From Moo to Ewe

The Pre-Vet Club Newsletter

September/October 2016

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PVC'S UPCOMING EVENTS:

- Oct. 3rd - Cedar Point Meeting (Davis 2225)
- Oct. 24th - Study Abroad Meeting (Thailand/Japan)
- Oct. 17th - PVC Meeting - Speaker (Dr. Guggenbiller)
- Oct. 17th - 21st - Popcorn Fundraiser

Contributors: Rebecca Berton, Michaela Breece, Jordan Cameron, Darian Gordon, Tessa Jenkins, Ashley Long, Emily Martinez, Kylie Miller, Heather Reist, and Lindsey Skinner

From the Editors' Desk

Hello! We hope everyone is having a great start to the school year. It is already the seventh week of the semester and many students are off to a great start! First year animal science and pre-veterinary medicine students are getting lots of hands-on experience in their animal handling classes. Sophomore, junior, and senior class students have also been busy taking classes that involve weekly barn duty as well as participating in production classes.

We are excited to share with you the first edition of the Pre-Vet Newsletter, *From Moo to Ewe*, for the 2016-2017 school year. We invite you to browse through and read the articles that many talented Pre-Vet students have submitted. Each contributor did an excellent job on the article(s) and we appreciate all their hard work and dedication!

We hope that you enjoy the newsletter! If you are interested in contributing to the November/December newsletter, please contact either of us (reisth@findlay.edu or reistk@findlay.edu). Good luck with midterms and have a great Fall break!

~Heather & Katelyn Reist

I Love My Pet!

Tessa Jenkins

I believe everyone in this world has someone they're destined to be with for the rest of their life; someone they can bury their soul to, who will love them no matter what. Some people are lucky enough to meet their person early on in their lives and decide this is who they want to grow old with. I'm eighteen and know of a couple my age who just got married. When I heard the news, I stood in front of the mirror and just looked at my reflection; my blue hair was in disarray, it was noon and I was still in my pajamas and I had dark circles under my eyes from sleep deprivation due to late night Netflix marathons. But before a single minute was up, I heard a familiar whining meow that only sounds when its owner is hungry, bored or knows I'm thinking (so basically, all the time; he never shuts up). Knuckles is his name and he's my cat.

At the sound of his cry, I turn around and see him looking up at me, his big, round yellow-green eyes a stark contrast against his ink-black fur. He never lets me be sad. I can't help but smile whenever he looks at me with those wide eyes because I'm reminded of the first time I met him.

He was three days old and living in the unused employee bathroom at the local animal rescue back home with his mom and four other siblings. My mom works at the rescue and after school one day, insisted I come meet this new litter of five kittens and their mom that had just come in the other day. I agreed to come and she led me through the shelter, opened the bathroom door and I followed her inside.

"Her name is Symone" my mom nodded toward the momma cat who was nursing her babies. "But *check this out*" she said excitedly and moved to kneel in front of the kitten pile. Gently, she removed one of the kittens from Symone and held it gingerly in her hands in front of my face. I smiled at the little black kitten she held in the palm of her hand.

"No, *wait*" her grin got wider as she repositioned the kitten so she could hold it in one and lift one of its paws with the other. I watched on as she spread out its toes with her fingers.

"*Whoa*" was all I could muster. This cat had a crazy amount of toes, I'd never seen anything like it before; its foot looked like a big blob with claws, rather than individual toes.

"It's called '*polydactyl*'" she gushed. "and *four of them have it*."

"No way…" I said absently as I counted the toes. *Seven*. Normal cats have five on their front paws and four on the back. This dude had seven and five.

We took the litter and their mom home that night where they lived in my room for the next few months as they grew up. That's right, I had with five kittens living in my room – it was awesome. We did some research on the polydactyl mutation and learned a little bit about it, including the fun fact that Ernest Hemingway had a thing for cats like this, too. Ever heard of the Hemingway Home in Key West, Florida, or the term "Hemingway Cats"? Look it up. He once had a cat named Snowball who had six toes who gave birth to more kittens with six toes and to this day, polydactyl cats live in his home, which is now a museum (and home to over 55 polydactyls).

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Poly, Digit and Hemmingway each had six toes (Hemmingway got an extra "m" in his name for his extra toe), Ernest had a normal amount of toes, and Knuckles had seven. Living with them in my room was a blast; they were fun to play with during the day and liked to cuddle at night. Poly slept at my side, Digit, Ernest and Hemmingway liked to sleep on my legs and stomach and Knuckles liked to sleep on the floor, as far away from everyone else as he could get. He acted like he didn't like me, but he always followed when I walked around the room and meowed for attention, so I knew he was bluffing.

Before I knew it, it was adoption time. They had all been spayed/neutered and vaccinated so it was time to take them back to the rescue so they could go to their forever homes.

The night before they had to go, I looked at the four that were curled up on the comforter around me and my eyes wandered about the room before landing on Knuckles, curled up in his designated spot on the floor against the wall and before I could process it all, I was bawling. I didn't want to send him back.

I loved how he followed me around my room. I loved how he brushed against my legs when he wanted to be picked up. I loved the single white eyebrow hair that protruded from his forehead that totally defied every other black hair on his body, and I loved all his toes as weird as it all sounds. He was so special and so unique and so perfect. I'd never had a bond so strong with any other foster we'd had before his litter like I had with him and I knew, I may likely never come across one again.

