

# RUTGERS UNIVERSITY

# EQUINE SCIENCE QUARTERLY



From Our Stable To Yours

Fall 2015

## Inside the Issue:



06

From The Lab & Top 5 Facts for the Microbiome



08

Symposium for Issues in the Equine Industry



10

Horse Racing & Equestrian Sports Integrity

## Debut of Equine Educational Resource Series: First Volume Equine Vaccinations

**T**he Equine Science Center debuted part of its new education resource series “Volume 1: Equine Vaccinations” in August with the hope that everyone who owns, or cares for a horse will find it educational and easy to use.

The first volume covers basic information about viral and bacterial diseases; vaccination schedules; and warnings, treatments, and prevention methods for “core” and “risk-based” diseases that commonly affect horses.

The resource package is based upon the recommendations of the American Association of Equine Practitioners (AAEP), and was edited by the Equine Science Center and Dr. Michael Fugaro, Professor from Centenary College and collaborator of the Equine Science Center.

“The aim of this project was to not only get this information out to people, but to encourage

them to have conversations with their veterinarians about what vaccinations are needed for their horse,” said Karyn Malinowski, Director of the Equine Science Center.

“Too often people don’t even think about vaccinations until their horse already is infected with something, at which point they decide to speak with their vet,” she continued, “These are conversations that need to happen before that, as a way to prevent the infection from even occurring in the first place.”

Vaccinations for horses are extremely important. This fall a 10 year-old gelding from Gloucester County was humanely euthanized on October 3rd after having tested presumptive positive for West Nile Virus (WNV). This was the first confirmed case of WNV in a horse in 2015. The vaccination status of this horse was unknown. In August, a 2- year-old mare

Continued on pg. 4

# From The Clubhouse



Looking forward to  
upcoming events -  
there are so many  
ways to visit with  
the Equine  
Science Center

Dearest Friends,

Summer has come and gone and the fall semester is in full swing! We welcomed students back to campus on September 29 with a catered Texas style BBQ and a lovely evening chat with the remarkable Sally Ike. Sally wowed us with tales of being an Olympic and Point-to-Point rider, her wonderful horses, and of course, her passion for developing young equestrians. The Center also presented Sally with its 2016 "Spirit of the Horse" award after her lecture. Read more about her on [Page 5](#).

Besides our usual Summer Showcase Open House, Center faculty, students, and staff were busy attending events and professional meetings, lecturing, and conducting various research projects. We even had some time to take a summer vacation!

I had the wonderful opportunity to be interviewed by Peter Furey, the Executive Director of the New Jersey Farm Bureau for the featured story of "Ag Matters". The Equine Science Center was also featured in a story by NJFB's Liz Thompson. See the summer issue devoted entirely to the New Jersey equine industry [here!](#)

Center Associate Director for Research, Ken McKeever and I were involved in two research

projects in support of horse racing since my last column. See the story on [Page 10!](#)

A new event for the Center was the idea of RUBEA vice-chair Liz Durkin, Esq. The symposium on Legal, Business, and Insurance Issues Impacting the Equine Industry was a five-star event held at an off campus conference venue. Ms. Durkin assembled a panel of experts for the program that was sponsored by Merial. Read more on [Page 8](#).

The Equine Science Center debuted part of its new education resource series "Volume 1: Equine Vaccinations" at the New Jersey State Championship 4-H Horse Show. Giving away over 200 copies of the resource packages to every show participant, the Center aimed to reach some of the best young equine competitors and enthusiasts in the state. See the feature story on [Page 1](#).

The Center was well represented at the 4th annual Open Space Pace, which turned out to be overwhelmingly successful. Over ten student volunteers tabled on behalf of the Center the entire day which began with a two mile walk through Freehold Borough in the parade. The Center also was one of the recipients of a \$1,000 check thanks to the OSP committee. We were proud to be there! Read the story [here](#).

