

# Large Animal LINKS

LARGE ANIMAL HOSPITAL NEWSMAGAZINE

**UF** | Veterinary Medical Center

## In this Issue:

New MRI Techniques for Diagnosing EPM

Treating Snakebites

New Faculty and Staff Section

UNIVERSITY of  
**FLORIDA**

# Message

from the Chief of Staff, Dr. Eleanor Green



Just when you memorized the old phone number, we changed it to new phone numbers. Why? So you could reach us more easily. These numbers simplify the phone tree (something I now know more about than I ever desired and even currently desire) and provide a real person when callers cannot reach the individual they want. Call us.

We cannot thank the Florida Thoroughbred Breeders and Owners Association and its Executive Vice President, Dick Hancock, enough for their continued support of equine research through their assistance in maintaining a herd of research horses at the University of Florida. Neonatal and reproduction research especially depend upon the ability to maintain a herd throughout the year from breeding, through pregnancy, parturition, and the early life of the foal. The challenge of identifying a consistent source of funds to keep the herd is formidable, yet essential, largely because granting agencies typically pay for keeping research animals only during the actual period of study. We take our role seriously is utilizing these funds wisely to advance the health and well-being of Thoroughbreds and other breeds in Florida and beyond. Thank you again, FTBOA!

The University of Florida Imaging Center is up and running. It was an enormous undertaking to set up the physical facility, train staff, establish protocols, and launch the final operation. It is a reality and is being refined daily. Leave it to Dr. Rob MacKay with his resident, Dr. Laura Javscas, to use MRI as a diagnostic aid for EPM. Stay tuned for other exciting uses of this technology.

People make programs. Kate Vinzant earned Employee of the Quarter in the College. Kate started with us as referral liaison and was so good she was soon promoted to Office Manager, Client Services. She grew up in the Thoroughbred industry in Maryland with a father who was and is a trainer, so she “speaks the language.” We congratulate her for being excellent every day. Dr. Ali Morton of Large Animal Surgery and Ms. Delores Foreman of Food Animal Reproduction and Medicine Service earned University of Florida Superior Accomplishment Awards. Then, Dr. Morton went on to win the campus wide award. The Department of Large Animal Clinical Sciences now holds a record, because this is the second year in a row that one of our faculty won the campus wide award, with Dr. Michael Porter winning last year. The odds of that happening are minuscule, considering our department of 38 faculty as compared with the thousands across campus. It seems natural to me with the quality of LACS faculty.

Due to popular demand, we have initiated a Companion Farm Animal Service which is still in its fledgling state. Dr. Ellen Wiedner, a Diplomate of the American College of Veterinary Internal Medicine, comes to UF one week a month. Our hopes are that this service grows enough for her to be here full time or close to it. Dr. Wiedner is on the veterinary team of Ringling Brothers, so her experience and talents are excellent.

Count down to July 16, 2007 when Dr. Amanda Martabano House joins our faculty as Equine Extension Veterinarian. She will replace the irreplaceable Dr. Dana Zimmel, who is now a clinician in Large Animal Medicine. We look forward to your meeting Dr. House.

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# Please Note:

## We have new direct phone numbers to serve you better.

College Administration	(352) 392-2213
Environmental and Human Toxicology	(352) 392-2243
Infectious Diseases and Pathology	(352) 392-2239
Large Animal Clinical Sciences	(352) 392-2212
Large Animal Hospital	(352) 392-2229
Physiological Sciences	(352) 392-2246
Racing Lab	(352) 392-2238
Small Animal Clinical Sciences	(352) 392-2226
Small Animal Hospital	(352) 392-2235



*The Foundation for The Gator Nation*

# Medicine

*with Dr. Dana Zimmel, DACVIM, ABVP (Equine Practice), Service Chief*

The Large Animal Medicine service would like to thank the Florida Thoroughbred Breeders and Owners Association for their continued support of neonatal research. The generous contributions from the FTBOA maintain a herd of twenty mares that combined with other granting agencies have produced the following exciting results in the last year:

