

Delivering Superior Veterinary Diagnostic Imaging

It was not long ago that Colorado State University unveiled a PET/CT scanner that is the first of its kind in a veterinary teaching hospital and at the time of installation, was only the third in any hospital in the world (human or animal).

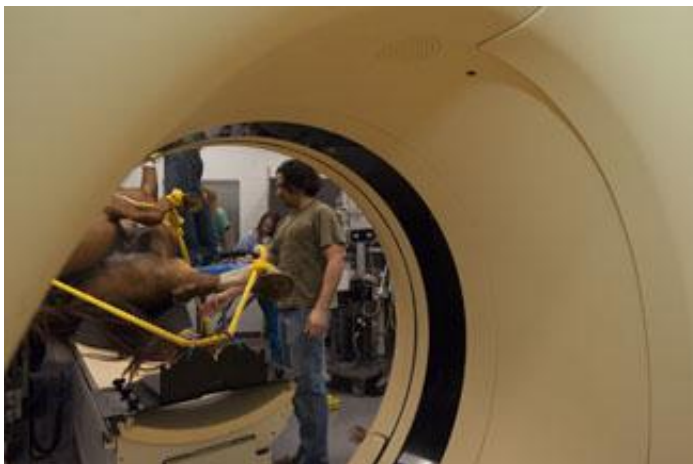
The Gemini TruFlight Big-Bore PET/CT imaging system benefits multiple services at the Veterinary Teaching Hospital, including oncology, neurology, cardiology and equine medicine.



The Gemini TruFlight Big-Bore PET/CT imaging machine was installed at the Veterinary Teaching Hospital in November 2009.

A PET/CT scanner combines a computed tomography (CT) scan with a positron emission tomography (PET) scan. CT provides detailed anatomic images of body regions while PET allows veterinarians at the University to image tumor metabolism and other metabolically active structures.

The two images can then be combined to create a three-dimensional fused image of the structures.



The scanner's big bore feature provides a patient opening 15 centimeters larger than previous generations of PET/CT systems. This gives the hospital the ability to image equine and other large animal patients more easily and provide positioning flexibility when scanning oncology veterinary patients.

The state-of-the-art scanner complements the hospital's Varian Trilogy Linear Accelerator, which delivers radiation for cancer treatment to animals and also is the only system of its kind in any animal clinic or veterinary teaching hospital in the world. The accelerator and new PET/CT scanner are connected with software that allows them to share images, improving the veterinarian's ability to perform treatment planning and execute those plans with high precision.

"We're pleased to be the first veterinary hospital or clinic in the world to offer this service to our clients," said Dr. Lance Perryman, Dean of the College of Veterinary Medicine and Biomedical Sciences. "It further enhances the expertise of the University's veterinarians, who are among the best in the world at diagnosing and treating a number of diseases that are important to both the animal and human populations."

The PET/CT scanner is used for cancer treatment, detection of metastases, surgical and radiation treatment planning and monitoring the effect of treatments such as radiation and chemotherapy on a malignant tumor. The scanner includes respiratory gating which allows sophisticated tracking of chest movement when the patient breathes to optimize imaging and radiation therapy of lung cancer. The scanner also serves the needs of specialists in orthopaedics, neurology and cardiology, offering higher-quality imaging capability for improved diagnosis and treatment planning.



Veterinary students assist with positioning a horse for a scintigraphic acquisition.

Another new system benefiting horses and other large animal patients at the Veterinary Teaching Hospital is a Large-Animal Gamma Camera. This new system allows veterinarians and technicians to quickly take highly detailed images of the skeleton and soft tissues.

Veterinary radiology specialists use this system – one of only two in the state – to monitor different musculoskeletal problems such as stress fractures, infections, arthritis and injuries to the soft tissues that attach to bone. The gamma camera provides a rapid study of the entire skeleton and helps evaluate areas of the body that are difficult to X-ray in a large animal, such as the spine and pelvis. State-of-the-art software allows for motion correction on the images if the animal being scanned moves during the scan.

"Colorado State University has six board-certified veterinary radiologists who assess the images on site, providing immediate evaluations, which allows veterinary surgeons to quickly create a treatment plan," said Dr. Richard Park, a radiology specialist at the Veterinary Teaching Hospital. Dr. Park is a veterinarian, the Section Chief of the Department of Environmental and Radiological Health Sciences' Veterinary Diagnostic Imaging Section and a Professor in the Department of Environmental and Radiological Health Sciences (ERHS), College of Veterinary Medicine and Biomedical Sciences.

“One very important feature of the gamma camera is that large animals, such as horses, don’t have to undergo anesthesia while we get these images. We can position them standing in the room and move the gamma camera around them to acquire the images. It makes the whole process much easier for the horse and the veterinary team.”

The incredible technology of these two machines, which bring superior images and convenience for animal patients and owners, are clear examples of the ERHS’ commitment to continue to provide the finest veterinary radiology service available anywhere.

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