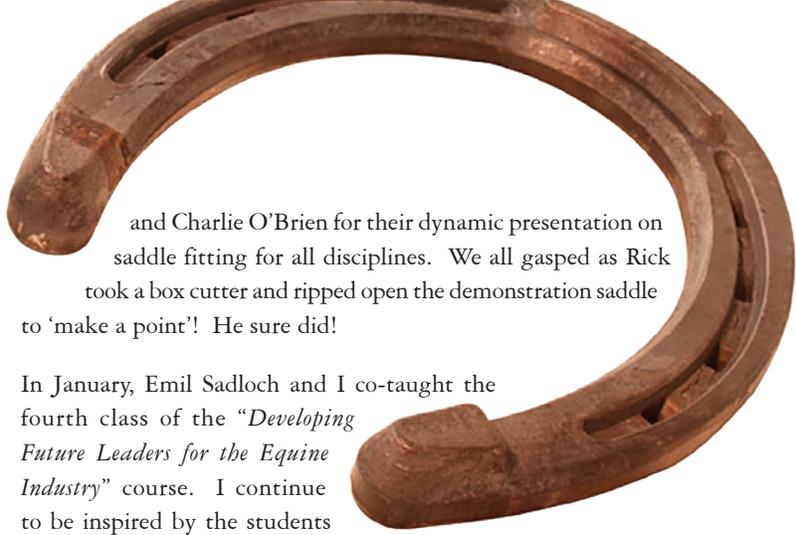


From The Clubhouse



Dear Friends,

Hopefully by the time you receive this newsletter there will be more evidence of spring's arrival besides the return to daylight savings time. This has been a tough winter for everyone, our equine friends included! Thanks to all of our dedicated Animal Care staff and students who have been extremely persistent in conducting several research trials during all of this inclement weather. Now I know why people and horses go "south" for the winter. It's been very difficult to ride and train horses with all of the snow and ice making for unsafe footing for horses and humans!

With that said, Center faculty, students and staff have still been out spreading the word about "Better Horse Care through Research and Education." At the New Jersey Department of Agriculture's All Breed Awards Luncheon on January 26, we had the pleasure of presenting the Governor's Trophy to the Landy Family as "Horsepersons of the Year." Congratulations to the Landys, new members of the "Community of 50' for Equine Excellence," and to Sam who also received the 2014 "Unsung Hero" award from the United States Harness Writers Association on February 23 for his work in developing the increasingly successful Open Space Pace. Congratulations also to our own Amanda Xiu, the 2014 recipient of the **Ernest Bell Memorial Scholarship**.

The annual **Horse Management Seminar**, "Caring for your Equine Athlete," held on February 9 was both informative and highly entertaining! Thanks to all of the Olympic equestrians who participated in the panel discussion; you all were FABULOUS and to Rick Wills

and Charlie O'Brien for their dynamic presentation on saddle fitting for all disciplines. We all gasped as Rick took a box cutter and ripped open the demonstration saddle to 'make a point'! He sure did!

In January, Emil Sadloch and I co-taught the fourth class of the "*Developing Future Leaders for the Equine Industry*" course. I continue to be inspired by the students taking this course but am also dismayed that issues identified as threats to the sustainability of the New Jersey horse industry in 2008 are still issues in 2014. We're taking baby steps in bringing together members of all four classes in an effort to be able to make some positive changes in addressing these critical industry issues.

In the coming months, you will hear about some upcoming events as fundraisers for the Center. During this "Year of the Horse," we're hoping to cast a wider net to attract new friends to the Center. In the meantime, I hope to personally see many of you at Ag Field Day at Rutgers Day on Saturday, April 26. It's a good time to catch up with fellow alumni for a day of good family fun. As always there will be an opportunity to see the **Horse Hero** mares "strut their stuff" in the horse show and to experience the ever-exciting treadmill demo by one of our teaching/research horses. Alumni, please don't forget the **10K Alumni Challenge**. You have until June 30 to help support the work of the Equine Science Center for decades to come. Make sure that others have the opportunity to experience the hands-on research opportunities that you had when you were here at CAES, Cook College, or SEBS!