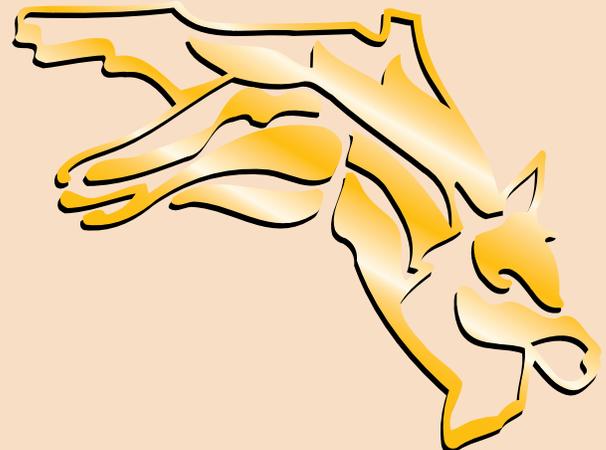
- Pharmacokinetics of doxycycline in foals, and drug concentrations in body fluids and bronchoalveolar cells.
- Comparison of caffeine and doxapram on respiratory and cardiovascular function in foals with induced respiratory acidosis.
- Use of gastric tonometry to assess blood flow to the gastrointestinal tract in foals.



The presence of the FTBOA research herd made it possible for two very important scientific discoveries to be made that directly impact the Florida Thoroughbred industry. Due to the location of the herd on the University of Florida property, researchers were able to confirm Mare Reproductive Loss Syndrome (MRLS) does occur in Florida and is likely to be a reoccurring cause of abortion in mares. Farm owners learned the need to screen their farms for the presence of cherry trees to eliminate the Eastern Tent Caterpillar.

The second advancement was the discovery of Nocardioform placentitis in a Florida-bred mare which until now has only been isolated to mares in central Kentucky. Both of these discoveries were possible because the FTBOA research herd provided the opportunity to perform diagnostic analysis of these problems by a team of specialists.

For more information on the research programs being conducted at the University of Florida College of Veterinary Medicine and the Veterinary Medical Center please call the new phone number for the Large Animal Hospital: (352) 392-2229.



# A new application of MRI: Imaging of the lesions of equine protozoal myeloencephalitis

Dr. Rob MacKay and Dr. Laura Javiskas

Equine protozoal myeloencephalitis (EPM) remains one of the most important infectious diseases of horses in North America. Despite considerable advances in treating the disease and in understanding the biology of the causative agent, *Sarcocystis neurona*, there still is no definitive antemortem diagnostic test for the disease. In the context of neurologic signs not readily explained by a competing diagnosis, antibody tests of blood or cerebrospinal fluid (western blot, indirect fluorescent antibody tests etc.) only provide support for the diagnosis.

Imaging studies usually do not contribute directly to the process of EPM diagnosis. Nevertheless, in the more than 95% of cases with signs relating exclusively to spinal cord disease, cervical radiography helps to exclude the possibility of spinal vertebral involvement. The relatively rare presentations of EPM that are characterized by brain involvement provide additional diagnostic challenges. Often there is asymmetric involvement of brainstem cranial nuclei with signs of obtundation (mental depression), facial paralysis, head tilt, tongue paralysis, or dysphagia. Horses with this type of

“brainstem EPM” are easily confused with viral or verminous encephalitis, temporohyoid osteoarthropathy (THO), skull trauma, or compressive mass (abscess or neoplasia). When the lesions of EPM are located in the forebrain, another spectrum of signs can be seen including seizures, dementia, or blindness. These forebrain presentations of EPM also can be difficult to distinguish from viral encephalitis, hepatoencephalopathy, compressive mass, hydrocephalus, or leukoencephalomalacia.

We have recently found that at least the brainstem lesions of (presumed) EPM can readily be seen using MRI. Following is a report of one of these cases.

## Presentation

This 8-year-old mixed breed pony mare was referred to the Veterinary Medical Center at the University of Florida for acute onset of head tilt and circling. At presentation, the head was tilted to left, while the head and neck were turned to the right, and body leaned to the right. The mare preferred to lean against the wall on right side (Fig. 1). There was severe paresis of all components of facial muscle tone on the left side (ear, eyelid, lip, muzzle) and cranial nerve V-VII reflexes could not be elicited on that side (commisure of lip, palpebral, ear).



Figure 1- The patient at admission, displaying a head tilt to the left, head and neck turn to the right, and facial paralysis.

