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Kentucky Equine Survey launches

A University of Kentucky (UK) College of Agriculture-led study aims to accurately assess the number of horses in Kentucky and their economic impact—fundamental pieces of information currently unavailable to those who need it.

UK's Equine Initiative, in conjunction with the University of Louisville's (UofL) Equine Business Program and the Kentucky field office of the National Agricultural Statistics Service, and in partnership with the Kentucky Horse Council (KHC), will conduct a statewide comprehensive survey of all horse breeds in 2012. The last comprehensive study of this kind was conducted in 1977.

"Making good policy for the horse industry requires good facts," said project leader Jill Stowe, PhD, assistant professor in agricultural economics at UK. "This statewide, all-breed survey will gather information we currently do not have, including accurate estimates of the number of horses in Kentucky at the county level and the economic impact of the equine industry—including revenue and expenses, the value of land and buildings, and the state, federal and local taxes paid by equine operations. It will also build a framework for future research and equine health monitoring purposes.

"In addition, this study will allow us to establish a sample frame to conduct follow-up studies roughly every five years to track changes in the industry," she added. "Knowing this information

ANNE M. EBERHARDT

UK's Equine Initiative will conduct a statewide comprehensive survery of all horse breeds in 2012.

ARTICLES OF INTEREST

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will establish a benchmark enabling the industry to nimbly adapt to changing market conditions."

According to Stowe, similar analyses have been conducted recently in many nearby states, including Michigan, North Carolina, Maryland, and Virginia, and in none of those states is the horse as critical to the economy as it is in Kentucky.

The Kentucky Agricultural Development Board's announcement Thursday of its approval of $300,000 in state funds for the Kentucky Horse Council to conduct an equine economic impact survey was one of the final pieces needed to launch the study.

"The UK Equine Initiative is delighted at the formal partnership with KHC and appreciates the Governor's Office of Agricultural Policy, Agricultural Development Board for its support," said Nancy Cox, PhD, associate dean for research in UK's College of Agriculture, director of the Kentucky Agricultural Experiment Station, and administrative leader for the Equine Initiative. "We also thank our other numerous partners. Those who have been with us in the early planning stages, in addition to the Horse Council, include the Kentucky Thoroughbred Farm Managers' Club, Kentucky Thoroughbred Association/Kentucky Thoroughbred Owners and Breeders Inc., Kentucky Quarter Horse Association, and Kentucky Equine Education Project. Finally, we appreciate the Kentucky Office of National Agricultural Statistics Service for providing the best survey platform available for agriculture in the U.S."

The study is anticipated to cost about $600,000. In addition to the $300,000 committed by the Agricultural Development Board, the College of Agriculture has committed $200,000. Equine industry organizations will provide the remaining $100,000, and fundraising is under way.

The bulk of the funds goes directly to the Kentucky field office of National Agricultural Statistics Service, an agency that conducts this type of census research regularly and is able to provide the highest level of confidentiality to participants (view their confidentiality pledge at www.nass.usda.gov). Neither UK nor UofL are charging overhead costs. The remaining funds will be used for staff support, travel, supplies, and equipment.

"This study ... will provide the much-needed detail and economic analysis for true industry development and promotion."

Anna Zinkhon, KHC Board President

The effort has broad equine industry support and has been several years in the making. In early 2006 the Kentucky Equine Education Project and UK partnered to gather a snapshot of some of the numerical information Kentucky was lacking. Funding was limited, and the time frame for gathering information was narrow. While they received important information from participating counties, more information was needed to get an accurate statewide picture. In 2009 the Kentucky Thoroughbred Farm Managers' Club board approached UK to explore conducting an academically rigorous study of the number of horses in Kentucky and their economic impact on the state. That led to a partnership with the Kentucky Horse Council, Kentucky Thoroughbred Farm Managers' Club, and the Kentucky Quarter Horse Association in securing funding and educating horse owners around the state about the study and its importance.

"Over the past few years the Kentucky Horse Council board has discussed the need for accurate and current data on the horse industry across the state," said Anna Zinkhon, Kentucky Horse Council board president. "Without good information, the Horse Council could not provide adequate advice to those wanting to start new equine businesses in the Commonwealth or to local officials who wanted to promote equestrian activities for local tourism. This study will answer those questions and provide the much-needed detail and economic analysis for true industry development and promotion."