Best,
Karyn



Partners



Established in 1961, the **Standardbred Breeders & Owners Association of New Jersey [SBOANJ]** has a membership comprised of horse breeders, drivers, trainers, owners, and backstretch personnel, and its mission is to support and promote the standardbred industry in New Jersey. The Board of Directors authorizes stallion, mare and foal registrations, negotiates with track management, actively oversees and administers a benefits program, and advances legislation favorable to the horse racing industry. For more information, please visit www.sboanj.com.



NEW JERSEY
DEPARTMENT OF AGRICULTURE
The New Jersey Department of Agriculture (NJDA)

is an agency which oversees programs that serve virtually all New Jersey citizens. One of the Department's major priorities is to promote, protect and serve the Garden State's diverse agriculture and agribusiness industries. In addition to the programs we offer to support production agriculture, NJDA also manages programs that feed schoolchildren, distribute surplus federal foods to soup kitchens and pantries that serve our needy citizens, conserve precious soil and water resources, protect farmland from development and preserve it for future agricultural use, expand export markets for fresh and processed agricultural products, and promote our commercial fishing industry, and administer the complete program of agriculture, food and natural resource education, which includes the State FFA Association. For more information about NJDA, please visit www.nj.gov/agriculture/index.shtml

Manure Happens!

New Fact Sheets on Manure Management

Is it good luck to step in horse manure? Probably not. Fortunately, the Equine Science Center is committed to providing expert information on how to best manage manure on a horse farm.

In fact, the Center, is pleased to announce the publication of three new fact sheets about manure: “Storing Manure on Small Horse and Livestock Farms,” “Managing Manure on Horse Farms: Spreading and Off-Farm Disposal,” and “Can Animal Feeding Practices Influence Nutrient Runoff?”

The fact sheets were written by Michael Westendorf, Extension Specialist in the Department of Animal Sciences at the School of Environmental and Biological Sciences (SEBS) at Rutgers University. Westendorf partnered with Fred Kelly, USDA-Natural Resource Conservation Service; Jactone Arago-Ojogo, Associate Professor and Extension Specialist, Virginia Tech; and Carey Williams, Extension Specialist in Equine Management in the Department of Animal Sciences at SEBS. All three fact sheets are on the “FAQs – Stable Management” page on the Equine Science Center website.

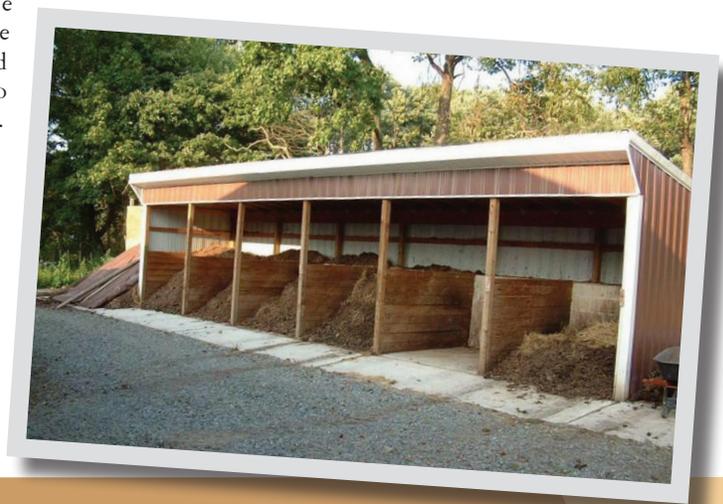
“The Equine Science Center faculty and staff are committed to the mission of ‘Better Horse Care through Research and Education’ as well as its vision statement which includes ‘Educating students, stakeholders, and the public,’” said Karyn Malinowski, director, Equine Science Center. “The new fact sheets are another example of delivering on both our mission and vision.”