*Continued on Page 6....*

The right eye was rotated dorsally and the left ventrally. Although spontaneous nystagmus was not seen, physiologic nystagmus was present only when the head was moved horizontally toward the right; it was absent to the left. The mandible was consistently deviated to the right. The horse walked in tight circles to the right and head tilt, turn and circling all were exacerbated by blindfolding both eyes. The pony had a notably stiff abducted stride in both pelvic limbs, most notably in the left limb. There was 2/4 weakness and ataxia in the left pelvic limb and 1/4 in the right (outward rotation of hock and fetlock during walking, weakness to tail-pull). Neurologic abnormalities were not seen in the thoracic limbs. The cutaneous trunci reflex (panniculus), over its entire catchment area, was reduced on the left side compared with the right.

## Diagnostic tests

Cytology of the CSF revealed mild pleocytosis (7 white blood cells/ $\mu$ L; reference range, 0-5/ $\mu$ L) with a normal differential, red blood cell count of 383/ $\mu$ L, and normal total protein (44 mg/dL; reference range, 5-65 mg/dL). The CSF was positive for antibodies to *Sarcocystis neurona* by western blot, with a relative quantity of 35.

## Neuroanatomic localization

- Nucleus or nerve of cranial nerve VII (facial) on left (facial paresis)
- Nuclei, nerve, or end-organ of cranial nerve VIII on left (paradoxical central vestibular) or right
- Nucleus or nerve of cranial nerve V (motor) on left (deviation of mandible)
- Long tracts (proprioceptive and motor) in brainstem or spinal cord to S2 (pelvic limb weakness and ataxia), worse on left, probably including lesion behind T2 (no thoracic signs noted), possibly immediately caudal to T2 on the left (cutaneous trunci on that side without affecting thoracic limb)

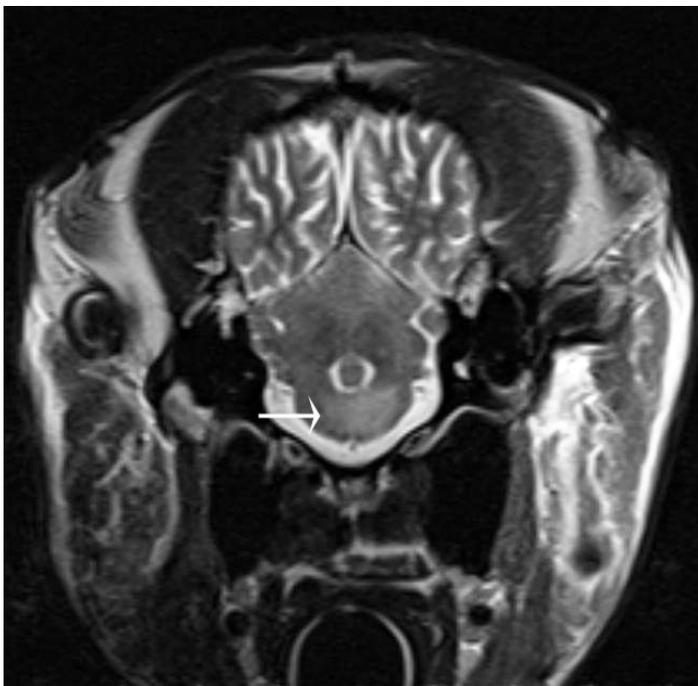


Figure 2- Transverse T2-weighted image of the brain. The patient's right is on the left side of the image and dorsal is at the top of the image. An area of increased signal intensity is noted slightly to the left of midline in the caudal brainstem.

In summary, there appeared to be at least 2 lesions: (i) brainstem on left (pons/medulla oblongata) and (ii) spinal cord on left behind T2 (pelvic limb signs, cutaneous trunci)

## Imaging

Radiographs of the skull and upper airway and guttural pouch endoscopy revealed no abnormalities. MRI (T1-weighted, T2-weighted, FLAIR, and T1-weighted with gadopentetate dimeglumine) revealed a 20-mm by 17-mm moderately high signal intense focus on T2-weighted (Fig 2) and FLAIR images (Fig 3) in the center and left caudal brainstem, caudal to the fourth ventricle. The focus was isointense on T1 weighted images and did not display contrast enhancement.

## Interpretation

The clinical findings of multifocal CNS disease, with confirmation of one of the sites by MR imaging was consistent with a diagnosis of acute onset EPM. Western blot results provided support for this diagnosis.

## Treatment

The pony was treated with of pyrimethamine/sulfadiazine (1 mg/kg, PO, q 24 h/ 20mg/kg, PO, q 24 h) and ponazuril (5 mg/kg, PO, q 24 h), for one month before reevaluation.