I look forward to seeing many of you at two of our upcoming events. On Monday, November 2, we are hosting the premier book signing and lecture by the scientific journalist Wendy Williams. Her book, "The Horse: The Epic History" of our Noble Companion, resulted from over five years of studying horses all over the world. The lecture and images from Ms. Williams' travels are sure to be fascinating. Take a look at [Nelson's Corner](#) to see what he thinks about this great topic.

November 12 is the date for the Center's "Evening of Science and Celebration." Our keynote lecture is from Carolyn Stull from the University of California-Davis Veterinary School, who will discuss a topic we usually avoid, but one that is extremely important – "When is it time to Euthanize Your Horse?" This lecture is a MUST for all horse owners and equine practitioners who care for these magnificent animals. Both of these events can be found on our website [here](#).

Best,  
karyn

# PARTNERS



New Jersey Farm Bureau's primary purpose is to represent the overall interests and improve the financial well-being of farmers and our \$800 million industry. NJFB activities are supported through voluntary membership and annual dues. Members have access to:

- Staff assistance on farming issues and regulatory problems.
- Educational workshops on topical issues such as farm labor, wildlife damage, and zoning.
- Weekly updates on legislation news and regulations affecting all aspects of farming.

It pays to be a NJ Farm Bureau member! For a full list of membership levels and benefits, or to sign up, visit: [www.njfb.org](http://www.njfb.org).



UMH Properties, Inc., is a real estate investment trust that owns and operates manufactured home communities in seven states throughout the north-east.

UMH has been in business since 1968, operating as a public company since 1985. Owning a portfolio of over 90 manufactured home communities, housing approximately 15,700 home sites.

In addition, owning over 810 acres of land for the development of new sites. It is our mission as a company to provide the best quality affordable home for the hard working residents of Pennsylvania.

UMH communities are perfect for residents of all ages, let us help up you find your dream home today.

For more information about UMH Properties, Inc., please visit: [www.umh.com](http://www.umh.com)



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](http://www.nj.gov/agriculture)



Merial recognizes that diseases pose a significant threat to the health and well-being of horses, and that's why Merial is at the forefront of supporting horse owners and veterinarians in their efforts to keep horses healthy.

In addition to providing a wide array of vaccines and pharmaceutical products for horses, Merial engages veterinarians and horse owners in educational programs and online tools to build a greater awareness of diseases and the importance of prevention.

These resources, along with industry-leading products enable us to help veterinarians and horse owners keep horses healthy.

## UPCOMING 2015 EVENTS

### "The Horse: The Epic History of Our Noble Companion" Lecture and Book Signing

Monday, November 2, 2015

Institute of Food, Nutrition, and Health Building  
63 Dudley Road  
New Brunswick, NJ 08901

[ESC@aesop.rutgers.edu](mailto:ESC@aesop.rutgers.edu)

### Evening of Science and Celebration

Thursday, November 12, 2015

G.H. Cook Campus Center  
Rutgers, The State University of NJ  
New Brunswick, NJ

[ESC@aesop.rutgers.edu](mailto:ESC@aesop.rutgers.edu)

### "Developing Future Leaders for the Equine Industry" Course:

January 5 & 7, 2016

G.H. Cook Campus Center  
Rutgers, The State University of NJ  
New Brunswick, NJ

[Malinowski@aesop.rutgers.edu](mailto:Malinowski@aesop.rutgers.edu)

### Horse Management Seminar: Equitation Science

Sunday, February 14, 2016

G.H. Cook Campus Center  
Rutgers, The State University of NJ  
New Brunswick, NJ

[Kenny@aesop.rutgers.edu](mailto:Kenny@aesop.rutgers.edu)

For more events, visit our website @ [esc.rutgers.edu](http://esc.rutgers.edu)

from Gloucester County was also humanely euthanized after testing positive for Eastern Equine Encephalomyelitis (EEE). That horse was not vaccinated and was the first and, so far, only confirmed equine case of EEE in New Jersey this year.