The Kentucky Thoroughbred Farm Managers' Club board of directors responded to news that the project had secured funding with the statement, "The Kentucky Thoroughbred Farm Managers' Club is greatly impressed to learn that substantial funding has been raised for the most comprehensive equine economic impact study in state history. The diligent work by those

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involved has made this project become reality. This important study will scientifically quantify the contribution of all horses to Kentucky's economy."

According to Stowe, sample frame development, promotion, education, and survey design have already begun. The mail survey will be administered near the end of July 2012, and a summary report is anticipated to be ready from National Agriculture Statistics Service sometime around the end of December 2012. UK and UofL will complete additional data analysis in early 2013.

In preparation for the survey mailing, UK personnel have begun traveling statewide, holding meetings to educate the public about the project, and gathering ideas from county extension agents and equine industry participants about important issues facing the industry. Information collected during these forums will help shape the questionnaire mailed to participants, as well as help determine the direction of follow-up analyses.

Horse owners can get involved now by sending their contact information—name, mailing address, and phone number—directly to National Agriculture Statistics Service at nass-ky@nass.usda.gov with "Kentucky Equine Survey" in the subject line. National Agriculture Statistics Service provides the highest level of confidentiality. Horse owners can also send this information to equineinitiative@uky.edu, and it will be forwarded to National Agriculture Statistics Service. Those connected to the equine industry can e-mail issues they feel are relevant to the Equine Initiative at the above address. Finally, if horse owners receive a survey in the mail, they are urged to complete it and mail it back.

More information about the Kentucky Equine Survey can be found at www2.ca.uky.edu/equine/kyequinesurvey. UK

Holly Wiemers, MA, is communications director for UK's Equine Initiative.

WEED OF THE MONTH

Common name: Perilla mint (also known as beefsteak mint, common perilla)
Scientific name: *Perilla frutescens* (L.) *Britt.*
Life Cycle: Annual
Origin: Asia
Poisonous: Yes, all plant parts

Perilla mint is an erect annual plant of the mint family. It was introduced as an ornamental plant because of its attractive green leaves with purple leaf edges, but escaped cultivation and is now a serious poisoning threat to horses and other livestock.

Perilla mint grows in moist soils of pastures, woodlands, stream banks, and other fields in most of the eastern United States. It can grow to two feet in height at maturity. Leaves grow opposite each other and are coarsely serrated. The stems are branched, square, and frequently have a purplish color. The plant has a strong, pungent minty odor when crushed.

Perilla mint plants are toxic to horses, and all plant parts (especially the flowers and fruits) contain the toxin. The greatest poisoning risk is with consumption of fresh plant material during late summer or early fall. Perilla mint plants harvested with hay also pose a risk to animals ingesting the dried plants. Animals that have consumed perilla mint might exhibit clinical signs of respiratory distress, such as labored breathing and possibly an elevated temperature.

Look for perilla mint in spring and early summer growing in moist, shady pasture margins. Mowing close to the ground in late spring is usually an effective control method. Consult your local Cooperative Extension Service personnel (http://ces.ca.uky.edu/ces) for specific identification and control in your area. UK

William W. Witt, PhD, a researcher in Plant and Soil Sciences, provided this information.

STUDENT SPOTLIGHT

To highlight equine research projects by graduate and doctorate students in the University of Kentucky College of Agriculture, the Bluegrass Equine Digest newsletter features a different student's work in each upcoming issue.

Sydney E. Hughes

From: Lexington, Ky.

Degrees: B.S., Animal Science, from the University of Kentucky

Sydney Hughes enrolled as a graduate student at the Gluck Equine Research Center when the opportunity arose to work on a project with Ed Squires, PhD, Dipl. ACT (hon.), director of the Equine Initiative and executive director of the University of Kentucky (UK) Gluck Equine Research Foundation, and Mats Troedsson, DVM, PhD, Dipl. ACT, director of the Gluck Center and chair of UK's department of veterinary science.

"I am from Central Kentucky, and after working in New Zealand and Ireland I returned to Lexington and was an assistant for Dr. Walter Zent (DVM, at Hagyard Equine Medical Institute)," Hughes said.