## Outcome

The pony was examined after one month of treatment. The cranial nerve VII deficits had improved but there was still a mild left ear droop and muzzle deviation to the right. No head tilt, neck tilt, or circling were noted and normal physiologic nystagmus could be elicited. When the pony was blindfolded, a mild left head tilt became apparent. It was recommended that the pony be turned out in a small paddock by herself for exercise. Continuation of the ponazuril and pyrimethamine/sulfadiazine and monthly evaluations were also recommended. Complete blood counts were checked periodically because of the risk of bone marrow suppression with the use of pyrimethamine/sulfadiazine.

## Comment

In selected cases, MRI provides objective assessment of EPM lesions in the brainstem (and probably also in the forebrain) and helps rule-out other causes of intracranial disease. We predict that MRI will be a useful tool in diagnosis, assessment, treatment, and prognosis of forebrain and brainstem disorders.

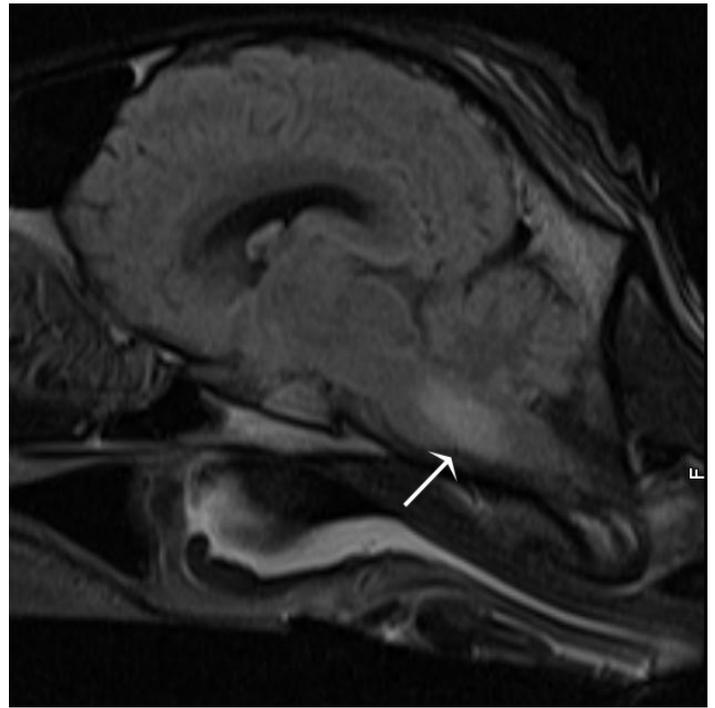


Figure 3- Sagittal FLAIR image of the brain. Rostral is to the left and dorsal is at the top of this image. An ovoid focus of increased signal intensity is noted in the brainstem.

Large Animal Hospital Employees make their presence felt in the Superior Accomplishment and Employee of the Quarter awards.

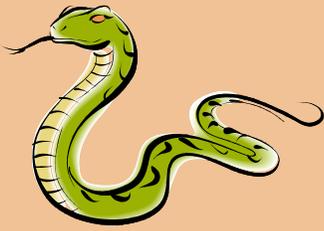
### Superior Accomplishment Awards (University-wide)

Dr. Alison Morton, DVM, MSPVM, DACVS, Assistant Professor, Large Animal Surgery  
Delores Foreman, Sr. Clerk, FARMS Dept.

### Employee of the Quarter (College-wide)

Kate Vinzant, Office Manager, Client Services  
Heather Wells, Veterinary Technician, Medicine  
Christie Hodge, Secretary, Client Services

# Bites of Venomous Snakes in Horses



Dana Zimmel, DVM, Diplomate ACVIM, ABVP

Venomous snakes are widespread in Florida. Pit vipers are the most common snakes to bite a horse and include the copperhead, cottonmouth (water moccasin) and rattlesnake. The coral snake is another venomous snake found in Florida. It is in the same family (Elapidae) as the deadly cobra. The coral snake is unlikely to kill an adult horse because it has a poor method of delivering adequate venom with its small mouth parts and short fangs. In most cases the owner is not present when the horse is bitten and cannot identify the snake. The size and age of the horse combined with the amount of venom injected will determine the clinical signs and outcome. Hemotoxins and neurotoxins present in the venom can result in cardiovascular, respiratory, neurological and hematological signs. The onset of neurotoxic side effects can be delayed up to 12 hours in humans.