With this new surge of emotion, I wrote a letter to my mom and dad. They were asleep in the other room, so it wasn't like a real letter, just a really long and sappy note about how much I adore that cat and how much I wanted to keep him forever and ever. I then snuck downstairs and laid the letter on my mom's side of the kitchen table so she would see it when she woke up in the morning. Then I went upstairs again, scooped Knuckles into my arms and hugged him. I crawled into bed after that and he climbed up, too and later fell asleep on my face for the first time since we'd brought him home.

When I woke up the next day, my mom was already at work, my dad was working on the computer and my sister was watching TV. No one mentioned my letter. I went back upstairs and hung out with my kittens until around one in the afternoon when my mom came home from work and called me downstairs. She was in the kitchen so I sat down at the table and looked at her expectantly. She handed me a letter. I opened it and felt tears prickling at the corners of my eyes as I read what she wrote. When I looked up, my eyes brimming with happy tears, she held a small blue collar with a red heart-shaped tag suspended from a metal ring on it. Hands shaking, I reached out and touched the tag, it read "Knuckles" and my heart about stopped.

"I signed the adoption papers today at work." She smiled. Incapable of speech, I pulled her toward me in a bear hug and then turned and hugged my dad and sister as well. I ran up the stairs and told Knuckles the good news and put his new collar on him. He tried to eat it.

July 19th, 2014 was the day Knuckles became an official member of our family. He is now two years old in all his seven-toed glory with feet that look less like blobs and more like over-sized boxing gloves. He slept in my room every night, curled up against my side, on my chest, or his favorite – on my face so that I feel as though he's trying to suffocate me. He also likes to head-butt my nose as hard as he can. I've decided this is how he shows his affection – suffocation and head-butts.

Going to a college that's two hours away from home is hard on the both of us. I miss him so much and when I go home for a weekend, he ignores me for the first day as punishment for having left in the first place, but the following days, we're back to normal and he loves me again.

I may not be in a relationship or anything like nice like that, but I do have a cat and he loves me, no matter what he tells you. I know the cat lady stereotype and I know you're thinking it right now, so I just want you to know something: being a cat lady is pretty rad, you're missing out. And I may not have met who I'm meant to be with yet, but if you can have an *animal* soul mate, then I've found mine in Knuckles.

Gypsy Vanner World Show: A Life Experience

Jordan Cameron

Everyone knows the major horse breeds, such as the American Quarter horse, Thoroughbred, Arabian and the wild mustang. The horse breed that holds a special place in my heart is none of these. While I own a quarter horse, I would trade him in instant for one of these amazing horses. Gypsy Vanners are relatively small and compact. The best way to describe them is a shrunken Clydesdale with a Paint's markings. Vanners are a relatively new breed to the US and originally come from the UK and Ireland, where they pulled the colorful gypsy wagons. In the last 20 years they have travelled to the US and into my family. About 9 years ago my uncle bought a Gypsy Vanner named Huston for my aunt's birthday and from there our love for these beautiful horses began. Around this time last year, I received a call from my uncle and aunt asking if I would want to work at the Gypsy Horse Registry's World show in February. I didn't even have to think about it and I said yes. My aunt put me in charge of being the judges' assistant. To say that I learned a lot would be an understatement. The judges taught me not only what to look for in Gypsies themselves but what to look for in a good steady horse that is truly versatile no matter the task set before him.

Barn Bulletin

Heather Reist

When walking through the animal science barn, it seems as though spring has arrived early. There is the hustle and bustle of sheep with lambs, nannies with kids, sows with piglets, and cows with calves. If you listen closely you may even hear an occasional sound of Colby, the donkey. With all these babies come a lot of responsibility and learning opportunities. First year animal science and pre-veterinary students have had great experiences in their food animal classes. During the first few week of classes they learned the basics of animal handling by practicing tying knots and learning how to throw sheep.

A week later dozens of baby animals were born at the barn and were a part of their hands-on classes. The lambs, along with the goat kids, were ear tagged and vaccinated by students. In addition, the lambs' tails were docked. Each food animal class has the ability to "process" piglets. With the six litters of piglets (each litter containing roughly 10 piglets), the students kept busy ear notching, tail docking, teeth clipping, vaccinating, and supplementing. Although some students have very little experience with food animals before they arrive at Findlay, they learn a great deal within the first weeks of the semester that allows them to be comfortable and confident with performing basic procedures on the animals.

When not working with baby animals, students in the food animal handling class get practice trimming goat and sheep hooves. Although it may look easy, it can be a difficult task, especially with the sheep! Students use the throwing technique they learned the first few weeks of class on the sheep to allow the sheep to be in a relaxed position so the student can trim the hooves.

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Some junior and senior students taking Beef Production & Management Lab had the lucky opportunity to take care of a cow and her calf throughout the semester. In this class students have a cow/calf project in which they take care of the cow and the calf after it is born. Students are required to take care of the calf after it is delivered, keep track of their weights, give vaccines to the cow and calf, freeze brand the cows (as shown in the picture), and determine the body condition score of the cow. The Lowline calves are absolutely adorable! Within a few days they are already put out on pasture with their mothers to make more room in the barn for the other cows. This is a great experience for students to learn about the parturition process and the management of beef cattle.

On the other side of the UF farm is the western equestrian complex. It is at this barn that many freshman students in the animal science program are learning equine handling. This includes learning how to handle a horse, give a physical exam, draw blood, give vaccinations, and learn how to age a horse by its teeth.

