

# RUTGERS UNIVERSITY

# EQUINE SCIENCE QUARTERLY



From Our Stable To Yours

Fall 2016

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## From Iraq To New Brunswick, New Jersey: How A Love Of Animals Changed A Life

**I**t all started back in the 1980's with a television show called "Animal World". "Animal World", which by the 80's was running in syndication, was being seen for the very first time by a small boy in a country half way around the world, in Iraq.

Ali Hassan Dagher Janabi, a child who like many others at the time was enthralled with television shows that featured animals, couldn't take his eyes off the screen.

His love of animals can be traced back to these years when he would watch people on his television interacting with not only animals in the zoo, but also animals in their natural habitat, the wild.

As many kids do, he decided then that he wanted to work with animals; and as many kids do, he would eventually change his mind repeatedly.

Towards the end of high school Janabi started to think about what was next for him, and what his future would hold. Becoming a doctor was appealing because it allowed him to help others, the money would be good, and he was interested in the science; but at the end of the day Janabi was pulled back to an earlier passion.

Starting college at the University of

Baghdad in 1997, Janabi began taking classes to become a veterinarian. This would allow him to work in healthcare, but with slightly different patients.

Five years later, Janabi would graduate with his BS in Veterinary Medicine and Surgery. While his coursework would encompass all animals, he would continue his education with a Masters program focused on large and production animals to ultimately graduate with a MS in Veterinary Clinical Science.

Once Janabi had graduated, he took a job working with a government dairy herd which was seeing an increase of bacterial infections in the cow and calf populations.

These infections included tuberculosis and brucellosis, which not only had the potential of infecting the rest of the herd, but the human population as well. Brucellosis is known to cause the cows to lose their calves in gestation, but can also be spread to humans through unpasteurized milk.

Tuberculosis, which can also spread to humans through unpasteurized milk, can cause emaciation, respiratory distress, and eventually death.

This was also troubling due to the

# From The Clubhouse



Join us for a fun  
filled evening  
of science and  
celebration on  
November 17, 2016.

Dear Friends,

Summer has come and gone and we're almost half-way through the fall semester. The Center was well represented at several events in the past few months.

We had a wonderful day and evening at the annual Hambletonian Veterinary Conference, organized and produced by First Choice Marketing. We stayed into the evening to watch some of the finest harness racing in the world at the New Meadowlands Racetrack.

Four horses were diagnosed with Eastern Equine Encephalomyelitis this summer and **none** of them had been vaccinated to protect them from disease. Please check out the Center's **Vaccination Kit** information. You can protect your horse from disease! Contact your veterinarian to develop a vaccination plan. It's never too late!

The Center has also been providing scientific documentation about the value of New Jersey's horse racing industry – to its economy and quality of life in the form of open space. A referendum will be on the November 8 ballot (question 1) asking voters

whether or not casino gaming should be expanded beyond what currently exists in Atlantic City.

You may recall my 2014 white paper authored with Paul Gottlieb which demonstrated clearly the disadvantage New Jersey has compared to New York and Pennsylvania when it comes to horse racing purses, days, and breeder awards. Both Thoroughbred and Standardbred horsemen and women could benefit from a percentage of any new gaming revenue at any new north Jersey casinos.

We learned of the untimely death of my former graduate student, Patrick Guirnalda, at age 42 on September 8. See the tribute to Patrick on **page 6**.

On September 17 we celebrated the 5th anniversary of the **Open Space Pace** with the Landy family at Freehold Raceway. Once again the Center received a check for \$1,000 in recognition of its efforts in helping preserve open space in the Garden State.

We had a wonderful turnout of student volunteers and two of our students were winners in the \$1,000 scholarship raffle, new this year. Grand Marshal was Senator Jennifer Beck who proudly rode Sam Landy's horse in the parade down the Main Street of Freehold. We just completed another **Symposium on Legal, Business, and Insurance Issues Impacting the Horse Industry** on October 10 at The Palace in Somerset.