During this time Hughes met and worked with Squires while gathering information for her project.

"After meeting with Dr. Squires, I knew I wanted to be a part of the Gluck Center," she said.

Hughes' main research focus has been the athletic performance of Thoroughbred foals born to mares exhibiting signs of and/or receiving treatment for placentitis (inflammation of the placenta). She also is interested in the effect of reproductive status at the time of breeding and season on incidences of dystocia (difficult birth).

"We did a retrospective study on the performance of racehorses from mares with suspected placentitis in Central Kentucky," Hughes explained. "Many mares in the area are treated for placentitis; however, few studies have investigated the performance of their foals. The financial costs that accompany treating mares for placentitis include ultrasound monitoring and administering medications daily, so information on the performance of the offspring from treated mares would benefit anyone involved with horses."

Another study Hughes participated in, also involving Thoroughbreds, focused on risk factors affecting incidences of dystocia.

"We looked at the effect of maiden, barren, and foaling mares at the time of breeding on incidence of dystocia, as well as the frequency of dystocia early in the foaling season compared to later in the season," she said. "Asphyxiation due to dystocia is one of the leading causes of late reproductive loss in the mare and this study provided information on its occurrence during the foaling season."

Hughes has also worked on a side project on equine chorionic gonadotropin (eCG), a hormone produced in the pregnant mare used as a medication for enhancing reproduction in ruminants and laboratory animals.

"We investigated a means of increasing eCG levels in the pregnant mare by inducing twins," she said. "Increasing the levels of eCG in the individual mare could potentially decrease the costs of maintaining horses for the hormone's production."

Hughes said she plans to continue working in equine research and is interested in investigating the effects of fetal programming and performance of equine athletes. UK

Shaila Sigsgaard is a special projects contributor to the Gluck Equine Research Center.

Strongyle Egg Counts and Race Performance

Regardless of the method of choice, most equestrians have deworming down to a science. For years, horse owners have been told to control the amount of worms in their horses' bodies to keep them feeling and performing their best. But what effect do worms really have on equine performance? A team of researchers recently found that high strongyle egg counts in a population of Standardbred trotters didn't have as much of an association with racing performance as once thought.

"Subclinical parasitic infections are often assumed, by horse owners as well as veterinarians, to affect horses in various ways," explained Martin K. Nielsen, DVM, PhD, assistant professor in equine parasitology at the University of Kentucky's M.H. Gluck Equine Research Center. "Retarded growth and ill-thrift can be observed in young horses with heavy parasite burdens, but no observational studies have systematically investigated this in the field setting.

"Similarly, it appears to be widely assumed that parasites can cause poor performance in competition horses, but this is not supported by any published study," he continued. "In the equine racing industry in particular, there is a tradition for frequent prophylactic anthelmintic treatments as a part of a general health care plan."

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Trotters' race results were not negatively affected by strongyle fecal egg count levels.

In their study Nielsen and colleagues employed 213 Standardbred trotters, ranging in age from two to six years, at six different Danish tracks. The horses (mares, stallions, and geldings) were cared for by 21 different licensed trainers and had been in training for at least three months. All of the participating trainers dewormed their horses three to four times annually, but none of the study horses had received anthelmintic treatment in at least 12 weeks prior to fecal samples being collected from their stalls. The team also reviewed all study horses' race records.

Upon reviewing the results of the study, the team found that:

- Strongyle fecal egg counts ranged from 0-3,500 eggs per gram, with the average count being 319 eggs per gram;
- There were no significant effects of gender, age, or trainer;
- A statistically significant association was found between finishing position and fecal egg counts; and
- Surprisingly, the horses that finished in the top three positions were more likely to have a higher fecal egg count.

"A large proportion of Danish Standardbred trotters were included in the study, and their race results were not negatively affected by strongyle fecal egg count levels," Nielsen concluded.

He cautioned, however, that it's important to consider that the horses in the study were all in good health: "Horses showing clinical signs of any disease would probably not be racing, so it can be argued that horses affected by their parasite burdens never became part of the data set."

Additionally, Nielsen noted that further research is needed to identify the role strongyles play in athletic horses' performance so a suitable anthelmintic treatment plan can be developed.

