than



The stems and seedheads of tall fescue often contain high levels of the toxin ergovaline.

25% tall fescue, and since the stems and seedheads of tall fescue contain the highest levels of the toxin ergovaline, there is a good chance that mature hay contains toxic levels. In other areas of Kentucky and in surrounding states,

tall fescue often makes up more than 50% of horse pastures.

If overmature grass hay is used as bedding for pregnant mares, first have it tested for ergovaline concentration at the University of

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Kentucky Veterinary Diagnostic Laboratory (VDL, formerly the Livestock Disease Diagnostic Center) in Lexington. Work with a veterinarian or county agent to submit samples. Samples should be taken from the bales with a hay probe, just as you would take samples to test for hay quality. Make sure the sample submitted is comprised of cores from five to 10 separate bales from each hay cutting. In most

counties the county agent or a farm service store can loan a hay probe for sampling. The cost of the ergovaline test is \$50 per sample. For more information, contact Cindy Gaskill, DVM, PhD, a clinical veterinary toxicologist at VDL, at 859/257-7912.

If you reside in Central Kentucky, a representative from the University of Kentucky Pasture Evaluation Program can come to your farm,

sample your hay, submit it to the VDL, and send you the results with an interpretation. For more information on the Pasture Evaluation Program, visit www.uky.edu/Ag/Forage/HorseLinks.htm and click on "Testing Hay for Ergovaline." UK

Ray Smith, PhD, an associate professor and forage extension specialist at the University of Kentucky, provided this information.

Eight Kentucky Universities Welcomed the World During WEG

While Kentucky was on the world stage for 16 days during the 2010 Alltech FEI World Equestrian Games, one display in the Equine Village asked visitors, "Where else for an equine education?" The answer was found in the display itself, the result of a unique collaboration among Kentucky universities and colleges with equine programs.

The consortium of schools banded together to let the world know there is no better place to pursue an equine education than in Kentucky. The University of Kentucky's Equine Initiative and the University of Louisville's Equine Industry Program have worked closely together in recent years, and they led and funded the collaboration.

"There has been national attention given to the unprecedented degree of collaboration between the University of Louisville and the University of Kentucky over the last four years on post-secondary equine education conferences, foreign tours, and specialized courses, as well as on a variety of broader projects, such as the first Kentucky Youth Horse Festival and also the World Equestrian Games," said Rich Wilcke, director of the University of Louisville Equine Industry Program. "This unique and highly effective cooperation between UK's College of Agriculture and UofL's College of Business has been to the benefit of both the equine industry and the taxpayers of the commonwealth. It has also enabled the other private and public colleges in the state that offer horse courses to benefit from this spirit of statewide harmony."

Programs represented, in addition to UK and UofL, included Asbury University, Georgetown College, Midway College, Morehead State University, Murray State University, and Western Kentucky University.

The consortium also has created a website that lists each of the participating partners. For more information, please visit www.kentuckyequineeducation.org. UK

Holly Wiemers, MS, is the communications director of the Equine Initiative at the University of Kentucky.



A consortium of Kentucky schools promoted their equine education programs at WEG.

UNIVERSITY OF KENTUCKY'S EQUESTRIAN ACCOMPLISHMENTS

The University of Kentucky Wildcats are known nationally for their basketball prowess. But many sports fans might not realize that UK has achieved athletic successes with another Kentucky tradition—the horse.

Since 2008, UK's equestrian, dressage, and polo teams have all been victorious at the highest levels of intercollegiate competition.

The UK Polo Team, founded in 2006 and coached by Jorge Vazquez, has both a men's and a women's division. The women's team was a last-minute qualifier for the 2010 national championships in Charlottesville, Va., and became an upstart winner over the five-day meet.

UK's Equestrian Team was formed in 1985 and includes both English hunt seat and Western stock seat. Riders compete both for their team, earning points for each placing they receive, and for an individual placing.

In 2007 the equestrian team made its first trip to nationals. The hunt seat team won its first team championship the following year. Also that year, stock seat alumni rider Lacey Wercynski took home a reserve national champion title in individual competition.