November 17 is the date for the Center's **"Evening of Science and Celebration."** Our keynote lecture is from Dr. Kristine Urschel from the University of Kentucky, who will discuss protein needs for the high level performance horse. Information for this event can be found here.

All the 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 2016 - 2017 EVENTS

### 2016 Evening of Science & Celebration

Thursday, November 17, 2016

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

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

### The Equine Science Center Presents: Horses 2017

March 18-19, 2017

Livingston Student Center  
84 Joyce Kilmer Avenue  
Piscataway, NJ 08854

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

### Junior Breeders Symposium

Saturday, April 1, 2017

Former Agricultural Museum of NJ  
Cook Farm  
Rutgers, The State  
University of New Jersey  
New Brunswick, NJ 08901

[carey.williams@rutgers.edu](mailto:carey.williams@rutgers.edu)

### Ag-Field Day Part of Rutgers Day

Saturday, April 29, 2017

Red Barn - Cook Farm  
Rutgers, The State  
University of New Jersey  
New Brunswick, NJ 08901

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

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

# From Iraq To New Brunswick, New Jersey: How A Love Of Animals Changed A Life

(Continued from Pg. 1)



Janabi's family celebrating their son receiving his "Doctorate of Kindergarden."

fact that it could be transferred to humans through the aerosolized form of the bacteria, which is to say if the cow coughed or sneezed near humans.

With his interest in bacterial sciences, Janabi started to look at clinical science as a path to investigate ways to treat some of the issues that he was seeing in his patients. Even though his patients couldn't speak to him, a benefit that doctors with humans as patients have, he wanted to find a way to give his patients a voice, to speak on their behalf.

This opportunity came in the shape of a program that the Iraqi government was running, the "The Higher Committee For Education Development in Iraq" (HCED), which would enable Janabi to travel to the United States to study and receive a higher degree.

Committing to a 5-year program in cooperation between HCED and Rutgers University, Janabi would travel to New Jersey to begin doctoral studies in the field of microbiology. But he wouldn't be traveling alone, his wife Rana Jaber Tarish Al-Baghdadi was also accepted into the Rutgers Endocrinology & Animal Biosciences program to work towards her doctorate. They would also be traveling with their small son, who Janabi says would be working on his "Doctorate of Kindergarden".

So in January of 2012, Janabi and his family arrived in the United States and would call Rutgers University home for the next five years.

One would think that the Department of

have been a "perfect fit" for Janabi, but the department conducted no clinical or large animal studies, something that he missed dearly.

While he began his work rotating through the labs of Lori White, in the Department of Biochemistry and Microbiology, and Dina Fonseca, in the Department of Entomology, Janabi was increasingly frustrated that he couldn't follow his passion of researching the role of microbes in the health of large animals.

In the spring of 2014, after meeting with Ken McKeever and Karyn Malinowski in the Department of Animal Sciences, along with Jan Onishi, a visiting professor at Rutgers, a plan was made to get him back to his passion.

It was decided that Janabi would continue to satisfy the Iraqi requirements of pursuing a degree in microbiology, but he would add a mentor to his project who was currently using horses for research, Ken McKeever.

McKeever's lab would allow him to work with large animals again, and mentors in microbiology would allow him to continue his work in the field of microbiology.

Janabi would examine how the gut microbiome, (communities of microorganisms in the gut of humans and animals), is affected by exercise. He would investigate the effects of acute, intensive exercise on the horse's gut microbiome, before and after 12 weeks of exercise training, to be measured by the relative

abundance (percentage) of certain bacteria within the microbial community.

For Janabi, as well as the professors that he was working with, this was a very exciting prospect. The microbiome in relation to the effects of exercise had never been studied in horses. “The microbiome is a ‘hidden’ organ in the body whose relationship is important to the healthy condition of the horse,” said Janabi. But as he started to get some of his results back (after many, many weeks of collecting samples and running tests) he started to notice something about the way in which the bacteria were acting inside the horse.