“**Storing Manure on Small Horse and Livestock Farms**” addresses the benefits and drawbacks to storing manure versus spreading manure. Westendorf and Kelly give practical and valuable information for horse owners and farm managers to consider when determining which method to implement on their farm. For example, if storage is the solution, one will need to consider the manure storage location. Storage areas should be accessible by manure removal farm machinery and equipment. Storage should also be located well outside of any stream, wetland, or floodplain area to prevent potential runoff issues. The fact sheet also details manure storage options such as: stockpiling, dry stack, composting, liquid storage, and hauling.

“**Managing Manure on Horse Farms: Spreading and Off-Farm Disposal**” highlights several key points regarding the implementation of a nutrient management plan, the positive and negative impacts of manure, and environmental issues to consider when spreading.

“**Can Animal Feeding Practices Influence Nutrient Runoff**” provides guidelines on how to best manage balanced diets to avoid nutrient waste and potential environmental challenges. For example, a carefully balanced diet will prevent nutrient waste caused by overfeeding. Also, farm managers should be mindful of using suitable bunks and feeders for their horses. Any wasted feed should be placed in the manure or compost pile and allowed to decompose. Lastly, feeding horses on the ground should be avoided. Not only is it wasteful, it can also pose environmental threats, such as mud accumulation and erosion, as well as surface water runoff risks.

For more information about manure management, please contact Michael Westendorf at westendorf@aesop.rutgers.edu or 848-932-9408.



Manure shed at the Ryders Lane Farm on the G.H. Cook Campus in New Brunswick.

Join Our Board

Walk for a good cause and help fight MS. Challenge Walk call 732-555-1234 to register.

LOOK NO FURTHER

The Rutgers Equine Science Center is reaching out to all horse enthusiasts to broaden our base of the Rutgers University Board of Equine Advancement (RUBEA) board of directors. The Center is looking for influential, energetic individuals who are interested in Rutgers and the Center; anyone from alumni, horse lovers, and those already involved in the equine industry.

Please contact Dr. Karyn Malinowski at malinowski@aesop.rutgers.edu or 848-932-9419, if you want to help advance the health and well-being of horses and the equine industry.

WANTED

Looking for a baby sitter for a 4 year old.

Want cash? Apply now!

Applications are now being accepted for the Equine Science Center's **Doris C. Murphy** endowed scholarship. The deadline to submit an application for the 2014/2015 academic year is Monday, May 5, 2014. The Doris C. Murphy scholarship is reserved for female students who are New Jersey residents majoring in Animal Sciences with a minor in Equine Science and are currently enrolled or are incoming freshman at Rutgers University. Scholarships will be awarded based on academic merit, proven financial need, and demonstrated interest in equine science.



For more information, email Tiffany Cody at cody@aesop.rutgers.edu

News you can Use!

Laminitis Research

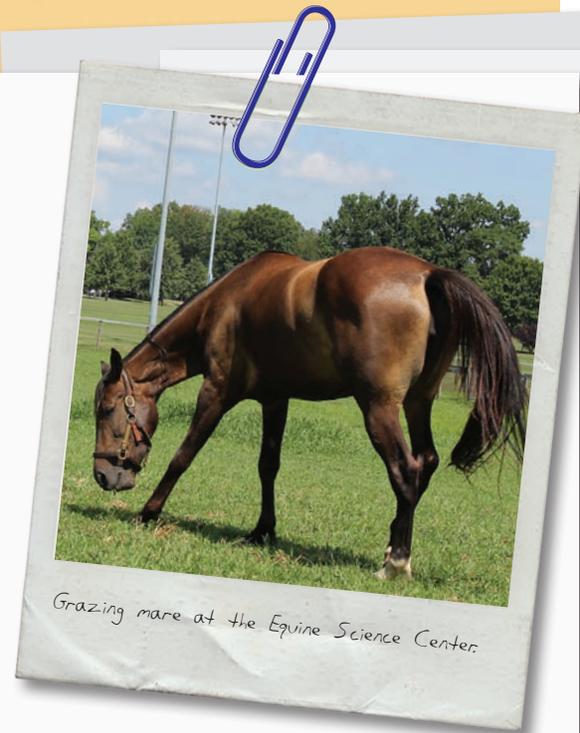
Horse owners associate pasture-induced laminitis with the spring and summer when horses graze on lush grasses.

