Acetaminophen Pharmacokinetics and Safety in Horses

The MARE Center partnered with the Virginia-Maryland College of Veterinary Medicine (VMCVM) to conduct a ground-breaking study investigating the use and safety of acetaminophen for treating pain in horses. Acetaminophen is the active ingredient in TYLENOL®, and for humans, is commonly used to reduce pain and fever. The study was funded by a grant awarded by the Virginia Horse Industry Board and was a component of a Masters of Science project for Dr. Melissa Mercer, resident in Large Animal Internal Medicine at VMCVM. Dr. Harold McKenzie, Associate Professor of Large Animal Internal Medicine at VMCVM and Dr. Bridgett McIntosh, Equine Extension Specialist at the MARE Center provided oversight to the study. Eight Thoroughbred geldings at the MARE Center were used to assess the appropriate dose and administration interval of the non-steroidal anti-inflammatory drug (NSAID) acetaminophen in horses for treatment of pain. The study also aimed to determine the long-term safety of repeated acetaminophen dosing, and the effects of long term administration on liver function and structure. Dr. David Hodgson, Professor and Department Head, Large Animal Medicine, Dr. Jennifer Davis, Associate Professor of Equine Internal Medicine and Clinical Pharmacology, and Dr. Katie Wilson, Clinical Assistant Professor Large Animal Internal were also VMCVM collaborators on the project. The study would not have been possible without the partnership of North Carolina State University College of Veterinary Medicine as well as the MARE Center Summer Interns who were integral to conducting the study. Preliminary data suggest that acetaminophen can be safely used in horses, but stay tuned for study results!

Drs. McKenzie and Mercer ultrasound one of the horses while interns observe and take notes.
Development of a Body Condition Index for Horses

The Body Condition Score (BCS) system developed by Henneke et al (1983) for horses is currently the “gold standard” method for evaluating adiposity (fat), however it is a subjective measurement that can vary between observers looking at the same horse. A new metric—the Body Condition Index (BCI)—based on morphological measurements rather than subjective assessments, could potentially provide a more objective and consistent measure of equine adiposity than BCS. The BCI was initially developed by researchers from Australia and the UK (Potter et al., 2015); however, more data are needed to improve the accuracy of the BCI. The MARE Center research team, led by Katie Delano, MS candidate, and in partnership with BUCKEYE® Nutrition, recorded morphometric data for 126 hunter/jumper horses in the Commonwealth including the Upperville Colt and Horse Show and H.I.T.S. Culpeper to create a database necessary to develop an accurate BCI equation for sport horses. Once fully developed, the BCI will serve as a valuable tool for veterinarians, horse owners and managers alike to monitor and evaluate the nutritional needs of horses.

Novel Turfgrasses for Horse & Environmental Health

The partnership project between the University of Maryland (UMD) and the Virginia Tech MARE Center is finally in the data collection phase! The project is a PhD study for UMD student Aubrey Jaqueth aimed at identifying turfgrass cultivars that are both low in calories (a diet grass for overweight horses) and able to withstand the rigors of equine grazing and hoof traffic. The research is a product of multiple trends in the equine industry in the region: the increasing population of overweight horses; the decreasing size of horse farms, resulting in more concentrated grazing pressure and hoof traffic on pastures; and the need for reduced environmental degradation in the Chesapeake watershed.
2nd Annual Spotlight on Stewardship: Equine Land Management Symposium - July 29th

This was the second year that the MARE Center and the National Sporting Library & Museum (NSLM) have hosted the Spotlight on Stewardship symposium, focused on teaching equine land managers ways to improve the health of their horses and land.

The symposium kicked off with expert seminars at the NSLM on pasture management, environmental stewardship, and the toxicology of pasture plants for horses; followed by a chance to view the library’s collection and a display of rare books not usually open to public viewing. After making the short journey to the MARE Center in the haywagon sponsored by Thomas & Talbot and on-site lunch sponsored by the Virginia Horse Industry Board, the group of around 40 participants enjoyed workshops on plant identification, heavy use area design and construction, manure management, fencing, grazing management, and soil health. The evening wrapped up with a wine tasting session at Boxwood Winery followed by a concert on the lawn at the NSLM Open Late hosted by the Virginia Tech Alumni Association.

We were pleased to see individuals from a variety of different equine backgrounds and levels of expertise—it was a great chance to share knowledge and make links between individuals from diverse aspects of the industry to come together for the common mission of land conservation. “It was wonderful. I really appreciated the time, work, and dedication the staff put into the day!” said one of our attendees.
Thank you to our Spotlight on Stewardship Supporters for making the program possible!
Hunt Country Stable Tour