“The bacterial community changes that may help the host obtain more energy” said Janabi. This is important because bacterial fermentation produces short chain fatty acids which act as a much needed energy source for horses exercising intensively, such as during racing.

Bacteria in the gut are affected by the environment within the gastrointestinal tract of the horse and the condition of the horse and its respective physiological state impact the gut’s microbial population.

One might think that with intensive exercise the horse’s gut environment would change because fluid shifts occur from the gut to the circulation to enable the horse to cool properly.

What Janabi was finding was that the microbiome was changing in such a way that may have permitted higher levels of bacterial fermentation, in turn giving more energy to the horses. Changes that occurred in certain bacterial groups were mostly in the beginning of the training period, and eventually tapered off towards the end of his study.

He was also finding that a change in the microbiome may have also helped to get rid of Reactive Oxygen Species (ROS), produced by the host during exercise, known to be detrimental to an athletic horse due to increasing fatigue.

After speaking with his mentors, and going over all of the data, he believed that the reason that the major changes in the microbiome occurred towards the beginning of his trial was because the horses’ bodies were trying to maximize energy output. Once

this maximization had occurred, and the horse’s body had become more “fit” due to the exercise, the horse required less energy to achieve the same output.

This can be seen in humans during weight training. For the first few weeks a fifty-pound dumbbell might seem impossible to lift more than a few times, but as you continue to work out your body becomes more “fit” and you are soon able to lift a fifty-pound dumbbell with less stress on the body and using less energy.

Janabi found something interesting about the microbiome at this point in the experiment. As the horse was requiring less energy, the microbiome was producing less fermenting bacteria or plateauing with the number that it already had.

This could show a correlation that there no longer needed to be a massive increase the number of short chain fatty acids because the horse was requiring less energy.

While Janabi’s findings have produced 3 scientific papers already, being published in the Journal of Comparative Exercise Physiology, the Journal of Microbiological Methods, and one under peer-review, this project has come to an end for him.

“Ali has been a hard working member of the team in the Equine Exercise Physiology Laboratory,” said McKeever, his mentor. “His exciting and groundbreaking work on the microbiome is providing important information for horse owners, trainers, and veterinarians alike. We will all be sad to see him go.”

He has successfully defended his Ph.D. thesis and will now prepare to move back to Iraq with his family (both now holding doctorates from Rutgers).

Both Janabi and his wife will join the faculty at Al-Qadisiya University in Al-Diwaniya, Iraq. While both will teach at the Veterinary School, Janabi will specialize in clinical science & internal science, and his wife will focus on physiology.

Janabi hopes that one day his time at Rutgers can be expanded on, possibly with some help from the Arabian Horse Center at his new university, but for now he is looking forward to being a teacher and to start the next chapter in their lives.



# IN MEMORIAM

## PATRICK D. GUIRNALDA

1974 - 2016



**P**atrick D. Guirnalda, a graduate of Rutgers, BS Animal Sciences 1997 and MS Animal Sciences 2000, passed away unexpectedly while vacationing with family in California on September 8.

While only 42 years of age, Dr. Guirnalda had made a difference in and impact on the lives of many people, including those of us in the Cook Community who worked with him.

He leaves behind his beloved wife, Radhika Goenka of Shrewsbury, Massachusetts and his mother and brother of Elizabeth, New Jersey.

During his time at Rutgers, working with Karyn Malinowski on pivotal trials investigating the effect of equine somatotropin in old horses, Patrick quickly developed his innate love of science and after leaving Rutgers, Patrick went on to receive a Ph.D. in Animal Biotechnology and Biomedical Sciences from the University of Massachusetts – Amherst in 2008.