Actively growing grasses have a high carbohydrate, or sugar content which is not metabolized by the horse but passes directly to the cecum where resident bacteria break-down the carbohydrates. As a result of bacterial metabolism, the properties of the cecal fluid change leading to an overgrowth of certain types of bacteria and a loss of others. It remains a mystery as to how the shift in intestinal bacteria leads to the inflammation found in lamellar tissue in laminitic horses.

Recently published results of research completed by Janet Onishi at the Rutgers Equine Science Center, in collaboration with colleagues at other institutions, led to the hypothesis that pasture-induced laminitis could be an early stage of chronic laminitis that develops as a result of exposure to potential bacterial pathogens in the animals' pasture. This idea is developed based on the results of two types of studies.

Lamellar tissue collected from chronically laminitic horses had higher numbers of bacteria compared to lamellar tissue collected from non-laminitic horses. Multiple types of bacteria were recovered and interestingly, the types found could live in the soil and water. It is unclear from the study whether the bacteria 'caused' chronic laminitis or were present as a result of an 'effect' of the disease.

To attempt to establish a cause-effect role of bacteria in chronic laminitis, the bacterial count in lamellar tissue was determined in tissue collected from horses in which acute laminitis was induced by carbohydrate overload. Higher levels of bacteria were not detected in lamellar tissue collected from animals that displayed early symptoms of lameness. The horses develop diarrhea and fever before lameness suggesting that an intestinal infection develops. Evidence that the colitis that develops in the horses may be due to a bacterial intestinal infection was revealed by profiling the changes in the bacteria using a metagenomic approach.



Grazing mare at the Equine Science Center.

To the best of our knowledge, horses that develop pasture-induced laminitis never display symptoms of infection, such as diarrhea or fever. Therefore, in agreement with recent research efforts to understand pasture-induced laminitis, the carbohydrate overload model of acute laminitis may not accurately reflect events in pasture-induced laminitis.

Dr. Onishi learned that in the Center's experience in managing a research horse herd on the G.H. Cook Campus for over 20 years shows that development of pasture-induced laminitis does not occur. In our research program, no horses have been clinically diagnosed with Pars Pituitary Intermedia Dysfunction (Cushing's disease) or equine metabolic syndrome; body condition scores for the horses range from moderate to fat (5-8 based on the Henneke Body Condition Scoring System). Other than the draft crosses and BLM mustangs used for the Young Horse Teaching and Research Program, all horses are female Standardbreds.

Accepted horse management practices have been used whereby horses remain outside year round feeding on forage typical of the season. During winter months, horses receive supplemental forage in the form of mixed grass/alfalfa hay. Transition to pasture grasses typical of our geographic area occurs gradually as the grasses begin to grow in the spring. Over the twenty year period, one would expect differences in plant-derived carbohydrate

content and composition due to seasonal and climate changes and in our area, ozone due to air pollution.

Review of our veterinary records of the Rutgers University herd over twenty years revealed that out of 200 horses, no horses were diagnosed and treated for laminitis by a licensed equine veterinarian. None developed the chronic form of the disease even though many remained in the research herd for over a decade.

We don't know whether the female Standardbred horses used in our research are resistant or whether our husbandry practices protected our horses from developing pasture-induced laminitis. In recent publications describing the incidence of pasture-induced laminitis in Great Britain and in Virginia, Standardbreds were not included in the studies. Results from a currently funded AAEP study on laminitis in horses designed to reveal risk factors for developing pasture or endocrinopathy-associated laminitis (PEAL) laminitis are not yet available.

The results of Onishi's research suggests that a study should be designed to consider the possibility that horses that 'just-go-lame' in the pasture may have a bacterial infection in the laminar tissue. Although antibiotic treatment has been used in the past to treat laminitis without success, the results of our study suggest that the failure might be due to the presence of a biofilm-type infection.