The annual Hunt Country Stable Tour is a major attraction that grants the public the opportunity to visit some of the most prestigious horse farms in the Upperville and Middleburg areas. On May 28th and 29th, the MARE Center greeted around 400 visitors who enjoyed a number of activities highlighting our research and Extension projects. Many visitors participated in a hayride tour where they learned about the farm’s history, the horse industry in Virginia, and the various research projects at the Center. They were also treated to the sight of the inimitable stallion Innkeeper, one of the last un gelded sons of Secretariat, as well as some of our herd of resident horses including our off-the-track Thoroughbred geldings. Since the Center’s broodmares had not yet foaled, guests were able to get up close and personal with a mare and foal graciously lent to us for the weekend from Jenny Cronner’s Matchpoint Stables. The MARE Center was very fortunate to have been able to host so many interested and supportive people for another year of this community event!
Meet the Herd: Balencia VT and Augustus VT

Balencia VT is a MARE Center-bred broodmare by Baladin d’Oc out of Hearsay that was entered into the OLD NA/ISR Main Mare Book at the recent inspection held August 11, 2016 at Zaragoza Acres in Jeffersonton VA with conformation scores in the 6 and 7 range with 97.5 total points. Balencia foaled a bay colt, Augustus VT, in June 2016 under the management of our summer interns and graduate students. Augustus VT is by the Hanoverian stallion Arrian, who is by Al Capone out of Olala. Augustus VT was outstanding at the inspection and was approved and branded OLD NA with impressive scores of 8.0 for movement, 7.8 for conformation and correctness, and an overall score of 7.9. Augustus VT has the athleticism, movement and temperament to excel in any of the sport horse disciplines.

For the students, the inspection was a valuable opportunity to gain experience in the sport horse breeding industry and deepen their understanding of what it takes to breed, train, register, and promote a sport horse foal. “I’d never been to a sport horse inspection before, so it was a great learning experience and a lot of fun prepping the horses for their big day,” said Katie Kaufman, PhD candidate at the MARE Center. Experiential learning is the heart of our graduate and undergraduate educational program, offering inimitable and essential skills for the future leaders of the equine industry.

Augustus VT is available for sale at the MARE Center.

To schedule a visit or learn more, call 540-687-3521.
This June, the MARE Center once again had the privilege of volunteering at the oldest horse show in America—the Upperville Colt & Horse Show, founded in 1853, making it 163 years old. The show featured many classes of Hunter and Jumper, as well as a $216,000 FEI 4* Grand Prix. Faculty, staff, students, and undergraduate interns assisted with everything from hospitality to presenting awards, as well as carrying out research on the BCI with BUCKEYE® Nutrition (see page 2). We would like to thank the Upperville Colt & Horse Show for providing us with such a valuable opportunity to work with our local equine stakeholders and show our students an integral aspect of the horse industry at such a beautiful venue.

Students Meet with Equine Industry & Legislators in Washington DC

The MARE Center faculty and interns travelled to Washington DC on July 19 to visit the nation’s capital and headquarters of the American Feed Industry Association, Animal Agriculture Alliance, American Horse Council, and the office of Virginia Senator Mark Warner. The visits provided students with the opportunity to speak directly with organization leadership about legislation, issues pertinent to promoting and protecting the equine industry and agriculture, and career progression. It was also a great chance for students from outside the capital region to visit and soak in the rich history and culture of our nation’s capital city.

Education Updates
The MARE Center Undergraduate Summer Internship

We are privileged every summer to host and mentor undergraduate students in our Summer Internship program dedicated to preparing students for careers in the equine industry, academia or the veterinary sciences through applying classroom knowledge in a real world setting and learning new skills through meaningful research and Extension projects. This year we were fortunate to have students from four different universities, with a diversity of academic and professional interests. The Summer 2016 Interns assisted with a number of projects including conservation practices for horse farms, turfgrass grazing research, pharmacological research, nutrition research, Sporthorse Breeding program, 4-H youth development, and more. The interns were also immersed in Extension programs, helping disseminate research-based information to stakeholders and program participants. Among the most valuable learning opportunities of the internship is assisting with the management and operation of our 420-acre farm, around 40 horses, 38 cattle and occasional sheep. This hands-on experience is unparalleled for applying classroom knowledge to real-world issues in the field. The internship is a unique opportunity to live in Virginia’s horse country and network with students and experts from diverse backgrounds while building resumes for future careers. We are grateful to receive grant funding from the Pat Stuart Endowment for Equine Studies to assist with costs for housing and educational opportunities for the internship program.

Hallie Broman, Virginia Tech Class of 2017
Major: Animal & Poultry Sciences
Internship project area: Curriculum development for the 4-H Program

Taylor Duncan, Virginia Tech Class of 2018
Major: Biological Systems Engineering
Internship project area: Conservation best management practices for horse farms

Abigail Hughes, Pennsylvania State University Class of 2017
Major: Animal Science
Internship project area: Acetaminophen toxicology study

Kate Kelly, Virginia Tech Class of 2017
Major: Biochemistry
Internship project area: Development of the Body Condition Index

Vernon O'Berry, Virginia Tech Class of 2017
Major: Animal & Poultry Sciences
Volunteer focus area: Veterinary aspects of large animal care

Lauren Lavoie, University of Connecticut Class of 2017
Major: Animal Science
Internship project area: Equine reproduction and management

Kyla Szemplinski, University of Missouri Class of 2016
Major: Animal Science
Internship project area: Novel turfgrasses for horse and environmental health
British Equestrian Federation Summer Internship Returns