Patrick went on to become a Postdoctoral Researcher/Fellow in the Department of Microbiology at the University of Pennsylvania from 2007-2012 where he identified immunomodulatory properties of Listeria-based anti-tumor vaccines that target tumor associated antigens and vasculature in implantable tumor models.

He then took a position as a Research Associate in the Department of Medicine at the University of Pennsylvania where he investigated immunoregulation

of the tumor microenvironment following administration of anti-tumor immunotherapeutics in preclinical mouse models of pancreatic ductal adenocarcinoma.

At the time of his untimely passing, Patrick was employed as a lab head of cancer biology research at Bristol Myers Squibb in Princeton.

His MS mentor, Karyn Malinowski remembers the first time Patrick arrived at the horse barn to take blood samples from his research horses. “He arrived dressed impeccably in dress shoes and trousers, and a leather jacket topped off with a white scarf. I remember saying, “where are you going dressed like that?”

Patrick also didn’t drive and one could see him constantly ‘strolling’ between Bartlett Hall and the Ryders Lane Barn. Every day he took the train from Elizabeth to New Brunswick and would then walk across town to campus.

Malinowski remembers the time he scared the wits out of her when he showed up at 2 o’clock in the morning outside her office in Bartlett Hall during Hurricane Floyd to help her with a 24 hour experiment. “The storm was so bad that I couldn’t get home for three days afterwards due to the flooding. But Patrick arrived in New Brunswick, in the middle of the storm, in the middle of the night”, she remembers fondly. “Patrick truly was unflappable.”

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

# Science & Celebration

Thursday, November 17, 2016

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

- Keynote - Dr. Kristine Urschel from the University of Kentucky
- 4-H Roundup Team Presentation
- Equine Science Center Presentations
- Spirit of the Horse Award
- Gold Medal Horse Farm Award



## Event Registration Closes!

THURSDAY, NOVEMBER 17<sup>TH</sup>, 2016

To register, please go online to [www.goo.gl/xEANWt](http://www.goo.gl/xEANWt)

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

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# RUTGERS

New Jersey Agricultural  
Experiment Station



Michael Westendorf

GOLD MEDAL  
HORSE FARM



Karyn Malinowski

CENTER  
HIGHLIGHTS



Kristine Urschel

PROTEIN NEEDS  
FOR EQUINE  
ATHLETES



Carey Williams

HORSE DIET  
FADS



Kenneth McKeever

EXERCISE & GUT  
MICROBIOTA

For  
Release



Ergon Equine Ltd. use the Exercise Physiology Lab

Lab Notes - McKeever

# From The Lab:



## TOP 5 FACTS ABOUT SADDLE-FITTING

#1

Like many athletes, racehorses are subject to high rates of injury during training and racing, with the back being a common area of injury.

#2

The role of the saddle is to provide a mounting point for the stirrups, and to distribute the load of the rider along the horse's back.



# Using 3D Scanning to Better Fit A Saddle

In July, a research team from the UK led by Dr. David Marlin, Science Supplements, and Trace Ward, Co-founder and CEO of Ergon Equine Ltd. came to the Equine Exercise Physiology lab for a two day dynamic 3D study that took previous state-of-the-art one step further, drawing on cutting-edge technology adapted from the motion picture industry. Dynamic 3D scanning enabled 3D video to be obtained, potentially allowing researchers to identify and extract shape changes between different phases of the stride. This detailed movement data will give us additional insights into the ways in which we can improve saddle function and enhance horse health and performance.

Like many athletes, racehorses are subject to high rates of injury during training and racing, with the back being a common area of injury. The role of the saddle is to provide a mounting point for the stirrups, and to distribute the load of the rider along the horse's back. However, existing racing saddles have been shown to regularly exceed the pressures that are known to cause pain and damage and lead to a shortened stride. This detrimental effect on the performance and health of racehorses has a significant cost to racehorse owners, trainers and jockeys.