Whether working with food animals or horses, first year animal science and pre-veterinary medicine students learn a great deal of information through hands-on learning.

Mad Cow Disease: An A-"moo"-zing Discovery

Lindsey Skinner

Bovine Spongiform Encephalopathy (BSE), more commonly referred to as Mad Cow Disease, is a fatal neurodegenerative disease in cattle that causes a deterioration of the brain and spinal cord, eventually leading to loss of mobility and eventually death. Until recently, little was known about the structure of this infectious prion protein. However, through recent advancements in electron cryomicroscopy, a three-dimensional model for the structure of the protein was discovered at the University of Alberta. This new insight to structure could help determine how the prion protein propagates, or reproduces. In turn, this information can lead to prevention techniques and treatments for affected animals. For now, this a-"moo"-zing discovery is a well-placed step forward for Veterinary Medicine.

***Contact editors for references.**

Pets are the Best Medicine!

Lindsey Skinner

Excluding those animals used for specific jobs, such as seeing-eye dogs or hippotherapy horses, animals as companions can have great health benefits. As just one example, having a dog gives more people an excuse to go on daily walks and in turn, this causes them to be healthier. In fact, in a 2002 study, it was found that those who keep companion animals have an overall lower blood pressure and a healthier heart, specifically under stressful situations. In another study, it was found that even just stroking a pet can help to lower blood pressure and cholesterol. According to the Centers for Disease Control and Prevention (CDC), pets can decrease your blood pressure, cholesterol and triglyceride levels, and alleviate feelings of loneliness. They also state that pets can increase socialization and outdoor activity opportunities. There are many organizations and websites dedicated to advocating for the use of companion animals to achieve a better overall health. However, there are no studies currently that state that any one pet is better than another. So, even if you live on campus and can only have non-dangerous fish, a beta is better than nada! Go and enjoy those pets!

North Carolina State CVM

Rebecca Berton

North Carolina State University College of Veterinary Medicine is located in Raleigh, North Carolina. The College of Veterinary Medicine was founded in 1978 and admitted the first class in 1981. According to U.S. News Education, North Carolina State is tied with Colorado State University in Fort Collins, Colorado, as the third best veterinary school in the United States (USNews). Their mission is "to advance the veterinary profession and animal health through ongoing discovery and medical innovation; provide animals and their owners with extraordinary, compassionate medical care; and prepare the next generation of veterinarians and veterinary research scientists" (NC State).

The curriculum at North Carolina State consists of three pre-clinical years of study and one clinical year as your fourth year. The curriculum starts out as a science basis and gradually moves toward a more veterinary medical application. Some focus areas that the college offers include equine practice, epidemiology, public health, food animal, laboratory animal medicine, mixed animal practice, pathology, zoological, and exotic animal medicine. There are also two combined degree programs offered. The two degrees offered are a DVM and MBA degree or a DVM and PhD degree (NC State).

There are many facilities on campus with modern technology and biomedical innovation. The campus consists of an ophthalmology, dermatology, oncology, surgery, orthopedics, cardiology, and neurology buildings for companion animals. There is also an equine and farm animal center, small animal emergency and internal medicine, pharmacy, large animal emergency, and a Veterinary Health and Wellness Center. The Veterinary Health and Wellness Center includes facilities for Avian/Exotic medicine, Behavioral Medicine, Dentistry, Rehabilitation/Mobility, and SA Theriogenology (NC State).

The in-state tuition for NC State is shown per year in the chart below, along with out-of-state tuition.

COLLEGE OF VETERINARY MEDICINE COST OF ATTENDANCE 2016-2017

Tuition and Fees	Year 1	Year 2	Year 3	Summer	Year 4
In State	$18,516	$18,516	$18,516	$15	$18,516
Out of State	$43,753	$43,753	$43,753	$15	$43,753
Books/Supplies	$2,000	$1,900	$3,865	0	$1,850
Living Allowance	$12,557	$12,557	$12,557	$6,500	$12,557
Personal/Travel	$4,890	$4,890	$4,890	0	$4,890
Loan Fees	$333	$333	$333	0	$333
Total					
In State	$38,296	$38,196	$40,161	$6,115	$38,146
Out of State	$63,533	$63,433	$65,398	$6,115	$63,383

What makes North Carolina State University College of Veterinary Medicine unique is that in 2016, the "pass rate for students to our College on the North American Veterinary Licensing Examination was 100% as compared to an 80% pass rate required by the AVMA Council on Education's Outcomes Assessment standard" (NC State). If you are interested in applying to North Carolina State University, their application is available through VMCAS or you can read about it on their website, https://cvm.ncsu.edu/.

One Health, Beyond Animals

Darian Gordon

When people hear the word "veterinarian", often the first image that comes into their minds is a person working with animals usually in a field or clinic setting, but a veterinarian can be much more than that. When a person receives their DVM, they are not restricted to a clinic, they have a variety of options. One up-and-coming area of veterinary medicine is public health.

What is public health?

Veterinary public health (VPH) encompasses more than just animals. The World Health Organization (WHO) defines veterinary public health as "the sum of all contributions to the physical, mental and social well-being of humans through an understanding and application of veterinary science." A term that is often used to describe veterinary public health is "one health." This term refers to the idea that veterinary medicine can be used to benefit human medicine and the health of the human population in general.