The MARE Center is happy to announce the return of our British Equestrian Federation (BEF) summer internships! Michelle Hand and Zoe Greenwood won the competitive internship and have been at the MARE Center assisting with various projects and learning about the U.S. horse industry since June. This is the first time that two applicants have been selected. Typically, there is only one position offered, but Hand and Greenwood were equally qualified and the selection committee—including Professor Graham Suggett OBE (BEF), Dr. Bridgett McIntosh (MARE Center) and Dr. Georgina Crossman (BEF)—opted to select both thanks to funding provided through a grant awarded by the Pat Stuart Endowment for Equine Studies. Hand and Greenwood are students of Reaseheath College in Cheshire, and both finished their Bachelor of Science degrees in Equine Science this summer. Michelle hopes to pursue a career in equine journalism, and Zoe intends to become an equine researcher. Happily, the two were already friends prior to their selection. They have learned a great deal about improving equine health and environmental stewardship, and we are grateful to have them here!

To catch up with our BEF interns, see their blog here:
http://reaseheathblog.org/higher-education/

Michelle Hand, Reaseheath College Class of 2016
Hometown: Lurgan, County Armagh, Northern Ireland
Interests: Equine journalism, equine welfare issues

Zoe Greenwood, Reaseheath College Class of 2016
Hometown: Doncaster, South Yorkshire, England
Interests: Equine internal parasites, pasture-based nutrition
Dr. Amy Burk is an Associate Professor and Coordinator for the Equine Studies Program in the Animal and Avian Sciences Department at the University of Maryland (UMD). She teaches courses in equine science and management, oversees the equine breeding program, and advises equine studies undergraduates as well as students in the Maryland Equestrian Club.

Dr. Burk completed her graduate work in equine nutrition as a Pratt Fellow at Virginia Tech having earned an MS in 1998 and a PhD in 2001. Dr. Burk says this of her time at the MARE Center: “I have no doubt that my experiences at the Virginia Tech MARE Center helped to shape my career and mold me into a future leader in the equine science field.”

After her work with Virginia Tech, Dr. Burk went on to found the Equine Research Unit (ERU) at the University of Maryland, influenced by her time at the MARE Center. “I like to think of this place as my own mini-MARE Center. I want it to have the same inspirational effect,” Dr. Burk said of the ERU.

She’s given over 100 invited talks on equine nutrition, pasture management, and equine health at the local, regional, and national level. Her novel 5.5 acre Equine Rotational Grazing Demonstration has been used to educate over 600 members of the horse industry. Dr. Burk received National awards for her work in educating the horse owning public including Educator of the Year from the Equine Science Society.

Happily, Dr. Burk’s work is once again tied to the MARE Center. University of Maryland PhD candidate Aubrey Jaqueth, with Dr. Burk as her advisor and the MARE Center’s Dr. Bridgett McIntosh on her graduate committee, is carrying out research on novel turfgrasses with the goal of finding varieties that are optimal for overweight horses and capable of standing up to heavy hoof traffic and grazing pressure. The UMD Equine Science Program and the MARE Center have partnered for this groundbreaking project.

Dr. Burk’s husband, Rob Burk, also a VT alum, works for the United States Eventing Association and together they have two young daughters who share their love of horses.
Horses graze contentedly as the sun sets at the MARE Center.

An early summer hailstorm took us by surprise. The hailstones were huge, but our horses were unharmed.

Our graduate students Katie Kaufman (left) and Katie DeLano (center) with Congresswoman Barbara Comstock (right).

The wise eyes of Innkeeper, one of the last ungelded sons of Secretariat at 28 years old.

The 4-H Ag Commodities tour, compromised of children from Richmond and Hampton Roads, meet Innkeeper.

Goldenrod and Joe Pye weed make for excellent pollinator habitat along our Wankopin Community Nature Trail.
4-H at the MARE Center

Our first ever Intro to EquiSmartz was held Saturday, July 16th at the MARE Center. Approximately 27 youth and adults gathered to learn more about the format of our state knowledge contest held annually in the spring at the VA State Fairgrounds in Doswell, VA. Many thanks to our 4-H teens that helped to teach our beginners about the contest, our volunteers and MARE Center interns. All were fabulous, fun and fantastic! We hope to offer this event again in 2017.

The MARE Center

Situated in the heart of Virginia’s horse country, the Middleburg Agricultural Research and Extension (MARE) Center is one of Virginia Tech’s 11 agricultural research and extension centers. Philanthropist Paul Mellon donated the 420-acre farm to Virginia Tech in 1949 to foster research that improved pasture and animal health while enhancing the land. The Center was used primarily for beef cattle research for 40 years, but was rededicated to equine research and teaching in 1992. Today, the MARE Center continues to play a critical role in the discovery, outreach, and education missions of Virginia Tech’s College of Agriculture and Life Sciences. Through collaboration with academic and industry partners around the world, the Center advances the health and well-being of the horse through its innovative research efforts and exceptional educational programming.