## What are the clinical signs?

- Local swelling/ intense pain
- Hypotensive shock
- Fever
- Tachycardia/ arrhythmias
- Dyspnea/ pulmonary edema
- Epistaxis

The majority of bites in horses occur on the muzzle. Profound facial swelling can occlude the nasal passages and result in asphyxia. Less than 10% of horses are bitten on the leg. Horses can develop cardiac arrhythmias, persistent bleeding, diarrhea, colic or laminitis.



Swollen Face

Laboratory abnormalities include anemia, leukocytosis, thrombocytopenia, clotting disorders and elevated muscle enzymes. Rattlesnake envenomations can result in elevated cardiac isoenzymes indicating myocardial damage.

## Diagnostic Evaluation

Diagnostic evaluation includes a complete blood count and platelet count, coagulation profile, electrolytes, lactate, liver enzymes, serum creatinine, muscle enzymes, cardiac troponin-I and a urinalysis. Arterial blood gas, echocardiography and electrocardiogram are indicated in most cases.

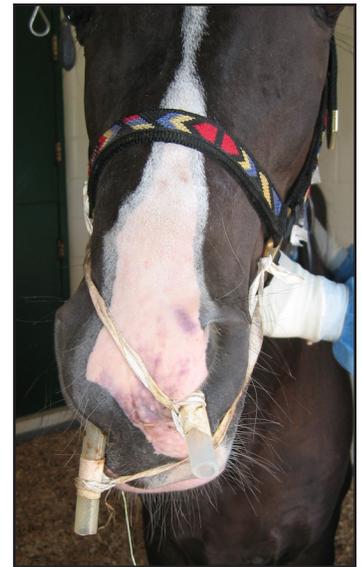
## Treatment

In humans the most important therapy is antivenin administered within 4-6 hours of the bite. Unfortunately, the quantity needed to effectively treat a horse is unknown.



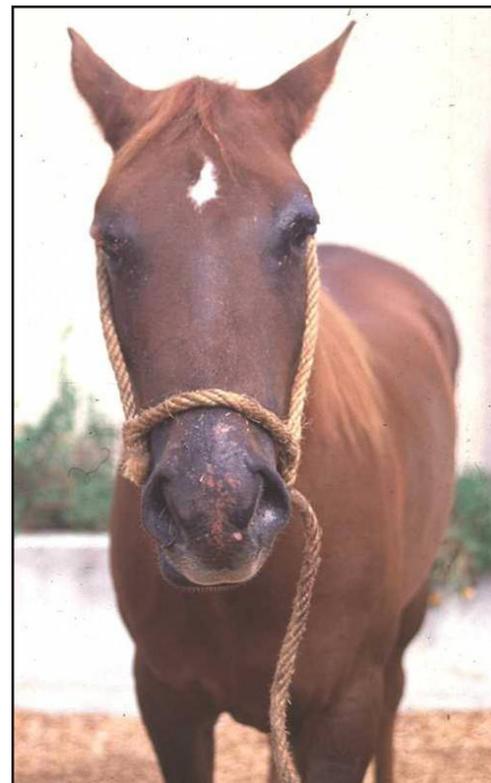
Epistaxis

Extrapolating from the human dose for antivenin would be very expensive (\$2,000-2,500) to treat 1000 pound horse. The small body weight of foals and ponies potentially increases their risk of developing severe clinical signs justifying the expense of antivenin in select cases. Without the use of antivenin the mortality rate for horses bitten by rattlesnakes is 18-25%. Maintaining the airway is critical for horses bitten on the face. Severe facial edema occurs rapidly and a small tube placed in each nostril before they swell shut will eliminate the need to perform a tracheotomy. Aggressive nursing care and addressing any of the various complications including diarrhea, laminitis and acute renal failure improve survival. Some horses will develop compartment syndrome caused by myonecrosis in the area of the envenomation. Fasciotomy may be required to provide relief. Additional therapies may include anti-inflammatories, intravenous fluids and colloids. Prophylactic use of antimicrobials is not recommended in the treatment of snake bites in humans. The use of antimicrobials should be considered in horses if there is obvious evidence of wound infection. The horse should be given a tetanus toxoid booster if it has been greater than 6 months from vaccination. Cardiac dysfunction may not be recognized until several months after envenomation.