First-time horse owners might not realize some of the warning signs of these diseases. Without this knowledge they might not even know that their horse is infected, let alone know that they should report this to their veterinarian who would inform the Department of Agriculture.

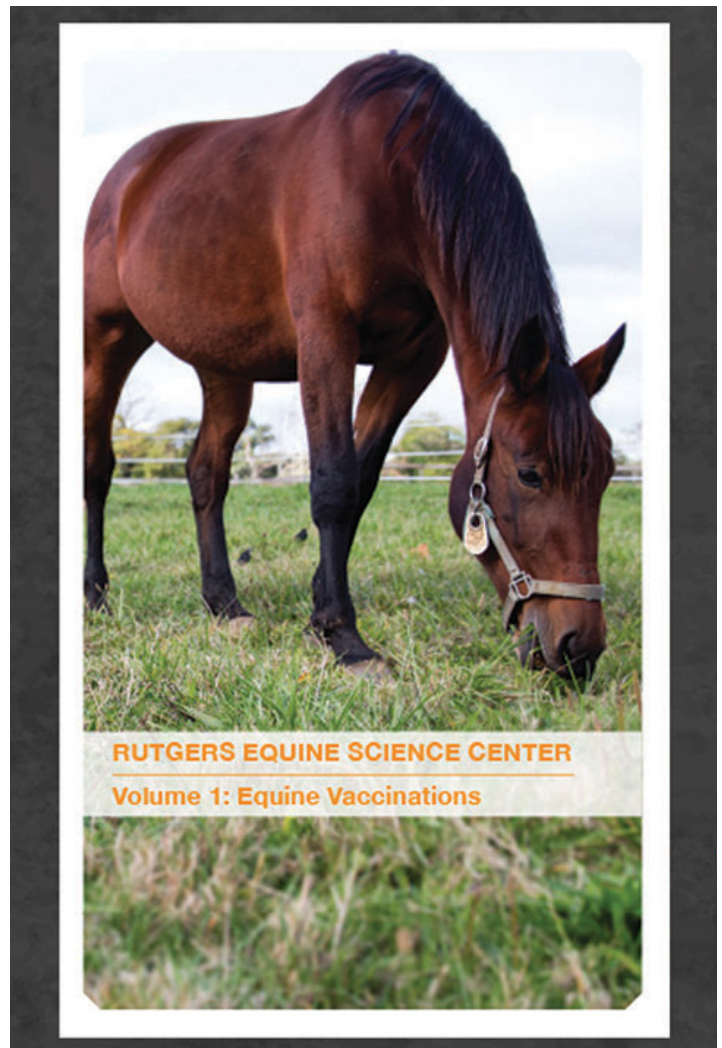
Some viral and bacterial diseases, considered “reportable diseases” in New Jersey due to their infection and/or mortality rate, must be reported in order to prevent the spreading of the disease. This is where the center believes education will come in handy.

Each resource package is made up of two pull out infographics (broken into “core” and “risk-based” diseases), as well as 9 cards detailing each of these diseases. On each card is information about the disease on one side, and “warning signs”, “treatment”, and “prevention” on the other.

While owners won’t be able to self-diagnose their horse, they will learn what to look out for, and have a starting point for discussions with their vet if horses start displaying symptoms.

New Jersey Equine Veterinarian Dr. Michael Fugaro was brought on to the project to help create a package that was both scientifically accurate as well as approachable for owners of every level.

“Although vaccines have been around for horses for years, often owners are confused as to why this type of prophylactic care is important” stated Dr. Fugaro. “Infectious and zoonotic diseases pose a continued risk for horses and humans alike. Disease prevalence, strains, and the pharmaceutical technology implemented



The Resource Package includes nine disease cards and two Adult Horse infographics. One for Core Vaccinations (17” x 22”) and one for Risk Based Vaccinations (25.5” x 22”).

to combat these diseases remain an ever-changing forum. The brochures provide the most current recommendations for our North American horses.”

New Jersey equine veterinarians are available to discuss with their clients which viral and bacterial diseases fall under this “reportable diseases” category, and create a vaccination schedule that hopefully will prevent an owner from ever having to go through that process.