It is advisable to discuss any adjustment in deworming protocol with a veterinarian before implementing the change.

The study, "Strongyle egg counts in Standardbred trotters: Are they associated with race performance?" was published in the August issue of the *Equine Veterinary Journal*. The abstract is available online. UK

Erica Larson is the news editor for The Horse: Your Guide to Equine Health Care.

New PCR Assay Reduces EHV-1 Testing Costs

Equine herpesvirus-1 (EHV-1) infections are common in horses throughout the world and cause significant economic losses to the equine industry through respiratory disease, abortion, neonatal death, and myeloencephalopathy (the neurologic form).

Virus isolation from a nasal swab or blood is the "gold standard" for diagnosing EHV-1 shedding (or viremia) horses, but this method can take several weeks to complete.

Because a gel-based PCR assay does not provide quantitative data, does not use an internal control, and is laborious, the microbiology laboratory at the University of Kentucky Veterinary Diagnostic Laboratory has implemented and validated a new real-time PCR assay for diagnosing EHV-1. This new test is slightly faster, yields quantitative data that provides a cycle of threshold values, has equal or greater sensitivity and specificity than gel-based PCR, and has an internal control that shows the presence (or absence) of PCR inhibitors in a particular specimen. In addition, this new test has high throughput capability.

Price: The fee for the new real-time PCR test for EHV-1 is $35 per animal (reduced from $55).

Specimen: Please continue to provide a pair of specimens from each animal tested. The desired ante mortem specimens are nasal swabs/washes and 10 ml of anti-coagulated (EDTA) blood.

Turn around time: Within 24 to 48 hours. UK

Erdal Erol, DVM, PhD, head of diagnostic microbiology at the University of Kentucky Veterinary Diagnostic Laboratory, provided this information.

RESEARCH UPDATE: OCULAR FLUID NITRATE CONCENTRATIONS IN FOALS

One dilemma in diagnosing nitrate/nitrite-induced abortions in foals is the lack of well-established normal reference ranges for ocular fluid (eyeball fluid) nitrate/nitrite concentrations. The purpose of the study reported here was to establish a normal reference range for these concentrations in aborted, stillborn, and neonatal foals that died in Central Kentucky.

In cattle, excessive nitrate or nitrite exposure can lead to poisoning and subsequent abortions in pregnant animals. Nitrate/nitrite poisoning is caused by ingesting large amounts of nitrate or nitrite in heavily fertilized forages or nitrate-accumulating weeds, consuming nitrate-containing fertilizers, or ingesting nitrate/nitrite contaminated water.

Nitrate/nitrite poisoning is fairly common in cattle and is always a consideration when abortions occur. To determine if a bovine abortion is the result of excessive nitrate/nitrite exposure, a veterinarian can test the fetal ocular fluid for nitrate/nitrite concentrations. Some nitrate is present naturally in cattle's ocular fluid, as nitrate is a natural component of the plants they eat. Normal fetal and neonatal ocular fluid nitrate concentrations in cattle can extend up to 25 ppm (parts per million); concentrations greater than this can be associated with nitrate-induced abortions. Nitrite is normally not present in ocular fluid unless bacterial conversion of nitrate to nitrite has occurred postmortem.

In horses, nitrate/nitrite poisoning is very rare and related abortions are even rarer. Some studies indicate that pregnant mares can safely ingest forages with at least twice the amount of nitrate that can cause acute poisoning and death in cattle, with no adverse effects or abortions. However, exposure to extremely high concentrations of nitrate or nitrite in forages or contaminated water could potentially cause abortion.

In this study researchers collected ocular fluid from 61 aborted or neonatal foals submitted to the University of Kentucky Veterinary Diagnostic Laboratory for postmortem examinations in the spring of 2011. Nitrate and nitrite concentrations were determined by ion chromatography (a process that separates ions based on their charge).