In 2009 the team returned to nationals and won a reserve national championship out of 372 teams. Individual rider Ali Cibon claimed a national championship in her division as well. In 2010 the team placed third at nationals.

Hunt seat team president Lauren Patterson believes the team's national success is a huge accomplishment given the small size of the organization. The hunt seat team is coached by Michelle Zimmer of Robert Murphy Stables, and the stock seat team by Bennie Sargent of High Point Equestrian Center.

The UK Dressage Team, now known as the UK Dressage and Eventing Team, also has had intercollegiate competition success. Rider Alison Wilaby became the first UK rider to receive a national dressage title when she won the First Level Test One Division in 2008.

The Dressage and Eventing Team is one of the youngest equine teams in the UK College of Agriculture and provides a networking opportunity for students interested in both disciplines.

There is no official intercollegiate eventing organization, but two unofficial shows are held each year as team competitions between universities. UK's eventing team placed second in the country at one of the 2010 shows.

The College of Agriculture also plays host to three other equine organizations: the Saddle Seat Team, the Horse Judging Team, and the Horse Racing Club, all of which continue to recruit new members.

For more information about the College of Agriculture's student equine organizations, please visit www2.ca.uky.edu/equine/StudentHub. **UK**

Natalie Voss is an equine communications intern for the Equine Initiative and a recent UK graduate in equine science and management.

MOMENTUM FOR UK VETERINARY SCIENCE SEMINAR SERIES

When Craig Carter, DVM, PhD, Dipl. ACVPM, director of the University of Kentucky Veterinary Diagnostic Laboratory (VDL, formerly the Livestock Disease Diagnostic Center), and David Horohov, PhD, William Robert Mills Chair in Equine Immunology at the UK Gluck Equine Research Center, first discussed holding seminars about horse-related topics four years ago, the focus was to provide equine health information to Central Kentucky veterinarians.

"Our intent was to provide the local practitioners with state-of-the-art information on a variety of equine health-related topics," Horohov said. "We also sought to showcase some of the efforts by faculty here at UK who were working on these important areas."

The Department of Veterinary Science Equine Diagnostic and Research Seminar Series began in June 2006 and has continued its momentum with support from the Kentucky Association of Equine Practitioners (KAEP), Pfizer Animal Health, *The Horse*, and the UK College of Agriculture.

The seminars are held on the last Thursday of each month and offer one hour of continuing education credit to veterinarians. The seminars are recorded by *The Horse* and can be viewed in the "Horse Courses" section on TheHorse.com. To date, more than 30 research and diagnostic seminars have been held featuring the work of

(SCIENCE SEMINAR SERIES ...)

UK faculty and equine researchers from the United States and Europe.

“We have covered a variety of equine-related topics ranging from infectious diseases to reproduction, laminitis, and economics,” Horohov said. He said two of the more popular seminars attended were a seminar on laminitis and another on neurologic herpesvirus.

Based on statistics from TheHorse.com, the seminars have been viewed by people worldwide, including those from Western Europe, Finland, Slovenia, Uruguay, Barbados, Uganda, Iceland, Grenada, Afghanistan, and Cuba, among others.

Even though the Seminar Series was created with local equine practitioners in mind, the seminars also are open to horse owners, breeders, and students.

An organizing committee consisting of local practitioners; Stephanie Church, editor-in-chief of *The Horse*; Doug Byars, DVM, Dipl. ACVIM, Bill Bernard, DVM, Dipl. ACVIM, and Jack Easley, DVM, Dipl. ABVP, of KAEP; and Carter, Horohov, and Ed Squires, PhD, Hon. Dipl. ACT, executive director of the Gluck Equine Research Foundation and director of advancement and industry relations, meets each year to discuss potential topics and speakers.

A new feature for 2011 will be an evening dinner session in the fall. The dinner seminar will focus on an in-depth topic and feature several speakers. The Seminar Series, which was held at the Kentucky Horse Park's South Theater in 2010, will convene at the VDL when

construction is complete in early 2011.