Biofilm infections are well known to be resistant to antibiotic treatment. The equine community must understand that treating lame horses with penicillin, which is readily available on the internet, is not advised and may make a bad situation worse. With inappropriate use of penicillin, the numbers of penicillin-resistant bacteria would be expected to rise in the horse. These types of bacteria, which are known as MRSA, are a major health concern in the equine community.

Lab notes courtesy of:

Janet Onishi, Ph.D.

Visiting Scientist

Department of Biochemistry and Microbiology
Rutgers University

Article Highlights

- Our laminitis research questions whether pasture-induced laminitis is truly a problem.
- In 20 years and 200 horses, Rutgers University has not had a case of laminitis demonstrating that pasture-induced laminitis did not occur.
- The use of antibiotics is ineffective most-likely due to antibiotic-resistant bacteria and can make laminitis worse.

NELSON'S CORNER

Ag Field Day Homework!



It's that time of the year again! Round up your little colts and fillies and meet my friends at Ag Field Day at Rutgers Day on Saturday, April 26. This is a day filled with family fun and you don't want to miss it! But before you come to campus, I have a homework assignment for you!

The festivities kick-off at 10:00 at the Red Barn and my favorite **Horse Hero** mares will be performing on the treadmill at 1:00 and 2:00 pm. Have you met our Horse Hero mares yet? If not, check them out on the Equine Science Center website. These gals do a great job of teaching undergraduate and graduate students all about the science of horses. Find your favorite loveable horse online (other than me!) and then come meet her during Ag Field Day!

And, if you haven't seen the equine exercise physiology treadmill in action, you can preview it in animation on the **Equine Science 4 Kids** computer game "**Exercising HorsePower!**" To play the game, pick one of three horses - Frankie, Snowdrift, or yours truly - and go through all of the steps to complete a research project in the treadmill lab! You get a super cool prize at the end based on your score.

So there you have it folks! Check out the mares online and then come see them at Ag Field Day. Check out the equine treadmill online, and then come see it in person.

Have any questions about Ag Field Day, Equine Science 4 Kids, or any horse-related issues, email me at LordNelson@aesop.rutgers.edu.

Your pal,

Lord Nelson



Carriage Horse Industry

Equine researchers at the Equine Science Center at Rutgers University have carefully monitored the ongoing national discussion about the carriage horse industry. The New York City carriage horse industry, which has been at the forefront of debate, has been of particular interest due to its geographic proximity to Rutgers University. The Center prides itself on responding to emotionally charged issues as the credible primary resource for science-based information on equine-related topics in order to educate the public and policy-decision makers.

The Rutgers Equine Science Center, in keeping with its mission of "Better Horse Care through Research and Education," has received permission from the editors of the Journal of Equine Veterinary Science to post a research article, currently in press production, which reviewed carriage horse and mule welfare in Charleston, South Carolina. While providing a detailed review of carriage horses, the author concluded that further research studies need to be performed which assess stress levels in carriage horses. To download the article, go to www.esc.rutgers.edu/release_CarriageHorse14.htm. To date, there is no science-based information available as to whether or not carriage horses experience physiological stress while working.

For **more information**, contact Tiffany Cody at cody@aesop.rutgers.edu or 848-932-9419.

Horse Carriage in New York City.

Horse Management Seminar

Despite an ominous forecast predicting significant snowfall, a large and lively crowd arrived on Sunday, February 9 for the 2014 annual **Horse Management Seminar**

titled, "Caring for Your Equine Athlete" at the Cook Campus Center at Rutgers University in New Brunswick. The morning commenced with a panel discussion from four international-level riders from Reining, Eventing, Endurance, Dressage, and Combined Driving. The panelists shared their experiences, insights, and valuable lessons learned from many years of elite-level, professional competition. Audience members were pleased to have their individual questions answered by members of the expert panel.



Rick Willis and Charlie O'Brien of Rick's Saddle Shop.

After a short break, Patrick Reilly, Chief of Farrier Services and Director of the Applied Polymer Research Laboratory at the University of Pennsylvania, gave a fascinating presentation on horse hoof balance and how it can vary with trimming, shoeing, and even between gaits. During lunch, Kathleen Richards of the United States Equestrian Foundation explained how both human and equine athletes prepare for international competition and what to expect in the 2014 World Equestrian Games in Normandy, France.