Results revealed that the ocular fluid nitrate

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concentrations ranged from less than 5 ppm up to 12.8 ppm, with a mean of 7.8 ppm and a median of 7.4 ppm. Nitrite was not detected in any of the samples (minimum level of quantitation: 1 ppm). Thoroughbreds were overrepresented (48 foals). Causes of death included various types of infectious placentitis (inflammation of the placenta), dystocia (difficult birth)-related conditions, congenital deformities, equine herpesvirus type 1 infection, premature placental separation, uterine torsion, as well as four cases with no identifiable diagnosis. Ultimately, none of the diagnoses were associated with excessive nitrate/nitrite exposure. Factors such as age, breed, sex, gestation length, month of abortion, or diagnosis were not correlated with ocular fluid nitrate concentration.

In conclusion, these results indicate that fetal, stillborn, and neonatal foals dying from causes other than nitrate poisoning normally have ocular fluid nitrate concentrations that extend up to 12.8 pm. Additional investigations are under way, with analyses of ocular fluid from additional foals over a two-year period of time planned. UK

This information was obtained from the research abstract "Ocular fluid nitrate and nitrite concentrations in aborted, stillborn, and newborn equines," by Cynthia L. Gaskill, DVM, PhD, and Lori L. Smith, PhD; University of Kentucky Veterinary Diagnostic Laboratory; Proceedings of the American Association of Veterinary Laboratory Diagnosticians Annual Conference, Buffalo, 2011; p. 56

Aging Farmers' Health and Safety

Results from a recent study conducted by Deborah Reed, PhD, MSPH, RN, a researcher at the University of Kentucky's College of Nursing, revealed that 40% of 1,423 Kentucky and South Carolina farmers ages 50 and over defined health as "the ability to work." Because most farmers never retire fully, they need proper health screenings and care to stay productive during their advanced years.

Farmers' stark commitment to work is borderline obsessive, and researchers are beginning to develop new guidelines to better understand farmers, whose strong cultural and emotional ties to the farm drive their work ethic. Farmers in the horse industry are no different, continuing to work hard even as they age.

"My research has focused on helping physicians, nurses, and staff understand the culture of farming and learn how to relate to farmers," Reed said. "Asking the right questions is critical."

Reed comes from a farming family in Versailles, Ky., so she understands the unique challenges farmers face, especially as they age. She has 75-year-old family members who are still farming.

The average Kentucky farmer in Kentucky is 57—13 years older than the average worker. Kentucky's farming population mirrors that of the United States, making this a nationwide topic.

"Over half of all farmers are bivocational, meaning they have two jobs," Reed explained. "But farming is not always—or even usually—reported as the primary job, so doctors don't know to look for skin cancers or cataracts. They think the patient has a desk job or works indoors, when in fact he or she farms and faces sun exposure, mental health pressures, and more."

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Most farmers continue to work hard as they age.

One striking statistic is that farmers have the highest suicide rates of any occupation. Farmers are exposed to unrelenting and multifaceted stress and pressure. In addition to hard physical labor and long work days throughout the year, a farmer must endure the vagaries of nature and livestock, adverse weather conditions, market fluctuations, government policy changes, and family pressures. The resulting taxing emotional stress can be difficult to manage, and in some cases it leads to suicide.

In addition to mental stress, physical problems can develop early because farmers are exposed to countless hazards throughout extended careers.

"Senior farmers are still exposed to all the hazards

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even after they 'retire,' because almost all remain involved and active on the farm to some extent," Reed said.

She points out other health issues related to farming:

- Falls are one of the leading causes of death. Most falls occur from the same level—what Reed calls "trips and slips." Mundane accidents such as being kicked by a horse, slipping in mud, or falling on ice frequently cause injury as well.
- Farm work routinely exposes farmers to loud, potentially damaging noises. For example, the ear that is turned to the front of the tractor, where the exhaust is loudest, will have greater hearing loss. As farmers age, they might not be able to hear noises such as approaching people or machinery and verbal warnings, increasing the danger to themselves and others.
- Farmers often remove clothing to stay cool during warm months, so more skin is exposed to the sun's damaging rays. Many don't apply sunscreen and might not practice skin self exams regularly. Many farmers wear baseball caps, which increase sun exposure of the ears—especially the upper crest—and the back of the neck. Working without a shirt or in sleeveless tops also increases the risk of sun damage.
- Repeated sun exposure from farming also accelerates the risk of developing cataracts. Statistically, farmers are more likely to develop cataracts at a younger age, and they have one of the highest occupational rates of cataracts, largely because they do not wear protective sunglasses.
- Farmers often ignore their own health and safety, skipping vaccines such as tetanus routinely and visiting the doctor infrequently.

