

N.C. State Leads the Way in Pioneering Medical Procedures

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By Angela Pham

Cassidy, a 5-year-old German Shepherd mix, was used to navigating life with just three legs – until back problems started developing.

But with the help of North Carolina State University's College of Veterinary Medicine and its collaboration with the College of Engineering, Cassidy underwent a four-hour operation on Thursday, July 31, and returned home on Saturday, Aug. 2, with four functional limbs.

His prosthetic hind leg was custom-made as a permanent extension of his body through osseointegration, in which tissue and bone will fuse with the titanium prosthetic limb.

This pioneering procedure, performed by Denis Marcellin-Little, DVM, is attempted in only a couple of other hospitals worldwide, says Dave Green, director of communications at the College of Veterinary Medicine.

At a Glance

Location: Raleigh, N.C.

Opening date: Est. 1979; First graduating class 1985

Number of students: 300 DVM students, 85 graduate students and 60 interns and residents.

Financial aid available: Yes; \$100 million Campaign for Animal Health and Welfare

Programs offered: DVM; master's degrees in science, veterinary public health and specialized veterinary medicine; MBA; Ph.D.; residency, internship.

Website: www.cvm.ncsu.edu In osseointegration, engineering students develop prosthetic limbs to sustain unnatural stress from an animal's movements. Veterinary medicine students also get involved and are able to see their academic work translate into an actual, groundbreaking medical procedure, Green says.

The significance of this innovation is twofold, Green says. Faculty at the college hope to ensure that when animals need limbs, the standard procedure will eventually be osseointegration. And, through developing the procedure further in animals, human medicine will also benefit.

"The potential to provide prosthetic limbs that the body does not reject and accepts as totally natural would be fantastic for soldiers coming back from warfare and people with bone diseases, or [people who have lost limbs in] accidents," Green says.

The N.C. College of Veterinary Medicine – ranked among the top five national CVMs in U.S. News & World Report's current list of best graduate schools – is revolutionizing veterinary medicine through another groundbreaking surgical procedure: canine bone marrow transplant.

Used to treat dogs with lymphoma, the procedure involves harvesting bone marrow from the patient, performing whole-body radiation and then giving the cells back.

While canine bone marrow transplantation has been performed in the research setting for more than 30 years, never before has it reached the clinical academic setting, says Dr. Steven Suter, VMD, DVM, Dipl. ACVIM, assistant professor of oncology. Transplants are slated to begin in September, and Suter says he is optimistic about advancing the procedure.

“We can start off with a cure rate of at least 20 to 25 percent of our patients,” Dr. Suter says. “With time, we’re hoping to get that even higher. With humans, depending on the rate of lymphoma, it’s 60 to 65 percent; we’re hoping to get up to that level.”

The college also hopes to eventually develop a bone marrow registry for dogs, as well as find philanthropic donors who will help dog owners with the costs of the procedure. Already a bone marrow transplant foundation has been formed to help clients cope with the costs.

Suter thinks the innovative procedure is a boon to the college.

“It’s going to be a tremendous learning experience,” he says. “It will be an opportunity for anyone interested. Students are welcome to show as much interest as they want in any of our clinical services. This is one where it’d be wonderful to have some students interested in it.”

With a teaching animal unit just 25 yards outside the amphitheatre classroom on campus, students have easy access to hands-on learning experience.

And, with a new hospital in the works – the Randall B. Terry Jr. Companion Animal Veterinary Medical Center – even more cutting-edge technology will be available for students and faculty.

By doubling the size of the current companion animal hospital, the Terry Center is expected to be a national model for companion animal medicine, says Green. The Center is projected to be completed in late 2009.