The best way to prevent these diseases is often vaccination and proper bio-security measures (which the Equine Science Center is already looking at for the second volume of their resources “Volume 2: Biosecurity”).

# An Evening With Sally Ike

The Equine Science Center at Rutgers University hosted a barbecue and talk with Sally Ike, world-renowned rider, jumper, and course designer.

Ike, a native New Jerseyan, was first introduced to the equine world when her aunt married a racehorse trainer. Both Ike, and her sister (who is now a Dean at Rutgers), grew up at the track watching their uncle train the horses under his care. Both sisters soon came to love natural talent of the horses, and the riders and trainers who worked with them.

Ike's soon started competing at shows, and her first horse came in the form of an unbroken homebred. The two-year mare was a bit of a handful, but Ike (only 13 when she received the horse) was able to train the mare herself, and both of them went on to win ribbons in the green working hunter division.

From her humble beginning with a horse that her uncle didn't even want to spend the time breaking, to becoming one of the most well known names in eventing, Ike's dedication and commitment to the sport is unparalleled.



For pictures from the event, please visit [OUR FACEBOOK](#).

For  
Release



Ali Janabi, with two students, run a horse on the treadmill.

Lab Notes - McKeever

# From The Lab:



TOP 5  
FACTS ABOUT  
THE MICROBIOME

#1

The microbiome is the array of microorganisms present in the gastrointestinal (GI) tract of a variety of animal species ranging from insects to mammals.

#2

The microbiome influences the absorption of a wide variety of nutrients and recently published studies suggest that microbiome plays an important role in the health of the animal through its influence on energy homeostasis.

# The "Guts" of the Microbiome: What is it?

**A** major project funded by the Equine Science Center, currently underway in the Equine Exercise Physiology laboratory is the doctoral research project being conducted by graduate student Ali Janabi, a veterinarian from Iraq who is being supervised by Ken McKeever.

Janabi's experiment will determine if acute intense exercise affects the balance of good and bad microorganisms in the hindgut of the horse. His study will also examine if 12 weeks of strenuous exercise training has an impact on what is called the microbiome. Information gained through the research ultimately will enhance our ability to care for the health of equine athlete.

Some have suggested that the microbiome functions like a separate organ and the impact of the relationship between the GI microbiome and the body of the host has become one of the hottest areas of research in human medicine. Data obtained from a variety of species suggest that the microbiome exerts a large influence on the health of the host animal.

According to Stacy Dash (Medscape Psychiatry, 2015), "Researchers are now beginning to understand the ways in which bacteria living in the human gut—the gut microbiota—communicate with and influence brain health. The concept of a faulty "gut/brain axis" has been associated with various neurologic and psychiatric

outcomes and is thought to be explained, at least in part, by immune dysfunction and inflammation triggered by poor gut health."

Limited information has been generated on factors affecting the microbiome of the horse. We are aware of no published studies that have examined the effects of exercise on the microbiome of the horse. By comparing levels 16S rRNA sequences of the microorganisms in the feces of acutely exercised horses before, during, and after 12 weeks of exercise training the team hopes to gain insight into ways to improve the health and well-being of all athletic horses.

The microbiome project is a collaborative effort involving researchers from multiple departments within Rutgers as well Amy Biddle from the University of Delaware. Amy brings important expertise related to her work exploring the connection between the microbiome and a variety of health related disorders such as obesity, insulin resistance, and equine metabolic syndrome.

The research team from Rutgers and the University of Delaware are also part of the USDA sponsored Equine Clinical Studies Coordinating Committee (NECC1200) that has been formulating questions to guide research directions promote a better understanding of the important role that the microbiome plays in horse health.