VPH's contributions to human health

Veterinary public health benefits human health in many ways. Veterinarians play a crucial role in human health when it comes to zoonotic diseases. Zoonotic diseases are diseases that can be passed between humans and animals, for example rabies. Of all the diseases that affected humans in the past ten years, seventy-five percent of them were zoonotic (World Health Organization). This is why healthy animals are crucial for healthy people. If veterinarians are able to manage disease in animals before it reaches humans, humans remain much healthier.

Veterinarians are very successful at bridging the gap between veterinary medicine and human medicine. This is because their schooling is very similar to that of a doctors but they are also educated in every species and have a background in comparative medicine. With this knowledge public health veterinarians have made huge contributions to research, zoonosis, and environmental health (King, 2006). Even though with a DVM there is enough knowledge to be involved in public health, there are other avenues that better prepare students.

Pursuing VPH

There are some veterinary schools that give you an option to get a master's in public health while getting your DVM. These programs range in length; some allow you to complete it in the same four years you are there for your DVM, some add an additional two years, and some are in-between. These programs give you the same veterinary knowledge, while educating you in the issues of public health. The additional classes would cover public health topics that complement the veterinary curriculums, such as epidemiology. These classes allow you to apply your veterinary knowledge to public health issues. Some veterinary schools that provide these programs include: Colorado State (5 years), Ohio State University (5 years), Oklahoma State University (4 years), and many others.

***Contact editors for references.**

Sea World: Getting Rid of Orcas

Ashley Long

A controversy about the movie, "Blackfish," has caused SeaWorld to dive deeper into the concerns of their orcas. The movie was based on the mistreatment of the well-known orca, Tilikum, and many others that called SeaWorld their home.

Joel Manby, the CEO of SeaWorld, has taken into consideration on why orcas should not be in captivity and has agreed that by 2017 in San Diego, they will begin to phase out the orcas. Earlier this year, SeaWorld has announced that they will discontinue breeding their orcas and performances, although they can be viewed by the general public in the tank pictured above according to theodyssey.com.

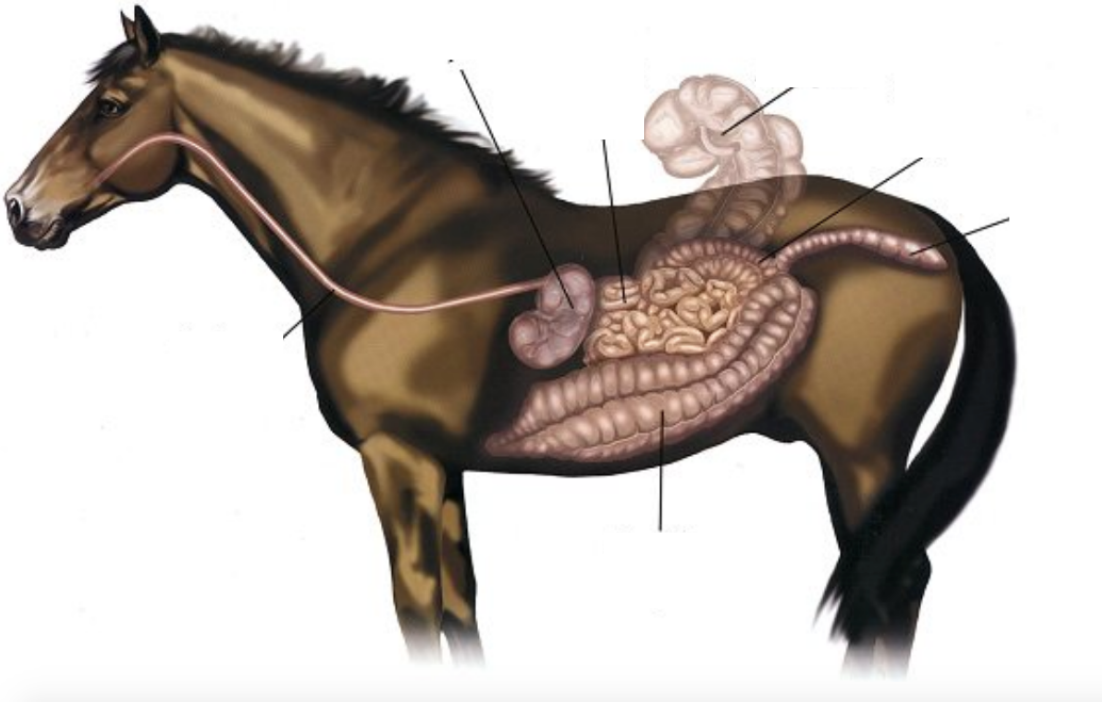
Although, the public will generally miss the orcas at SeaWorld, Manby agreed with the public that orcas should not be kept in captivity due to the health issues that kept reappearing in the orcas after being in tanks instead of the ocean. With a heavy heart, Manby said, "We've helped make orcas among the most beloved marine mammals on the planet. As society's understanding of orcas continues to change, SeaWorld is changing with it."

All of us love to view the orcas at SeaWorld, the staff understand that and share our grief and concern over the animals as we sadly say goodbye to one of our most favorite creatures of the sea.

