

Hoofbeats

The Official Newsletter of the Penn State Equine Research Team

VOLUME 2, ISSUE 1

DECEMBER 2013

Welcome Back to *Hoofbeats*!

Hello Everyone!

My name is Samarah LaFoca and I am the 2013-2014 PSERT Alumni Relations officer. In addition to contacting and communicating with PSERT's alumni, my major duty is to create this year's issues of *Hoofbeats*.

I am excited to have the opportunity to combine all that PSERT is doing into our newsletter to keep you, our alumni, updated.

PSERT has had a suc-

cessful year thus far, and we are looking forward to another successful semester! In this issue of *Hoofbeats*, I will briefly highlight the studies on which PSERT members have been hard at work, describe PSERT's Spring 2013 project and our trip to the PSU Diagnostic Lab, and give you a glimpse into what PSERT has planned for the spring semester.

I'm already looking forward



The 2012-2013 Penn State Equine Research Team (Photo credit—Mr. S. Shane)

to writing the next issue of the newsletter! Thank you for your continued interest in PSERT's endeavors!

Inside this issue:

Welcome	1
Current Projects	1
PSU Twin Foal Study	2
Pre/probiotic Study	2
Diagnostic Lab Visit	3
2014 Research Symposium	3
Spring 2014 Study	3

PSERT's Current Projects

As always, many of our members are hard at work to complete their research projects. Here's a brief intro to some of the current projects!

◊ **Amy Kraus** is working with Penn State's Metabolomics Core Facility to analyze urine samples taken from Katie Norris's gastrointestinal permeability study. Through LC-MS analysis, Amy is looking to find differences between horses fed high concentrate and high forage diets that indicate perturbations to biochemical pathways and lead to metabolic diseases.

- ◊ **Sam Nissley and Kira Hydock** are working on a fecal pH study, which began as a sub-study to Katie Norris's hindgut acidosis study. They conducted this study to learn the most efficient and accurate way to determine fecal pH using horse feces. After collecting 20 fecal samples and running 400 subsamples through four different protocols (i.e. ratios of water to feces to determine pH), they are now working on writing up a technical note on their findings.
- ◊ **Alyssa Williams** is analyzing a large dataset of veterinary records to determine if there is an association between date of birth and risk of developing skeletal abnormalities in young thoroughbred horses using Statistical Analysis Software.
- ◊ **Danae Oliver** is analyzing fecal samples from Katie Norris' study using GC-MS to investigate how different diets—forage and grain—affect microbial populations in the horse's hind gut and thus alter the presence and levels of VFA's.

Continue to follow PSERT's projects, events, and activities online!

◆ **PSERT Website**

<http://agsci.psu.edu/clubs/psert>

◆ **Facebook:**

The Penn State Equine Research Team

PENN STATE



Equine Research Team



PSU Twin Foals Provide Opportunity for Research

As most of you probably know, twin foals — one colt and one filly — by PSU Dynamic Krymsun were born out of PSU Shadows Bonita in April.

Naturally, with the birth of the foals, Dr. Staniar began to consider how we could use this rare occasion as an opportunity for research. He collaborated with one of PSERT's members, **Sheila Zimmer**, to come up with a plan.

Sheila has been keeping track of the foals' growth rates since they were born, and they are now being weighed once a week. Needless to say, they are getting very comfortable with the scale!

The foal's growth data is being compared to the growth rate and average daily gain of a sample of foals from single pregnancies. Sheila is hoping her data will be useful in comparing the growth of twin

foals in the future.



Sheila with the twins, a filly (right) and a colt (left), in September.

PSU Mares and Foals Used to Evaluate Passive Immune Transfer

In the Spring of 2013, Dr. Staniar and PSERT received an opportunity to perform research for Buckeye Feed Company. **Ashley Sutton, Molly Jordan, and Patricia Ochonski** were chosen to be the leaders of the resulting Pre/probiotic Study, which utilized a pre/probiotic product developed by Buckeye. The study used 14 PSU broodmares and their foals; 7 mares were fed a control concentrate feed, and the other 7 were fed the same feed supplemented with the pre/probiotic supplement. The goal of the study was to evaluate the degree of passive immune transfer from mare to foal, and to compare the degree of transfer between the two test groups.

In order to measure the amount of passive immune transfer, colostrum and fecal grab samples were collected from the mare and blood and saliva samples were collected from both the mare and foal. The blood and saliva samples were taken just after parturition before the foal suckled ("pre-suckle"), and when the foal was 24-36 hours old, 1 week old, and 2 weeks old; the colostrum samples were taken pre-suckle and when the foal was 24-36 hours old and 1 week old; the mare's fecal samples were taken when the foal was 24-36 hours old, 1 week old, and 2 weeks old. The mare's samples would be compared to the baseline blood and saliva samples taken before they gave birth.

