



Radiology Unit Benefits Animals and Research

**By Bonnie Coblentz
Photos by Tom Thompson**

CVM's X-ray facilities are state-of-the-art and accessible to large and small animals. The table in the small animal room can tip to almost 90 degrees, making it possible to make X-ray images of a prone subject as if it were standing.

When a patient comes in the door of the Mississippi State University veterinary college's Animal Health Center, three types of imaging tools help clinical faculty, staff and students provide the best care.

Diagnostic Imaging Services in MSU's College of Veterinary Medicine has a cardiac-capable ultrasound, large- and small-animal X-ray facilities and a computed tomography, also known as a CT or CAT, scanner. Dr. Dan Cantwell, chief of diagnostic imaging services, said the acquisition of the CT scanner was important for the veterinary college.

"This equipment helps us serve our clients better. The CT scanner improves our ability to diagnose a problem, which results in better treatment, less hospital stay and less overall cost to the pet owner," Cantwell said.

When Jackson residents Shannon and Steve Collins' 6-year-old chocolate Labrador retriever Piper started limping, they took her to their veterinarian to see what was wrong. The active dog typically ran with Shannon but began having problems with her leg.

Traditional X-rays did not reveal the problem and medication only temporarily brought relief. Piper's veterinarian and several friends and acquaintances of the Collins' referred them to Dr. Andy Shores at Mississippi State University's College of Veterinary Medicine.

"I just wanted something to be fixed, and obviously the medicine she was taking wasn't helping her," Shannon said of Piper. "Dr. Shores initially examined her and said the CAT scan could be the answer."

The CT scan revealed the problem in Piper's elbow, avoiding the added trauma of exploratory surgery. Minimally invasive arthroscopic surgery corrected the problem, and the now 6½-year-old Piper began her recuperation.

"Her recovery went very, very well," Shannon said. "She had a gradual recovery for about a month, then after that, we saw the problem completely disappear."

The CT scanner is located in the Mimi and Russell Gaines Unit within CVM's radiology department. Russell Gaines donated the nearly \$100,000 needed to outfit the room to house the CT scanner in memory of his late wife, Mimi.

LeeAnn Smith, a certified veterinary technician and a radiology technologist, said the unit arrived in October and was in use by November. The size of the gantry, or circular opening around which scans are made, limits the size of animal that can be examined by CT. Most animals will fit on the standard table made for humans, but this scanner came with a large, three-position table capable of holding animals up to 4,000 pounds for scanning. Technicians can use this table to scan an anesthetized horse's head, legs and other parts.

Smith said the CT unit has averaged 24 patients a month. The method is noninvasive and reveals the specific location of certain problems, making treatment or surgery more precise.

CT images, as well as those created by X-ray and ultrasound, are stored digitally. Smith said digital technology provides tremendous benefits over traditional imagery, such as the ability to change the exposure setting or contrast on screen without shooting another image to transmit an image file to a colleague at CVM or across the country, and to store all of an animal's records in one digital location.

CVM's X-ray facilities are state-of-the-art and accessible to large and small animals. The table in the small animal room can tip to almost 90 degrees, making it possible to make x-ray images of a prone subject as if it were standing. The large animal X-ray room was built for flexibility. An image plate is suspended from the ceiling, and the X-ray image is made through the standing animal. The equipment slides readily on overhead tracks as needed.

Using X-ray technology, CVM staffers can perform digital fluoroscopy, or streaming video of a procedure, using a contrast medium such as barium sulfate. These images, too, are stored electronically, and can be transmitted and manipulated for interpretation and review.

Smith said students spend four weeks in the radiology rotation. When she works with them, she stresses the importance of safety, as regulations limit how much radiation a person can safely be exposed to in a year. Smith also helps students learn correct procedures to produce diagnostic quality images.

The third piece of equipment is the ultrasound machine, now used routinely for diagnosing trauma and disease conditions. Ultrasonography aids with the examination of bones, tendons, ligaments and organs. CVM's machine is cardiac-capable

and can be used to examine the heart on many species.

Dr. Erica Baravik, one of the CVM's sonographers, said the clinic's ultrasound machine is used daily and has become a standard part of many procedures.

"Ultrasound complements X-ray and CT," Baravik said. "Radiography examines the contours of organs, while CT allows examiners to evaluate organs using one cross-sectional slice at a time. Ultrasound shows interior organ architecture and function on a real-time basis, unlike X-ray and CT."

Dr. Andy Shores, associate clinical professor of surgery and neurology, is a board-certified neurologist and is responsible for the CT scanner. He said with CVM's acquisition of this equipment, "we are catching up with where we should have been years ago. We're able to plug in an area of deficiency that has hampered us or forced us to refer cases to LSU or Auburn."

Shores said the CT technology opens up avenues to explore problems and will one day allow CVM to perform interventional radiography.

"We'll now be able to very accurately and safely biopsy tumors, perform minor surgical procedures and allow ourselves to do more work with less invasiveness," Shores said. "We're at a stage now that as we continue to grow, we'll be able to do a lot with this unit, and it's going to be an attraction to additional faculty, as well interns, residents and students."

The chief of diagnostic imaging services said MSU's veterinary college was "behind the curve" before getting the CT scanner, but it is now on equal footing with other teaching hospitals. CVM interns, residents, faculty, and third- and fourth-year veterinary students benefit from the information provided. Cantwell hopes the CT scanner will soon generate grants for the college as researchers at CVM and the rest of the university begin to take advantage of its capabilities.

At MSU's veterinary college, the three technologies of X-ray, CT and ultrasound work together to offer top-notch care for patients. They also provide veterinary students a chance to gain experience in imagery technology they will need as they begin their careers.