***Contact editors for resources**

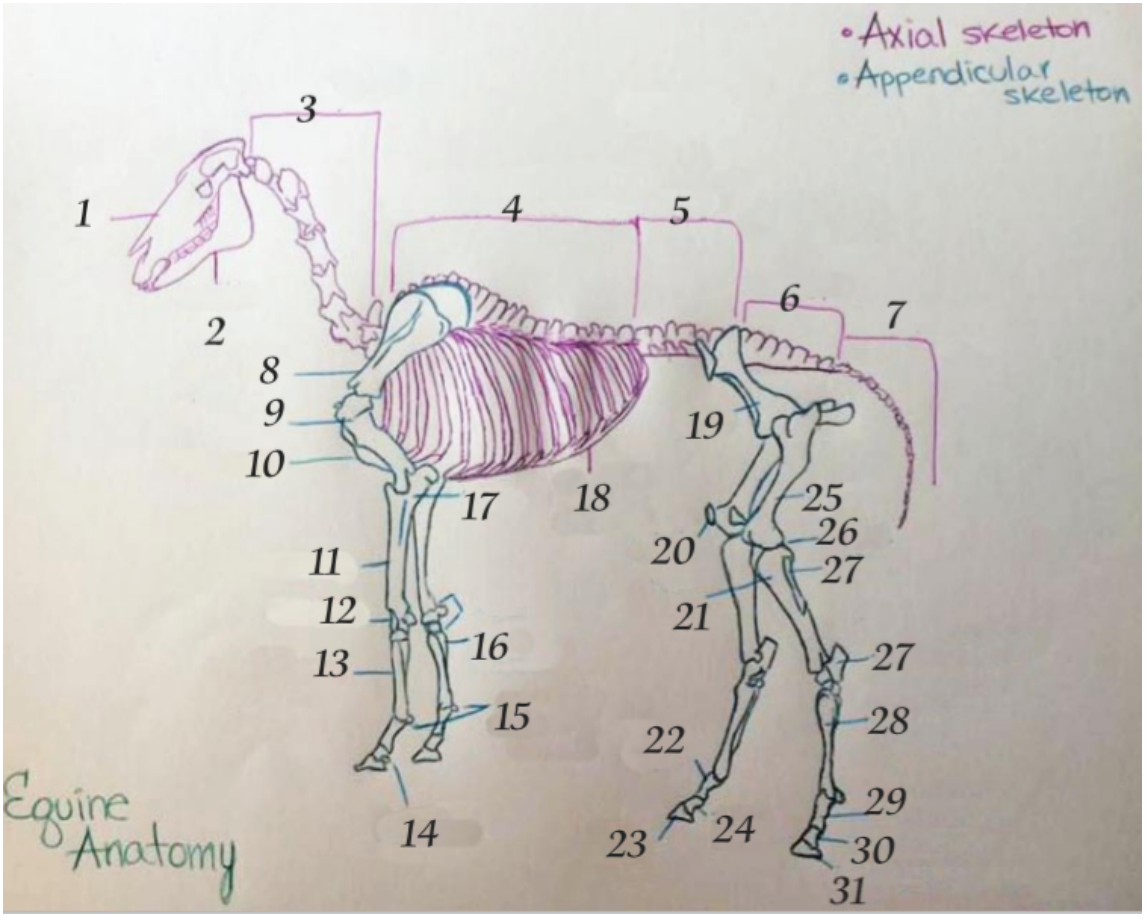
Gastrointestinal Anatomy of the Horse Diagram