## #3

**Anything that alters the microbiome (e.g., diet, hydration, exercise, drugs) has the potential to alter the health and possibly the athletic performance of an individual.**

## #4

**Studies of rodents and humans even go so far as to suggest that the microbiome can affect the immune system, can influence mediators of inflammation, and may play a role in the onset of obesity, insulin resistance, and Type II diabetes.**

## #5

**Some sources in the literature have suggested that the number of cells in the microbiome of humans is 10 times the number of cells in the rest of the host's body.**



## Symposium on Legal, Business, and Insurance Issues Brings Equine Industry Issues to the General Public

**T**he Equine Science Center hosted a symposium on the legal issues within the equine industry on October 12th at The Palace at Somerset Park in Somerset, New Jersey.

There was a fantastic turnout with a broad range of equine professionals from various disciplines including: veterinarians, horse owners, college professors, and students. Not to mention, the venue was absolutely stunning!

The symposium featured topics such as business planning, immigration law, workers compensation, accounting, insurance coverage, and the New Jersey's Right to Farm Act from legal experts specializing in the equine industry.

The goal was to educate members of the equine industry on the basics of equine related law, accounting, and insurance to provide them with the necessary tools in order to become successful.

“This symposium was a MUST for all professional horse people, irrespective of discipline or industry interest,” said Karyn Malinowski, Director of the Equine Science Center. “Never before has the Center assembled such an exemplary panel of experts. Thanks to the vision of Liz Durkin Esq., Vice-Chair of the Rutgers University Board for Equine Advancement, we were able to cover topics of



utmost importance to equine operation owners and/or managers,” she continued.

Hoyt Cheramie, DVM and a Manager for Large Animal Services at Merial, presented “Pain Management for Your Horse”. He discussed the different types of pain, the physiology of pain, pain indicators including secondary symptoms such as elevated heart rate, and various types of treatments.

Merial, the Title-Sponsor of the event, offered to have Dr. Cheramie give this lecture as a way to reach out to the everyday horse owner. Merial is a pharmaceutical company with many products for horses that are traditionally sold directly to veterinarians. By partnering with conferences such as this, they hope to broaden their reach to include horse owners as well.

“In order for the equine industry to succeed, people in the horse industry have to run their business as a business,” said Liz Durkin. “We believe that this symposium is the first event of its kind where the target audience is equine

operators specifically. Other similar events are geared to either attorneys or accountants who practice in that field,” continued Ms. Durkin.

A special thank you to all of the sponsors of this event, including: Merial, The Durkin Firm, Equine Billing Services, and Farm Credit East.



Dr. Cheramie was chosen by Merial to give his lecture on pain management, “Pain Management for Your Horse”, as a part of their approach to direct outreach to horse owners.



Jack Chellew from Merial, Liz Durkin from The Durkin Firm, and Karyn Malinowski, director of the Equine Science Center, presenting prizes from the many give-a-ways that took place throughout the symposium.

# Support of Horse Racing and the Integrity of Equestrian Sport



American Pharoah winning the 2015 Haskell Invitational. American Pharoah gained international attention this year by winning the Triple Crown and breaking a 37 year dry spell without a winner. Photo Courtesy of - Bill Denver from EQUI-PHOTO, INC.

**T**he Equine Science Center continues its commitment to preserving the integrity of equestrian sport and to ensuring the sustainability of the horse racing segment of the equine industry. To this end, Center faculty members Karyn Malinowski and Ken McKeever are presently involved in two projects which will impact the industry upon their completion. Underway is a research study, funded by the United States Trotting Association, to evaluate the effects of cobalt on red blood cell production (erythropoiesis) and performance enhancement in horses. This research trial is in collaboration with George Maylin from SUNY- Morrisville.

“The purpose is to study the effects of cobalt on racehorses with the exercise physiology model used by McKeever to study drugs such as EPO,” explained George Maylin. “It’s the only way to assess the pharmacological effects with this type of compound. It will be a dose-response study to see if some level of cobalt has an effect on performance.”

In a previous study funded by the USTA, the three researchers determined a baseline for what the normal levels of cobalt are in race horses. Malinowski and McKeever collected blood samples from over 250 Standardbred and Thoroughbred horses which were known to not have been given cobalt.