Previously, custom fitting a saddle to a horse involved taking three basic measurements from the horse's back 1) in a line from just behind the shoulder up and over the withers; 2) at T18; 3) a measurement of the curvature of the horse's spine would also be taken, from the withers to T18. More recently, 3D scanning technology has allowed detailed topographical information to be obtained, allowing for an improved match between the 3D 'photo' of the stationary horse and the static saddle frame.

This is the first time that work of this kind has been attempted, and it would not have been possible without the invaluable support and cooperation from Ken McKeever and Karyn Malinowski, along with thoroughbred racehorse owners Gale Thompson and Judy Batcha from whom we borrowed the horses needed for the study. This work required a high-speed treadmill, experienced operators, and sensible thoroughbred horses that were able to run safely without a harness. Also critical to the success of this study were the very capable students who did such a great job training, preparing, and running the horses on the treadmill for this study.

## #3

**However, existing racing saddles have been shown to regularly exceed the pressures that are known to cause pain and damage and lead to a shortened stride.**

## #4

**Previously, custom fitting a saddle to a horse involved taking three basic measurements from the horse's back.**

## #5

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# Meet the new members of the Rutgers University Teaching Herd (RUTH)

**A**t the end of 2014, we decided that Rutgers Animal Science students needed a dedicated teaching herd of horses that were more diverse in breed than our Standardbred research horses.

So a group of Animal Science faculty started the Rutgers University Teaching Herd or RUTH.

We retained two of our older Standardbred mares that were everyone's favorite. No Kidding Marcie and Molly, are 18 and approximately 24 years old, respectively. They help novice students learn about safe handling of horses.

This fall we would like to introduce you to two new members of RUTH.

Wiser (Jockey Club registered name is Wise Investment) is a 11 year old Thoroughbred gelding who raced when he was younger, but suffered a fracture that ended his career and he went back to his owner for some rest and recovery.

Wiser came to us through Ken McKeever's research. He was performing a study this past summer with a few borrowed Thoroughbreds and Wiser quickly became a barn favorite. When it was getting time to end the research we asked the owner if she would think about donating him. Fortunately she said yes and Wiser is now a RUTH horse.

Our fourth and newest horse is Gus. Gus is a 25 year old Paint gelding who was donated to us the end of August from his owners who said he was unable to continue jumping in their lesson program due to lameness.

However, Gus is an outstanding addition to the RUTH herd because of his patience on the ground with novice students. In the past Gus had been used for horse camps and was used to small children climbing around him learning how to groom and handle horses.

The four RUTH horses have started their semester of teaching with Dr. Eli Perris, Rutgers Part-Time Lecturer and the owner of Perris Equine Practice in central New Jersey.

Dr. Perris started teaching our Horse Management Laboratory that instructs students



*(Previous Page) New teaching horse, Wisier (Wise Investment), an 11 year old Thoroughbred.*

*(Top Left) New teaching horse, Gus, a 25 year old Paint gelding.*

*(Top Right) Molly with her 2016 Animal Handling and Fitting student Sarah.*

*(Left) Marci with her 2016 Animal Handling and Fitting student Caitlin.*

about the management and care of horses from handling and restraint, to dentistry and emergency care.

Guest lectures for the course include Carey Williams teaching the students about evaluation and selection of horses and form to function, and Sarah Ralston talking about nutrition including evaluating hay and balancing a ration.

Future classes the RUTH horses will be

used for include Horse Practicum, Livestock Evaluation and Selection, and the very popular, Animal Handling and Fitting where the horses are shown on Ag Field Day.

In the spring we will be getting temporary foster RUTH horses for our Animal Handling and Fitting class. One of the best parts of this teaching program is that at the end of the year the horses can be adopted during Rutgers Day!



## Student Spotlight: Kate Goodman

**K**ate Goodman was a typical horse crazy young woman when she began looking for colleges/universities, where she could get the training to be able to make a career out of her passion.