A complete listing of past seminars is available at www.TheHorse.com/Videos/Horse-Courses.aspx. **UK**

2011 Seminar Series

January 20: EQUINE METABOLIC SYNDROME

Nicholas Frank, DVM, PhD, Dipl. ACVIM,
University of Tennessee

February 24: OPHTHALMOLOGY

Dennis Brooks, DVM, PhD, Dipl. ACVO,
University of Florida

March 31: BACTERIAL AND FUNGAL SKIN INFECTIONS

Stephen White, DVM, Dipl. ACVD,
University of California, Davis

April 28: BIOMECHANICS

Hilary Clayton, BVMS, PhD, MRCVS,
Michigan State University

May 26: DERMATOLOGY

Wendy Lorch, DVM, PhD, Dipl. ACVD, Ohio State University

June 30: DIAGNOSTIC TESTS FOR BACTERIA AND VIRUSES

Erdal Erol, DVM, MS, PhD, University of Kentucky
Veterinary Diagnostic Laboratory

July 28: EQUINE MELANOMA

John Robertson, VMD, MS, PhD, Virginia Tech—Blacksburg

August 25: MUSCULOSKELETAL SYSTEM

Jamie MacLeod, VMD, PhD, UK Gluck Equine Research Center

September 29: ENDOMETRITIS

Mats Troedsson, DVM, PhD, Dipl. ACT, UK Gluck Equine
Research Center

October 27: UPPER RESPIRATORY DISEASES

Norm Ducharme, DMV, MSc, Dipl. ACVS,
Cornell University

November 17: NEUROLOGICAL DISEASE MINI SYMPOSIUM (dinner seminar)

Steve Reed, DVM, Dipl. ACVIM, Rood & Riddle
Equine Hospital, and Dan Howe, PhD, UK Gluck Equine
Research Center

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YOUR GUIDE TO EQUINE HEALTH CARE

Fall Pasture Improvements



Herbaceous weeds in pastures are most easily controlled with herbicides during the fall.

Fall is a good time to evaluate horse pasture quality and weed control. The weeds that were most prevalent and uncontrolled during the summer will now be large and producing seeds.

Horse pasture managers might not realize that these troublesome weeds that grow and thrive during the spring and summer actually germinate and begin growth in September, October, and November. This means many herbaceous weeds that grow in horse pastures are most easily controlled with herbicides during the fall.

There are three groups of weeds that can be controlled in the fall with herbicides. Although these groups of weeds have different life cycles and periods of active growth and seed production, similar herbicides can be used for controlling all of them. These groups, with examples of weeds as they appear in September and October

and as they appear in spring and summer (March through June), are:

1. Annual weeds that germinate in early fall
 - Common chickweed
 - Henbit
 - Purple deadnettle
2. Biennial weeds that germinate in the fall and have actively growing, year-old rosettes
 - Musk thistle
 - Poison hemlock
3. Perennial weeds, either new or established plants, that are actively growing in the fall
 - Dandelion
 - Buckhorn plantain
 - Broadleaf plantain
4. Long-lived perennial weeds that are best controlled in the fall
 - Canada thistle

The weeds that emerge in the fall or spring in your area might differ from the ones presented here, which are typical of Kentucky horse pastures. Consult your local county extension personnel (www.csrees.usda.gov/Extension) for specific control of these weeds. **UK**

William W. Witt, PhD, a researcher in the Plant and Soil Sciences department at the University of Kentucky, provided this information.

UPCOMING EVENTS

November 5-7

Eastern National 4-H Horse Roundup, North American International Livestock Exposition (NAILE), Louisville, Ky.

November 16, 6 p.m.

Kentucky Equine Networking Association (KENA), "Business success with horses requires committed planning," Rich Wilcke, University of Louisville Equine Program Director.

November 18, 4 p.m.

Department of Veterinary Science Equine Diagnostic Research Seminar Series. Jack Easley, DVM, MS, Dipl. ABVP, "Equine Dentistry." South Theater in the Visitor Center at the Kentucky Horse Park.

December 24-January 2

The University of Kentucky will be closed for the holidays during this time. The VDL is still reachable at 859/257-8283.



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