Rick Wills and Charlie O'Brien from Rick's Saddle Shop passed around saddle parts as they explained how to determine appropriate saddle fit using a large plastic model displayed on a table. The seminar concluded with an individual presentation from Dr. Meg Sleeper, who in addition to competing internationally, is an Associate Professor of Cardiology at the University of Pennsylvania, School of Veterinary Medicine. Her presentation outlined how to condition a horse for upper level equine sports.

Vet Memorial

The loss of a beloved horse and/or pet can be devastating for an owner. The Equine Science Center created the **Veterinarian Memorial** program to honor the memory of horses and pets that have left an impression on someone's heart.

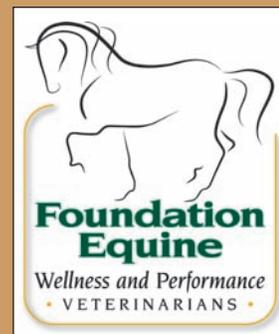
Veterinarians participating in the program make ongoing donations in memory of each owner's horse to the Equine Science Center. The support helps the Center advance its mission of "Better Horse Care through Research and Education" as a means to improve the health and well-being of all horses, and to actively support New Jersey's equine industry.

In response, we have received touching letters and donations from horse owners, who have encouraged us to continue our research and help prolong the life of their next horse and other horses, especially through our aging and metabolic disorders studies.

Thanks to Foundation Equine and Dr. Sharon Vaillancourt, two veterinary practices that currently participate in the program.

Encourage your vet to join the Veterinarian Memorial program. For more information, contact Tiffany Cody at cody@aesop.rutgers.edu or 848-932-9419.

DR. SHARON VAILLANCOURT



10K Alumni Challenge

“Where Would I Be Without the ESC...”

By Amanda Szucsik

When the Equine Science Center announced that it was offering a **special fundraising opportunity** for alumni, I jumped at the chance to participate. Here's why:

I graduated from Cook College (now the **School of Environmental and Biological Sciences**) in the spring of 2001, and am a proud alumna of the Rutgers University **Department of Animal Sciences**. I'll be 35 years old when I begin veterinary school at North Carolina State University this fall, and would never have arrived at this juncture in my life without the mentorship and experience that I received via the Equine Science Center.

Although I was born in New Jersey in 1979, I spent my childhood and adolescence in Natick, MA, a suburb of Boston. I grew up spending summer vacation in the Garden State (Point Pleasant Beach and Seaside Heights were favorite destinations). When I sensed an early proclivity toward a technical career involving animals, Rutgers became my first choice for a top-flight undergraduate education. I matriculated as an out-of-state student on the 'Banks of the Raritan' in the fall of 1997.

I attended Cook College with the singled-minded intention to become a veterinarian. This ambition changed, however, in the year 2000. In the fall semester of my junior year, I enrolled in the course 'Systems Physiology,' a class examining how organisms work and why they work the way they do. It was in this class that my love for science was truly brought to the fore. Physiology 'clicked' for me theoretically, and I excelled in conducting laboratory experiments on whole animals- particularly surgical preparations. Charles Kearns, my laboratory instructor, was a Ph.D. student in the Department of Animal Sciences. He was conducting his dissertation research on the effects of the drug clenbuterol on equine exercise performance and muscle physiology. Given my enjoyment of experiments within Systems Phys. lab, 'Charlie,' recruited me as an assistant to work on his project. This was my entre to research at the Equine Science Center.

Although I had completed an externship at the Tufts University School of Veterinary Medicine's Hospital for Large Animals, I had limited experience with horses. I certainly had never ridden. When I arrived at the 'Red Barn' on College Farm Road, I was thrown

into the midst of several peers who were light years ahead of myself with respect to equine experience. It was intimidating, to say the least. No matter, though. Charlie and his Ph.D. advisor, Dr. Kenneth McKeever, were very patient instructors. Dr. Karyn Malinowski was also a great help.