The Equine Genetics and Genomics Laboratory at the University of Minnesota team met with Karyn Malinowski and Ken McKeever to take blood samples from the Rutgers Herd for a new genetics study.

Racing jurisdictions have set thresholds to regulate the use of cobalt because it is known to be toxic in humans. However, there is currently no scientific evidence to determine an appropriate threshold for horses because dose-response studies have not been reported. Our research aims to determine whether cobalt can dramatically improve a horse's performance or is detrimental to the horse's health. These are the big questions for us at the Equine Science Center.

The Equine Science Center also partnered with the University of Minnesota in September to procure blood samples from over 700 Standardbred horses in New Jersey and New York for a new group of studies aimed at identifying genetic factors underlying musculoskeletal diseases in horses. The studies will also look at performance traits, such as gait and speed, and how a horse's genetic makeup affects these traits.

Broken into four distinct studies, the researchers will examine the genetic risk factors for recurring exertional rhabdomyolysis (RER) and osteochondritis dissecans (OC/OCD), and will investigate modifying loci associated with trotting and pacing and those affecting performance in Standardbred horses. "Identifying the genetics contributing to OCD and RER will allow us to design better treatments and management recommendations for these horses," said Dr. Molly E. McCue, Associate Professor in the Department of Veterinary Population Medicine at the University of Minnesota. "In addition, we hope that identifying the genetics that contribute to traits such as gait, speed, and elite performance will allow trainers, breeders, and owners of Standardbred horses to breed for desirable traits, select the best racing prospects, and train these horses to their fullest genetic potential," she added.

THE EQUINE SCIENCE CENTER INVITES YOU TO AN EVENING OF...

# Science & Celebration

Thursday, November 12, 2015

Cook Campus Center, 59 Biel Road,  
New Brunswick, NJ 08901 • (848) 932-7617

## OPEN TO ALL HORSE ENTHUSIASTS!

*Event highlighting the  
Equine Science Center's work  
in advancing equine health,  
horse management practices,  
and solutions to equine  
industry issues.*

### Schedule:

5 to 6 p.m. - Optional Tour:

- Treadmill Demonstration!
- Meet the "Horse Heroes" at the Red Barn on College Farm Rd.

6 to 7 p.m. - Light Supper

7 to 9 p.m. - Program Highlights

- "Dealing with Your Horse's Death and Euthanasia"  
- Dr. Carolyn Stull
- "The 80 Dollar Horse"  
- Jenna Miller, 4-H Presenter
- Equine Science Center Presentations
- Gold Medal Horse Farm Award  
- Lord Stirling Stables

## Event Registration Closes!

TUESDAY, NOVEMBER 10<sup>TH</sup>, 2015

To register, please go online to <http://goo.gl/2kquVx>

Event fee: \$35 for adults & \$15 for full-time students

Please remit payment & mail to: Rutgers Equine Science Center

57 US Highway 1, New Brunswick, NJ 08901-8554

Phone (848) 932-9419 • Fax (732) 932-2658



Sponsored by

MID-ATLANTIC  
EQUINE MEDICAL CENTER

[facebook.com/RutgersEquineScienceCenter](https://www.facebook.com/RutgersEquineScienceCenter) [pinterest.com/RutgersESC](https://www.pinterest.com/RutgersESC) [twitter.com/RutgersESC](https://twitter.com/RutgersESC) [youtube.com/c/RutgersEquineScienceCenter](https://www.youtube.com/c/RutgersEquineScienceCenter)