Michaela Breece



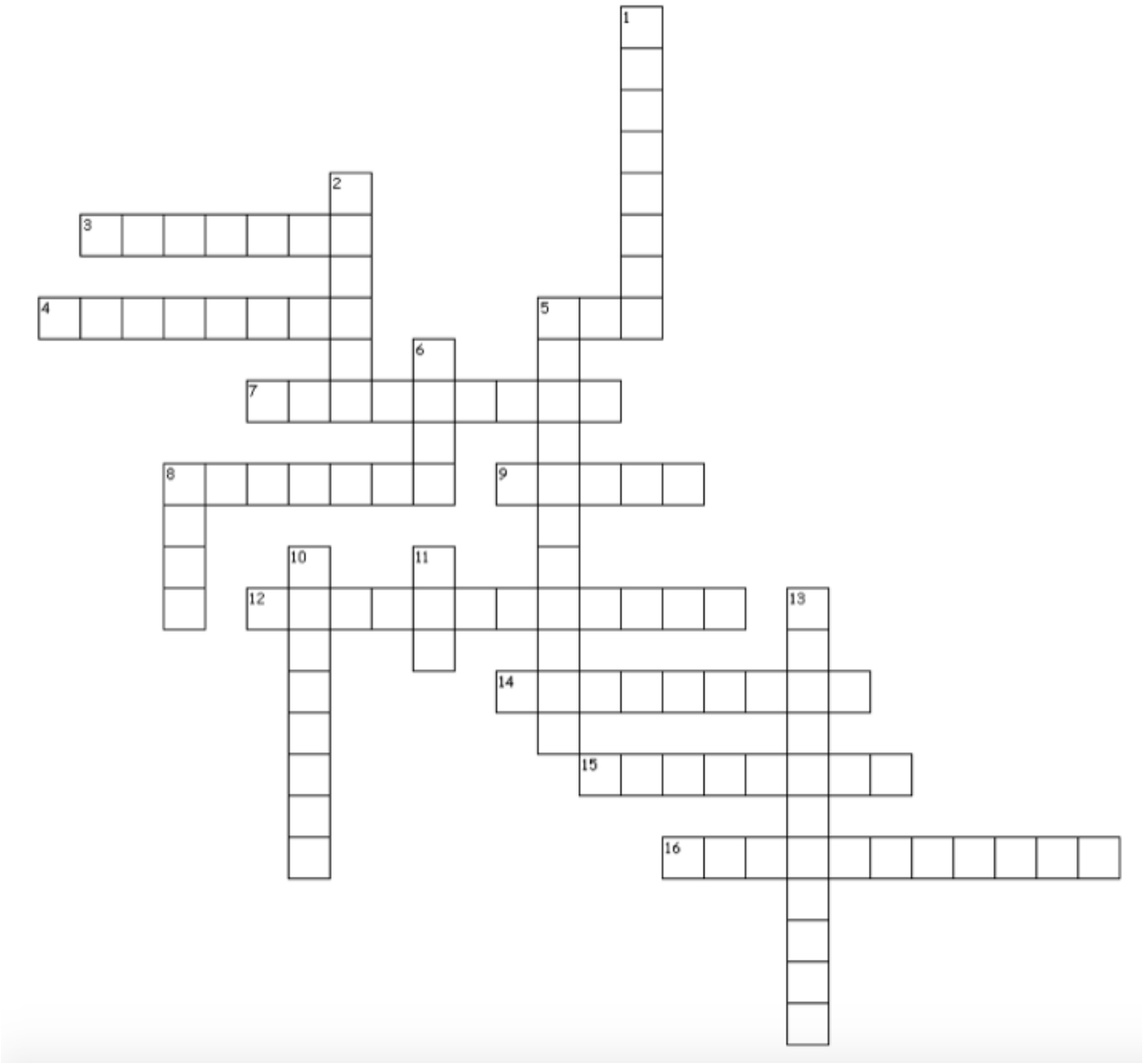
Equine Skeletal Anatomy Diagram

Kylie Miller



Vet World Crossword Puzzle

Emily Martinez



Across

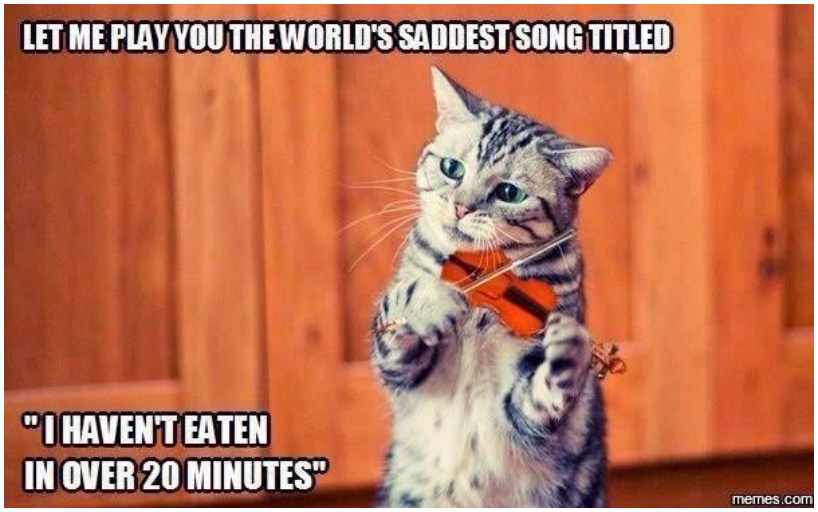
3. Main carbohydrate in milk
4. Adding bacteria to milk
5. Sexually mature female sheep
7. Upper jaw is longer than lower jaw
8. A young bull
9. Boneless Closely Trimmed Retail Cut
12. The physical form of an animal
14. Lower jaw sets out longer than upper jaw
15. Intramuscular fat within meat that adds flavor
16. Farming or rearing of aquatic plants and animals

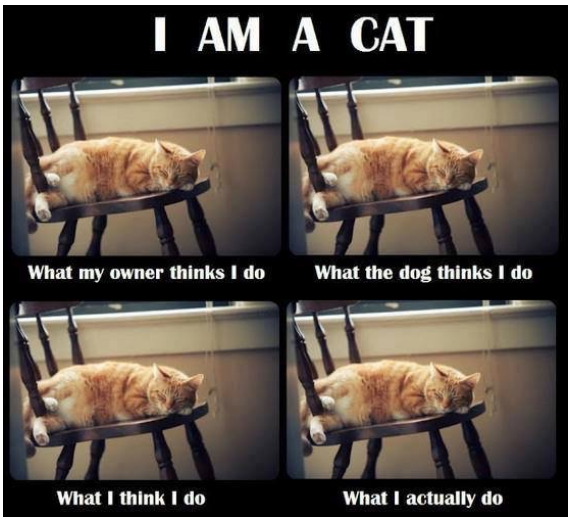
Down

1. An individual's genetic potential to grow
2. Need further feeding prior to slaughter
5. Cuts off an animals tail
6. Yellow part of the Egg
8. Prevents White Muscle Disease
10. Diseases transmitted from animals to humans
11. A Male Turkey
13. A trait expressed physically

Animal Comics

Submitted by Heather Reist





Matching Game

Lindsey Skinner

Directions: Match the "-ology" with its study!