"Because farming is usually a lifelong occupation, anyone involved in farming, including those in the horse industry, should be aware of these issues, even at young ages," Reed said.

Senior farmers bring a wealth of knowledge and wisdom to an operation. Simple attention to health and safety, such as using sunscreen, wide-brimmed hats, and hearing protection, can safeguard the farmer's long-term health. Sturdy shoes or boots and a walking stick can eliminate many trips and slips. For more information on farm health and safety, visit www.mc.uky.edu/Nursing/bios/reed.html or contact Reed at dbreed01@uky.edu. UK

Karin Pekarchik is an editorial officer in UK's Agricultural Communications Services.

SADDLE UP SAFELY WINS SAFETY AWARD

The Certified Horsemanship Association recently recognized Saddle Up Safely, a collaboration of more than 40 medical and equine organizations led by the University of Kentucky (UK) College of Agriculture Equine Initiative and UK HealthCare, with its 2011 Partnership in Safety Award. This award, which has been presented annually since 1996, recognizes an individual or organization that has helped the equine industry and riding community at large to promote safety awareness. In addition to raising awareness and understanding of rider safety, Saddle Up Safely's mission is to reduce the number and severity of rider injuries and to encourage injured riders to return to the sport via formal horsemanship training.

Bill Gombeski, MBA, MPH, UK HealthCare's director of strategic marketing, accepted the award on behalf of the Saddle Up Safely management team, which also includes Bob Coleman, PhD, associate professor in the Department of Animal and Food Sciences; Fernanda Camargo, DVM, PhD, assistant professor and Equine Extension Specialist, Department of Animal and Food Sciences; Ed Squires, PhD, Dipl. ACT (hon.), director of the Equine Initiative and executive director of the UK Gluck Equine Research Foundation; Holly Wiemers, MA, communications director for UK's Equine Initiative.

"The Certified Horsemanship Association was one of the first partners to join UK HealthCare in the Saddle Up Safely collaboration," Gombeski said. "We have benefited from the very active participation and safety expertise of the Certified Horsemanship Staff." UK

Ann Blackford, University of Kentucky public relations, contributed to this story.

Equine Initiative at the Alltech National Horse Show

The University of Kentucky (UK) Equine Initiative recently participated in the educational pavilion of the Alltech National Horse Show, held Nov. 3-6 at the Kentucky Horse Park. The booth included interactive demonstrations and games, including a game to try to match grass to the type of hay it becomes and displays of horse bones, pervious concrete, nutrition, immunology, weed identification, coat color genetics, horse shoes, tack costs, and art projects hosted by the UK Art Museum. Saddle Up Safely, a UK HealthCare-led horse safety program, also participated.

How do you attract 1,000-plus school kids? You bring in a pony. At right, James MacLeod, VMD, PhD, John S. and Elizabeth A. Knight chair and professor of veterinary science at the Gluck Equine Research Center, conducts a bone demonstration using "King," a resident Horse Park pony, and several volunteers from the audience, as well as a skeleton (bottom left) courtesy of Rood & Riddle Equine Hospital.

Tom Keene, hay marketing specialist within UK's College of Agriculture, and Lee Carol Greenwell, graduate student in Plant and Soil Sciences at UK, gives a forages demonstration (bottom right) to students from Clark County Elementary School.

UPCOMING EVENTS

Dec. 6

Advances in Equine Neurological Diseases Symposium presented by the University of Kentucky Gluck Equine Research Center, Embassy Suites, Lexington, Ky.

Jan. 20-21

Kentucky Breeders' Symposium, Lexington, Ky.

Jan. 20: New UK Equine Showcase, highlighting the young horse, designed for horse owners, breeders, and horsemen interested in learning more about the latest equine research happenings at UK.

Jan. 21: 3rd Annual Breeders' Short Course, in-depth equine reproductive information designed for equine practitioners and professional horsemen involved in breeding operations.

Registration available beginning Dec. 1 at www.ca.uky.edu/gluck.