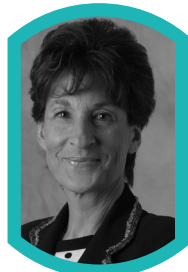
# RUTGERS

New Jersey Agricultural  
Experiment Station



Laura Kenny

PASTURE  
SUSTAINABILITY



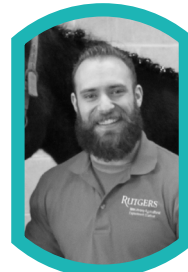
Karyn Malinowski

CENTER  
DIRECTOR



Carolyn Stull

FEATURE  
PRESENTER



Dylan Klein

MUSCLE PROTEIN  
METABOLISM



Kenneth McKeever

EQUINE  
MICROBIOME



# NELSON'S CORNER

## CAN HORSES READ?

This is such an interesting question, isn't it? While you all know I can write, did you also know that I can read as well! While at first I put up a little fight, apparently in order to become a professor at Rutgers you have to know how to read and write. So I did it. I learned how to read. I can honestly say that it is the best decision that I ever made. One of the first books that I read was a whole book on treats that you can make for your horses. Everyone that I knew got that for their birthdays that year.

There are some other things that I've read that haven't made me very happy though. Did you know that some people believe that horse's brains are the size of a walnut, and that horses therefore were unintelligent? I would beg to differ. To prove my point I convinced the Equine Science Center to host a lecture and book signing with the wonderful scientific journalist Wendy Williams. I knew that she would be able to dispel some of the myths about equine intelligence.

Her book, "The Horse: The Epic History of Our Noble Companion", is amazing. It's not an easy read for young readers, but I had Karyn Malinowski explain some of it to me. It's SOOOO interesting. Did you know that horses crossed an ice bridge between Russia and Alaska thousands of years ago? I immediately called my travel agent asking to book a trip, only to find out that this area is now the Bering Strait (a body of water between the Pacific and Arctic Oceans). My travel agent thought that she was a comedian and told me that I could join the cast of "The Deadliest Catch" and go King Crab fishing in that area if I wanted. How was I supposed to know that the bridge no longer existed!

Anyway, back to my original question of proving that horses can read. I had the opportunity to interview Ms. Williams to get a preview of her lecture.

.....

**Lord Nelson (LN):** Wendy, what did you learn about the horse's brainpower during your research for the book?

**Wendy Williams (WW):** Today we know that horses are sensitive, sentient creatures with finely nuanced minds. We know that horses are capable of forming deep, meaningful bonds and that they are astonishingly adaptable -- just as we are.

**LN:** But just how "smart" are they? I once heard about an orangutan who was able to communicate with a computer, and a Gorilla who knows sign language.

**WW:** I actually met that Orangutan. Long ago I visited Azy the Orangutan, who has for decades studied language and communication with researcher Rob Shumaker, at the National Zoo in Washington. I was thrilled to see the pair of them communicate with each other by way of two dimensional symbols, thanks to a special computer. Today Azy can read more than 70 of these symbols.

**WW:** Rob says that Azy can even read two symbols together and understand those symbols as representing an action (a verb) and a noun. In other words, Azy can read very simple sentences.

**LN:** What about horses? Can they do this?

**WW:** It would seem so. As I'll discuss in my lecture at Rutgers there is every reason to believe that horses are quite intellectually competent. And why wouldn't they be? For at least 56 million years, horses and primates have been travelling through the world together, sharing similar experiences and meeting similar challenges. Who knows where our marvelous partnership, with its evolutionarily deep roots, will take us next?

**LN:** Well I guess I'll have to find out more on November 2! Thank you helping me sort through all of this, and I can't wait for you to meet everyone at the event. I hope that you can help convince them that horses CAN read!

.....

For information about the event go [here!](#) I hope to see you there!

Your pal,  
Lord Nelson

# Contact Us:

**Karyn Malinowski**

*Director*

**Equine Science Center**

**Phone : 848-932-9419**

**E-Mail : [malinowski@aesop.rutgers.edu](mailto:malinowski@aesop.rutgers.edu)**



**Kyle Hartmann**

*Public Relations Specialist*

**Equine Science Center**

**Phone : 848-932-9419**

**E-Mail : [hartmann@aesop.rutgers.edu](mailto:hartmann@aesop.rutgers.edu)**



[esc.rutgers.edu](http://esc.rutgers.edu)