"-ology"	**Definition: the study of…**
Entomology	**Quantity or Dosage**
Herpetology	**Trees**
Acology	**Worms**
Angiology	**Bird's Nests**
Apiology	**Fish**
Caliology	**Grasses**
Cynology	**Reptiles and Amphibians**
Dendrology	**Dogs**
Graminology	**Bees**
Helminthology	**Insects**
Piscatology	**Medical Remedies**
Posology	**Blood Flow and Lymphatics**

Inspirational Animal Quotes

Submitted by Ashley Long

Only if we understand….can we care

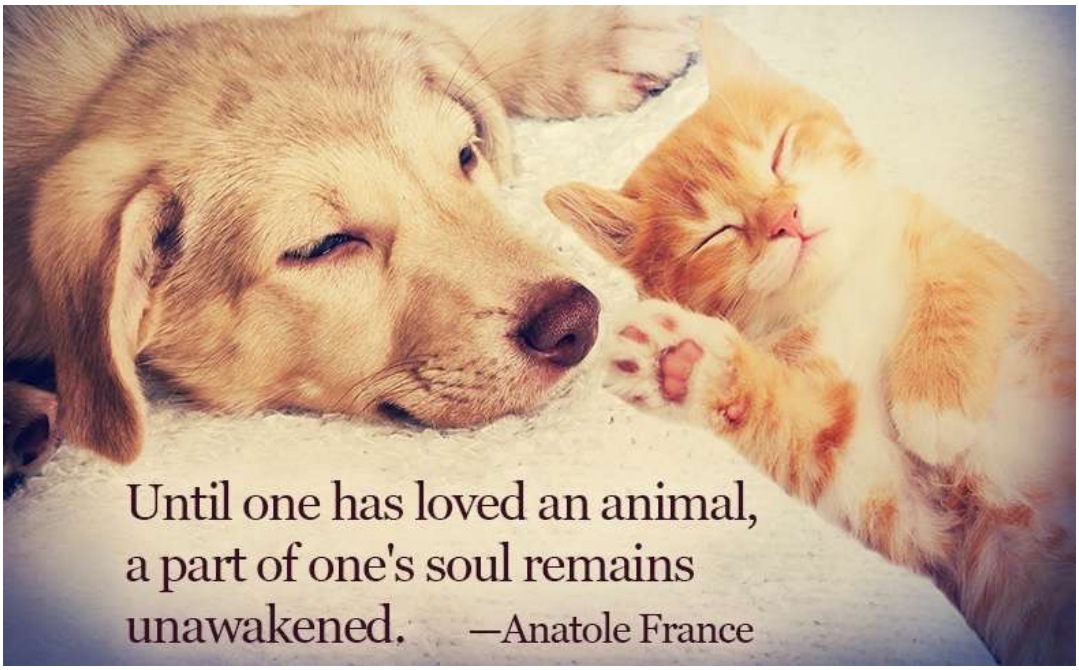
Only if we care…..will we help

Only if we help….will they be saved

-Jane Goodall

Sometimes, the smallest things take up the most room in your heart

-Winnie the Pooh



The love for all living creatures is the most noble attribute of a man

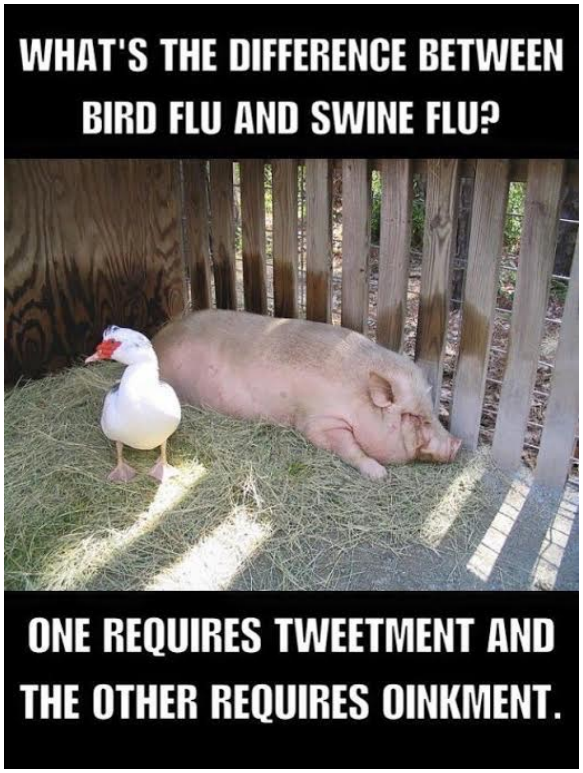
-Charles Darwin

UF Students "At Work"!