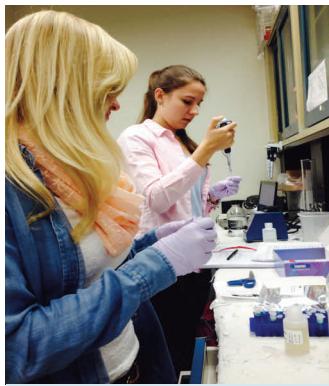
PSERT members who had completed their IACUC training had the opportunity to take shifts on foal watch at the PSU

horse barns throughout the foaling season, and to help collect and process the samples for the study. The last mare on the study gave birth in late April, and Ashley began to organize and run the blood samples in early May.

Over the summer, Ashley learned how to best use Bethyl Horse IgGa, IgGb, IgG(T) Quantitation Sets to evaluate the amount of IgG immunoglobulins in the blood samples, which had been spun down to obtain serum. Ashley has since finished running the blood samples, and is in the process of comparing the data from the two test groups.

Patricia and Molly have been working together to successfully analyze the amount of salivary secretory IgA in the saliva samples using Salimetrics Salivary Secretory IgA Enzyme Immunoassay Kits. They are still in the process of analyzing their samples, but hope to finish the assays early in the spring semester.

The Pre/probiotic study is an example of the opportunities to cooperate with companies in the equine industry to explore topics that have yet to be studied in-depth. Dr. Staniar, Ashley, Molly, Patricia, and the rest of PSERT's members are excited at the prospect of the study's potential to yield statistically significant results that could affect breeding management programs throughout the equine industry.



Samarah LaFoca collecting a saliva sample.

PSERT Visits the PSU Diagnostic Lab



Thanks to collaboration between Dr. Staniar, Dr. Ed Jedrzejewski, and the PSU Diagnostic Lab, 20 PSERT members had the opportunity to observe an equine necropsy in late October.

The necropsy was conducted by Dr. Arthur Hattel and Dr. Jenny Fisher on one of the aged broodmares from the PSU horse barns. The extent of the necropsy was impressive — the mare's gastrointestinal tract, reproductive tract, kidneys, liver, spleen, respiratory tract, and head were available for us to examine and relate to the information we've learned in class.

Dr. Hattel and Dr. Fisher

took the time to explain the physiology and pathology of each organ and organ system to us. The necropsy revealed the mare as having been healthy before she was euthanized—a testament to the knowledge, expertise, and management practices utilized at the PSU horse barns. While at the diagnostic lab, few of the members also learned how white tailed deer are tested for chronic wasting disease (CWD). On behalf of PSERT, I would like to thank Dr. Ed, Dr. Hattel, Dr. Fisher, and Dr. Staniar for giving PSERT this unique opportunity! Also, thank you to **Janelle Musser** for taking these awesome photos!



Dr. Fisher explaining the respiratory tract.



Plans for 2014 Undergraduate Research Symposium Underway

Beginning in the Spring 2011 semester, PSERT has participated in a yearly Undergraduate Research Symposium, which began as a collaboration between PSERT Virginia Tech University. Ohio State joined the symposiums in 2012.

Past symposiums were held at each of the three universities and included poster presentations, tours of each school's equine facilities, wet labs, and a dinner to accom-

pany a keynote speaker, who was a researcher in the equine field.

This year, PSERT is planning to both include The University of Kentucky in the symposium and change the format of the symposium. We are planning to travel to Lexington, KY, where we will meet with UK, OSU, and VT. The symposium will include poster presentations and tours of the UK Gluck Eq-

uine Research Center as in past symposiums. Unlike past years, the trip will include tours of local equine businesses and attractions. Some tours on the preliminary list includes:

- ◊ Rood and Riddle Equine Hospital
- ◊ Keeneland racetrack
- ◊ Kentucky Equine Sports Medicine and Rehabilitation Center (KESMARC)

◊ Winstar Farm
Molly Jordan, our UPAC Liaison, and a few of the other officers have begun the paperwork to receive university funding for the trip, and we hope to have our itinerary finalized early next semester.

The final details of the 2014 Symposium will be included in the next issue of *Hoofbeats* — be sure to check it out!

Growth Study Planned for Spring Semester

Beginning in the spring, PSERT will be conducting a growth study to characterize the weights and linear measures of Quarter Horse foals using PSU mares and their 2014 foals. The PSERT growth study leaders are breaking into groups to oversee the study of three areas related to growth. One group will weigh and measure the mares' placentas, a second

is going to measure and examine foal hoof growth and development, and the third group will take linear measurements of key growth areas such as withers height, hip height, body length, and several others. So far this semester, the growth study leaders have begun developing protocols for their respective sub-studies, which are necessary for the IACUC pro-

posal. After making a few more finishing touches to the proposal, the leaders will be ready to submit the proposal for approval. Details from the spring study will be featured in the spring issue of *Hoofbeats*, so be sure to check back to see how the study is progressing!

Thank you for reading the most recent issue of *Hoofbeats*!

If you know anyone who would like to be added to the PSERT alumni list or would like to receive the newsletter and PSERT updates, please contact Samarah LaFoca at sml5418@psu.edu.

Happy Holidays!