Her aunt trained Standardbred racehorses at Pompano Park in Florida where Kate visited often. Little did she know that she would be back working with this magnificent breed while working in the Equine Exercise Physiology Lab.

While on a brief internship at Cornell University in Ithaca, she realized that the horse program at Cornell was not of the caliber as that of Rutgers so, as a New Jersey resident, she “settled” for the Animal Sciences program

at the School of Environmental and Biological Sciences at Rutgers University.

Her mother was very pleased with the fact that Kate would be paying “in-state” tuition and still receive a high quality education.

Kate also received several academic scholarships during her four years of undergraduate work.

Initially Kate was enrolled in the pre-vet option, but later realized that she was more interested in the research side of animal science.

Kate’s independent research studies began with Sarah Ralston and the Young Horse Teaching and Research Program, where Kate learned to train a young yearling which

previously had little handling by humans, participated in nutrition research, and showed a young horse on Rutgers Day's Ag Field Day.

During her undergraduate career Kate also served as President of the Rutgers University Equestrian Team for two years.

Kate graduated from Rutgers with a BS in Animal Sciences in 2015. She enrolled in the Rutgers' Professional Science Master's Program with a concentration in drug development and discovery.

During 2015-16 Kate has been leading a clinical trial in Ken McKeever's lab. In talking about this research experience Kate said, "This has been an amazing opportunity that has allowed me to develop my skills more than I could have ever imagined. I have been able to practice techniques and perform procedures that have made my friends in their first year of medical school jealous."



Kate showing a stock horse "in hand" at a RUET event.

Kate's future plans are to go onto veterinary school because she realizes that to conduct research in animal products development, a veterinary degree is preferred by many within the industry.



The Equine Exercise Physiology "gang" on Ag Field Day with Gentleman before he took a run on the High-Speed Treadmill during the Center's Treadmill Demo.

# Department of Animal Science Academic Update



**T**he Animal Science undergraduate program remains the most popular program at Rutgers University, the School of Environmental and Biological Sciences (SEBS) with over 400 upper class students enrolled as majors.

The Departmental Curriculum Committee, comprised of Kathleen Rahman, Wendie Cohick, Carey Williams, Sarah Ralston, Barry Jesse, and Carol Bagnell, has implemented several changes to the program.

Beginning in Spring 2016, the Companion Animal Science, Endocrine Physiology and Health Science, and Equine Science minors are no longer offered and the single, Animal Sciences minor was revised to include all elective courses under the old minor curricula.

In addition, a new, comprehensive assessment of all

Animal Science courses was designed, approved and implemented for the 2015-2016 academic year.

As part of this annual assessment, a new Senior Exit Survey was drafted and circulated to graduating seniors. Results revealed that over 90% of students were happy selecting Animal Science as their major and rated the quality of our teaching as high.

Over 85% of students agreed that our program was challenging and prepared them well for future career plans. After graduation, the majority of students were planning on attending veterinary school (40%) while others were seeking employment (37%).

Of those seeking employment, the majority of students were interested in veterinary or research technician positions within private veterinary clinics, pharmaceutical companies, or government organizations.

To advance our curriculum offerings, two new courses were approved: Animal Assisted Therapy and Horse Management Laboratory.

Animal Assisted Therapy, with Professor Jennifer Tevlin, was such a success in the Fall semester that it is now offered in the Spring semester as well.

Horse Management Laboratory, with Dr. Elias Perris, is new for this Fall 2016 semester, but is already very popular among the undergraduates as indicated by it closing within the first days of registration.

Dr. Perris is also the sole course professor for Advanced Equine Health Care and Management. Students marked this advanced equine class as being a favorite among the courses offered in the Spring 2016 semester.

Overall, this is an exciting time for the Animal Science undergraduate program. The 2016-2017 academic year will surely be a success!



SAVE THE  
DATE!

**MARCH 18 - 19, 2017**

# HORSES

2017

THE BEST OF THE BEST

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