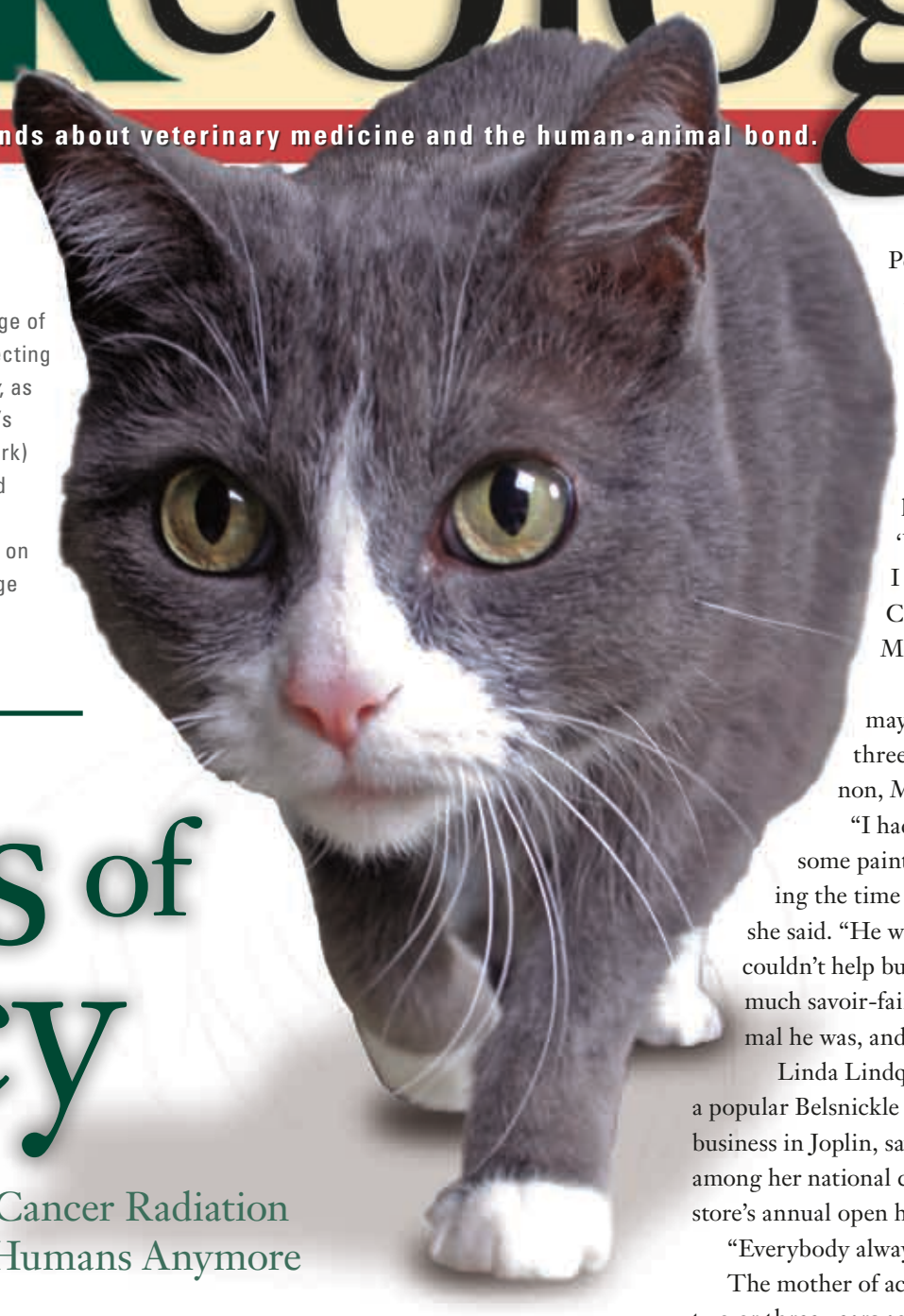
College of Veterinary Medicine • University of Missouri

Arkeology

Autumn/Winter '07 News and trends about veterinary medicine and the human•animal bond.

Our Mission

Because animals are more important today than ever before in our history, the University of Missouri College of Veterinary Medicine is dedicated to preserving, protecting and strengthening the human-animal bond. *Arkeology*, as its name implies, is a medium for bridging the college's role as a protector of the animal kingdom (a modern ark) and as a place where science, medicine, learning, and teaching can flourish (*logia* is the old Latin and Greek word for study or discipline). Continuously embarking on voyages of teaching, healing and discovery, the college invites you on board this vessel to journey with us.



Perils of Percy

A Joplin Cat Learns That Cancer Radiation Treatment is Not Just for Humans Anymore

Percy Katz, a Russian blue cat who is the official greeter for the Joplin Museum Complex off Route 66 in Joplin, Mo., is a feline with a lot of friends and almost as many problems.