I gradually gained confidence in reading equine behavior and earned progressive levels of responsibility within the framework of Charlie's project. This became my introduction to the rigors of empirical science. I relished in the problem solving innate to the process. Plus, the excitement of watching a mare gallop at near maximal speeds on the Center's treadmill is tough to top.

As Charlie's Ph.D. drew to a close, I ramped up my George H. Cook senior thesis project. For this publicly defended honors project, I investigated the effects of electrolyte administration on acid-base homeostasis in equine plasma during rest and following exercise. At the time, there was controversy within the Standardbred racing industry whether or not electrolyte supplements induced a false-positive test for sodium bicarbonate administration (known as 'milkshaking' in the business). My experimental results indicated that no, they did not, based upon measurements of total plasma carbon dioxide levels and strong ion difference. Completion of my G.H. Cook project solidified my desire to pursue scientific research as a career, and I applied for doctoral programs as opposed to admission to veterinary school.

In keeping with the theme I began in Dr. McKeever's lab, I studied reptile exercise physiology for my graduate education. Although I began my Ph.D. dissertation at the University of California-Irvine in the fall of 2001, I exited the program with a Master's degree in 2009. I loved conducting research, but was distinctly unhappy with the pressure to publish in top-tier journals and acquire ever-dwindling federal grants.

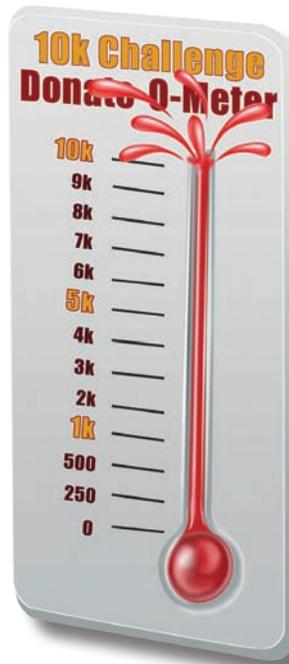
Following graduate school, I worked in private industry conducting pre-clinical safety/efficacy testing of various medical devices. Such trials were conducted in both small and large animal models. I'm currently working for the University of Utah under a human cardiothoracic surgeon investigating mechanisms of heart failure recovery in transgenic mice and goats.

My 10+ years of experience in research is extensive and diverse. It began at Rutgers, and has shown me the uncategorical need for veterinarians in laboratory settings. Laboratory animals no longer comprise solely rats and mice. Throughout my career, I have worked

in a technical capacity with: horses, sheep, goats, lizards, alligators, snakes, fish, chickens, mice, rats, rabbits, and guinea pigs- all in laboratory settings. Laboratory animals make the ultimate sacrifice for the benefit of others. As such, they deserve the best care that the veterinary profession has to offer. It is my mission to deliver this superior standard to all research species with which I come in contact as a laboratory animal veterinarian. My veterinary school aspirations were realized with admission to the NCSU College of Veterinary Medicine program in January 2014. The journey began long before that, however, in a Red Barn, on College Farm Road, in New Brunswick, NJ fourteen years prior.

I express my heartfelt gratitude to all members of the Equine Science Center who played a role nurturing my growth, development, and success- not only as a scientist, but as a total human being. Your influence is with me always, and will never be forgotten.

Please join me by participating in the **10K Alumni Challenge**. Your \$100 gift will make a big difference in the Equine Science Center's campaign to fund research projects for future students who, like me, have career ambitions in equine research and science. For more information, please contact Nettie R. Liburt, MS ('05), PhD ('11) at nrliburt@yahoo.com.



esc.rutgers.edu

Equine Science Center

Better Horse Care through
Research and Education

IMPORTANT ANNOUNCEMENT

Beginning in 2015, we will not be using the Pony Express (postal mail!) to deliver your newsletters. Don't miss out on future newsletters and messages from the Center – Join our email list TODAY!"

- Text **"RUESC"** to 22828.
Message and data rates may apply.
- **Or**
- Sign up at <http://goo.gl/yt9Wj>

**Go
Green!**

Join the email newsletter list!
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rates may apply.*



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