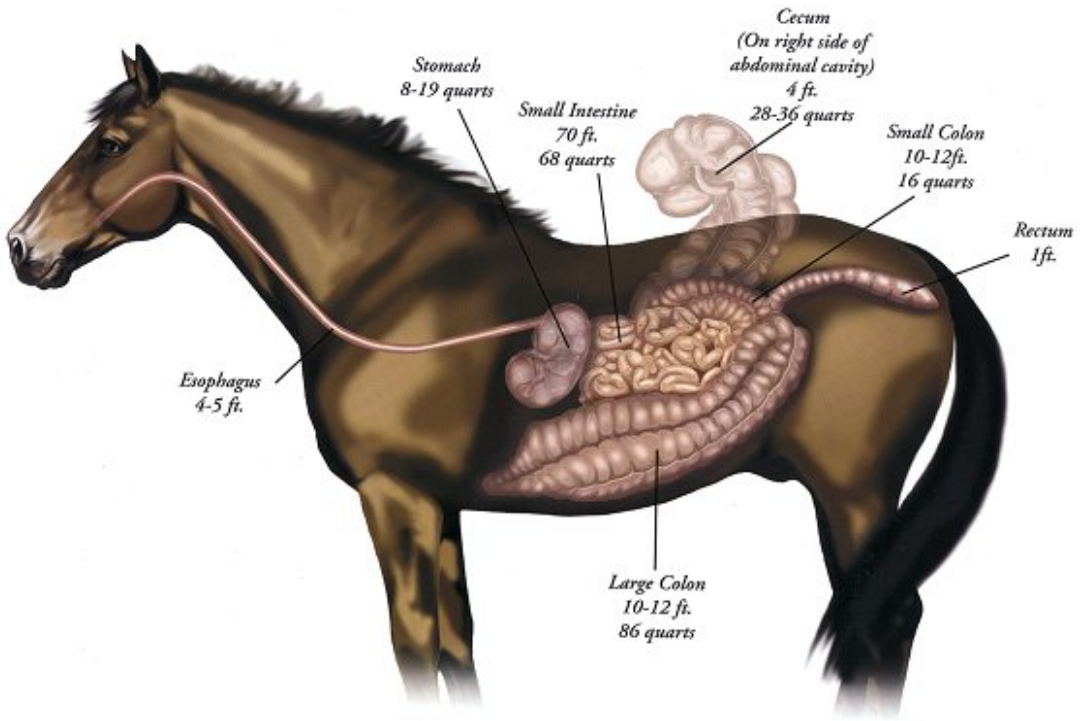
Here are some pictures of UF's students working with the baby animals in their animal handling classes, volunteering at the Humane Society's Ultimate Dogpawlooza, and attending the Buckeye Vet Exploration Day at OSU's CVM.

Thank you for reading!
See “ewe” next time!

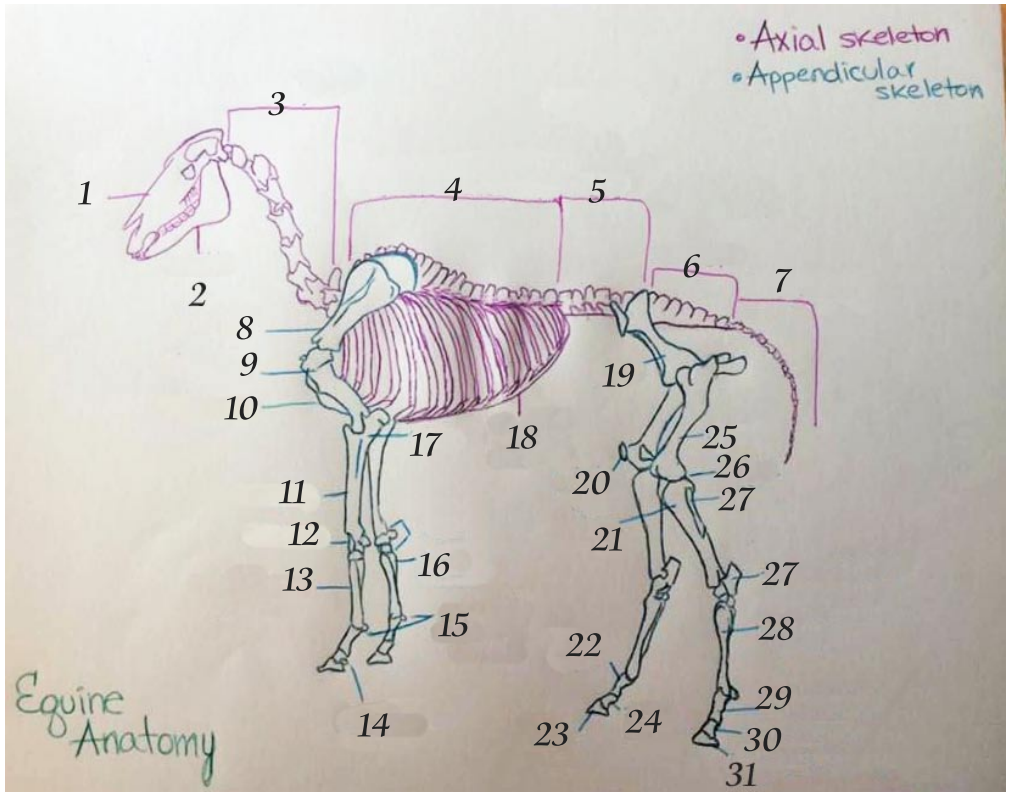
Thank you for reading the September/October Edition of the Pre-Vet Newsletter! We hope that you enjoyed reading all of the articles and submissions that students have done. If you are interested in contributing to the November/December newsletter, please email either Heather or Katelyn Reist.



Answers to Animal Diagrams, Crossword, and Game



Key:
1) Maxilla
2) Mandible
3) Cervical Vertebrae
4) Thoracic Vertebrae
5) Lumbar
6) Sacral Vertebrae (fused, form sacrum)
7) Coccygeal Vertebrea
8) Scapula
9) Humerus
10) Sternum
11) Radius
12) Carpus
13) Metacarpus (Cannon)
14) Navicular Bone
15) Proximal Sesamoid Bones
16) Splint Bone
17) Ulna
18) Ribs (36 total, 18 pairs)
19) Pelvis
20) Patella
21) Tibia
22) Long Pastern
23) Coffin Bone
24) Short Pastern
25) Femur
26) Stifle
27) Fibula
28) Tarsus (hock)
29) Metatarsus (cannon)
30) First Phalanx (P1)
31) Second Phalanx (P2)
32) Third Phalanx (P3)



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Across

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Crossword Puzzle: Answers will be in the next newsletter.