Abandoned as a kitten, he has been a fixture at the museum for more than six years. He has been held in the arms of Missouri's governor, greeted more than 100,000 visitors to the museum, and has pen pals from all over the world. Brad Pitt's mother wanted one of his offspring to give to actress Jennifer Aniston after seeing the cat's official oil painting portrait that hangs in the entrance to the museum.

Percy's topsy-turvy life has not quieted. The 7-year-old cat has had three surgeries to remove cancerous lesions from his abdomen and left hind leg. The cancer, a particularly aggressive form of sarcoma, had not been completely removed. To help rid him of this disease, Percy underwent four weeks of radiation therapy at the University of Missouri Veterinary Medical Teaching Hospital.

Cancer of this type is difficult to cure, so his prognosis is guarded, says his MU veterinary oncologist Dr. Carolyn Henry. Nonetheless, Percy has returned to the museum to assume, everyone hopes, a more mundane life.

An Abandoned Kitten

Percy came to the museum in the winter of 2000, a skinny kitten abandoned near the doorstep.

To stay warm, he burrowed underneath a mining display in front of the museum. He came to the attention of Brad Belk, museum director.

"Each night before I would leave the museum, I would slide a plate of food under the display," he said. "The next morning when I returned, the plate would be clean as a whistle. This went on for about a week. I would talk to him. He would cry, but he wouldn't come out."

Just before a blizzard, Mr. Belk knew that the cat had to be brought indoors.

"We were holding a cotillion, a dance for kids that has been held at the museum for years, and I was working the door," Mr. Belk said. "I was going to stay late and lock up. It started getting cold and the sky looked like impending doom with some kind of snowstorm coming in. Obviously, it wasn't a good idea to leave the cat outside, so I pulled him out and stowed him where he couldn't get into much trouble so he could at least have a good warm bed."

Inside and safe, the kitten showed obvious appreciation and friendliness. Mr. Belk and his staff fell in love with the cat. To see if the kitty could stay at the museum, they decided to give him a week-long test. If he didn't scratch or break anything, they would present a proposal to the museum's board of directors to keep him permanently.

"I brought him out to be around people," Mr. Belk said. "One night during a cotillion, some of the kids came to him and he didn't run away. Percy seemed to want to mingle with everybody. It was an amazing thing to see. People seemed to enjoy him, so it seemed like a wonderful fit."

After explaining to the board that Percy had done nothing destructive, was extremely low maintenance, and was a hit with museum visitors, the board members voted unanimously for Percy to stay. Percy became as much of an attraction as the museum's artifacts with visitors asking to see the cat first.

A museum receptionist named Percy for Joplin music composer Percy Wenrich. "We just threw in the Katz thing," Mr. Belk said. Mr. Wenrich wrote Joplin's theme song, 'Put on Your Old Gray Bonnet.' Known on Tin Pan Alley as the Joplin Kid, he also composed 'When You Wore A Tulip and I Wore a Big Red Rose,' 'Sweet Cider Time When You Were Mine,' and 'Moonlight Bay.'

Percy the cat's greatest honor may be an oil painting completed three years ago by Mount Vernon, Mo. artist Harriet Cremeen.

"I had been invited to show some paintings at the museum during the time Percy was roaming around," she said. "He was such a character that you couldn't help but notice him. He had so much savoir-faire. I saw what a beautiful animal he was, and I just had to paint him."

Linda Lindquist Baldwin, founder of a popular Belsnickle figurine and ornament business in Joplin, says Percy is well-known among her national customers who visit her store's annual open house in December.

"Everybody always asks about him," she said.

The mother of actor Brad Pitt visited the museum two or three years ago, Mr. Belk said, probably hearing of Percy from her friend Ms. Cremeen. If Percy couldn't be bought she wanted to see about getting one of his offspring for Pitt's then-wife, Jennifer Aniston. That request was unworkable as Percy had been neutered his first year at the museum.

Cat-napped from the Museum

Cancer is only the latest crisis for Percy; he is also a kidnapping victim. Percy mysteriously disappeared from the museum on Aug. 22, 2006, shortly after a Girl Scout troop toured the facility. Percy has never been known to roam outside of the building.

