

## Current News

### Equine PET Scanner Showing Success at UC Davis Veterinary Hospital

November 11, 2016

It has been a busy past few months for the equine [positron emission tomography \(PET\)](#) program at the UC Davis veterinary hospital. The newly-acquired PET scanner was delivered as planned in early August, enabling [UC Davis to become the first equine hospital to offer PET scans](#).

Through August and September, six horses were scanned to test the scanner and validate a clinical protocol (Figure 1), all with flawless results. For all six horses, both PET scans and computed tomography (CT) scans were performed under the same anesthetic procedure, instead of two separate anesthetics as with the [initial cases last year tested on a prototype of the scanner](#). The anesthesia time remained under three hours with approximately 90 minutes for the PET scan and 30 minutes for the CT scan. During this time, up to six different areas were able to be imaged, for example both front feet, both front fetlocks and both carpi.

The six horses enrolled were all racehorses recently retired from the track or currently training on a treadmill at the California Animal Health and Food Safety Laboratory. All these horses were imaged not only with PET and CT, but also with magnetic resonance imaging (MRI) and scintigraphy. Stress remodeling lesions were documented, in particular in the fetlock and the carpus. (Figure 2) Several of these lesions were not apparent on scintigraphy, CT or MRI, confirming the advantages of PET imaging. The pattern of uptake observed on the PET images matches areas of known occurrence of lesions. PET appears to be the most sensitive technique to detect these lesions. Further research is planned on the Thoroughbred fetlock, as UC Davis veterinarians believe that PET has the potential to help prevent catastrophic injuries in racehorses.

In early October, a clinical trial was started in client-owned animals funded by the [Grayson-Jockey Club Research Foundation](#) and UC Davis' [Center for Equine Health](#). The trial enrolls horses with lameness, already imaged with either scintigraphy or MRI, but requiring additional information for diagnosis or treatment planning. Currently, four Warmblood horses have been imaged. The lesions identified included subchondral bone remodeling in the fetlock and in the tarsus, remodeling of the navicular bone, focal active resorption of the coffin bone, osseous remodeling at the insertion of the suspensory ligament (Figure 3) and remodeling of the canon bone. For more information about the clinical trial, please contact the hospital's [Large Animal Clinic](#).

The first manuscript regarding use of PET in the horse was [recently published in the November/December issue](#) of *Veterinary Radiology and Ultrasound*. A keynote lecture on equine PET was presented in October by Dr. Mathieu Spriet at the Annual Conference of the American College of Veterinary Radiology in Orlando, Florida. An abstract was also presented in August at the Annual European Veterinary Diagnostic Imaging Meeting in Poland and received the best poster award. Future presentations are planned for the American Association of Equine Practitioners Annual Convention in December and at the Lake Tahoe Equine Conference in January.

The UC Davis School of Veterinary Medicine is proud to be at the forefront of equine imaging research, and its veterinary hospital is pleased to offer this cutting-edge imaging to its public clientele and referring veterinarians.



Figure 1: The new equine PET scanner arrived at the UC Davis veterinary hospital in August.

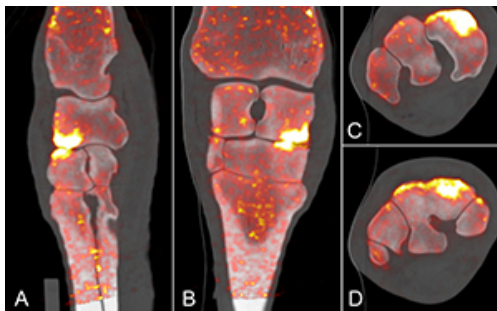
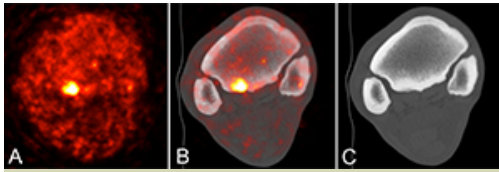


Figure 2: Sagittal (A), dorsal (B) and transverse (C, D) fused PET/CT images of the right carpus of a 2-year-old Thoroughbred racehorse. There is marked increased radiopharmaceutical uptake at the distal medial aspect of the radial carpal bone and proximal medial aspect of the third carpal bone.



**Figure 3: Transverse PET (A), fused PET/CT (B) and CT (C) images through the right front proximal metacarpus of an 8-year-old Warmblood gelding. Local analgesia had identified pain in this area. The PET images demonstrate marked focal increased uptake at the palmar aspect of the third metacarpal bone at the lateral aspect of the origin of the suspensory ligament. The CT did not demonstrate significant abnormality in this area.**