Nasaltracheal tubes need to be placed to establish an airway

Guide to Venomous Snakes: <http://www.flmnh.ufl.edu/natsci/herpetology/fl-guide/venomsk.htm>



The case is an example of a before (left) and after (right) a poisonous snake bite seen at the University of Florida Veterinary Medical Center Large Animal Hospital

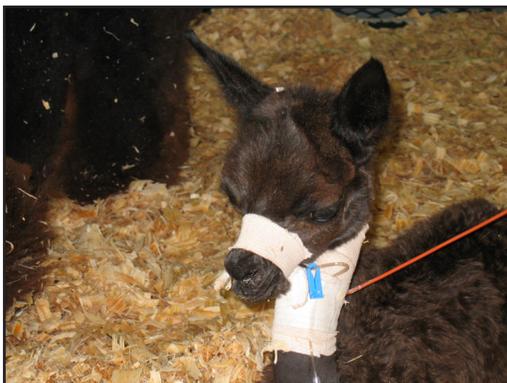
The University of Florida Veterinary Medical Center is proud to introduce our new Companion Farm Animal Service and Dr. Ellen Wiedner.



The new service will be geared to clientele with sheep, goats, llamas, alpacas, camels and miniature pigs, as well as exotic-farmed hoofstock including deer, bison, elk, and zebra, this new department will provide health care, both in-house and on-farm.

Dr. Wiedner is a 1999 graduate of the University of Pennsylvania. She did an internship in ambulatory and production medicine at Cornell University, and completed a residency at Purdue University in Large Animal Medicine. She is board certified in Large Animal Internal Medicine. For the past three years she has worked intensively with companion farm animals and exotic hoofstock and is eager to join UF's staff.

For information or an appointment please call (352) 392-2229 ext. 4000 and ask for the Companion Farm Animal Service.



The University of Florida Veterinary Medical Center is proud to introduce our new IFAS Equine Extension Agent, Amanda Martabano House, DVM, DACVIM.

Dr. House is originally from Katonah, New York. She completed her BS in Animal Science from Cornell University. After graduating from Tufts University School of Veterinary Medicine, Dr. House completed an internship and large animal internal medicine residency at the University of Georgia's Veterinary Teaching Hospital. She has worked for two years at UGA as a Clinical Instructor in Large Animal Medicine. Dr. House is looking forward to joining the faculty at the University of Florida as Assistant Professor, Equine Extension. Her professional interests include neonatology, infectious disease, and camelid medicine. She owns a Thoroughbred mare and has been a longtime competitor in the hunter/jumpers.



## What is Extension?

Extension is a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public. At the University of Florida, Extension is located in the Institute of Food and Agricultural Sciences (IFAS), along with the College of Agricultural and Life Sciences (CALS) and the Florida Agricultural Research and Education Center, and is called UF/IFAS Extension.

## Who We Are

UF/IFAS Extension encompasses thousands of Extension faculty members, scientists, educators, administrative staff, and volunteers, all working to provide solutions for your life. Larry Arrington, PhD, is the director of UF/IFAS Extension.

## Our Mission

The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) is a federal, state, and county partnership dedicated to developing knowledge in agriculture, human and natural resources, and the life sciences and to making that knowledge accessible to sustain and enhance the quality of human life.

# RDVM Appreciation Day Topics

## July 7, 2007

Management of Endotoxemia

Colic-A Team Approach

Managing Weight Loss in the Geriatric Horse

Pulmonary Function Testing in Horses with Inflammatory Airway Disease

Guidelines for Infectious Disease Control in Practice

Vaccine Recommendations for Weanlings

Diagnostic Evaluation of the Sick Foal

Protocol for EVA Vaccination on Breeding Farms

Breeding Strategies for Mares with Sick Foals

Innovative Therapeutics for Lameness

Diagnosis and Treatment of Suspensory Desmitis

Options for Local Indirect Antimicrobial Treatment of Distal Limb Infections

Treatment Options for Pythiosis

Dr. Rob MacKay

Dr. David Freeman

Dr. Michael Porter

Dr. Steve Giguere

Dr. Maureen Long

Dr. Dana Zimmel

Dr. Chris Sanchez

Dr. Pozor

Dr. Mats Troedsson

Dr. Troy Trumble

Dr. Ali Morton

Dr. Jason Errico

Dr. Sarah Matyjaszek