A search was launched. Local media had Percy's puss all over the nightly news in case someone had

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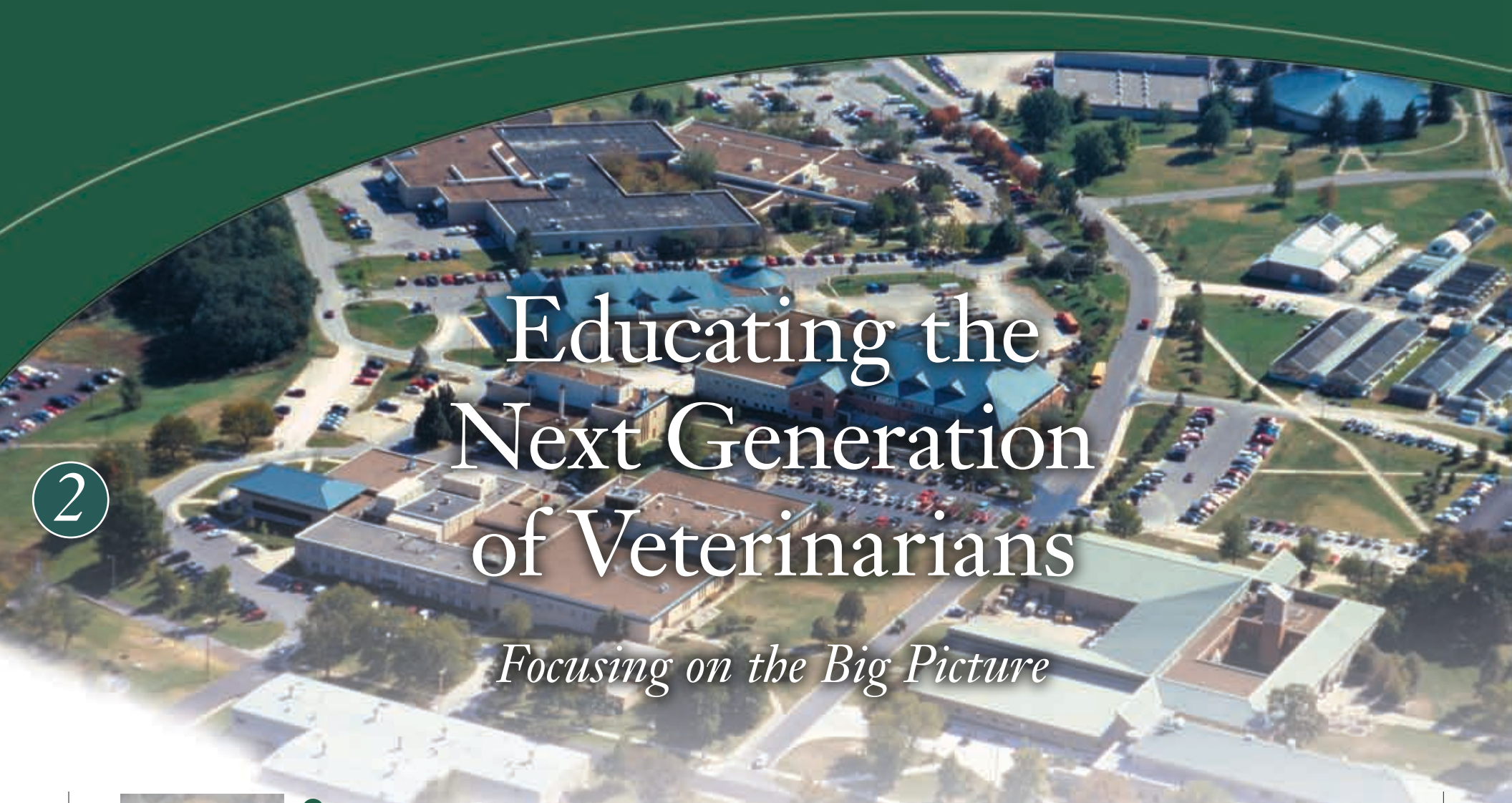
PREVIEWS

COMMENTARY: DR. NEIL OLSON



Educating the Next Generation of Veterinarians

Focusing on the Big Picture

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As our knowledge of the interconnectedness between animals and human beings evolves, so too will the role veterinarians fill in our society. No longer will the majority of veterinary students choose only between small-animal, large-animal and mixed-practice care. Young veterinarians interested in private practice will decide between specializations, such as ophthalmology, surgery, neurology, cardiology or anesthesiology. While the demand for specialization increases opportunities for young and experienced veterinarians, it means an ever-increasing challenge will be placed upon veterinary medical schools to provide the necessary education and clinical training required for modern-day animal-care practitioners. On the other hand, there may be no other domain within veterinary medicine where that growing demand will be felt more than in the field of what is being referred to as "public practice."

Public practice includes such areas as public health, food safety, comparative medicine, biomedical research, laboratory animal medicine and academic veterinary medicine. These areas are all facing critical shortages of qualified professionals. Veterinary schools are being called upon to serve as a national resource to fill positions within public health organizations and as a consequence, academia is also experiencing staffing shortages. There is an immediate need for 1,500 new veterinarians within public health positions in the United States; the projected need by the year 2025 is for an additional 15,000 veterinarians. There are currently 28 colleges of veterinary medicine across the country producing 2,500 new veterinarians per year. Consider that the need for veterinarians in small-animal, food-animal, exotic, equine and wildlife care will increase in tandem with the requirements of a growing human population, and clearly, the numbers fall well short of current and future demands.

State and federal lawmakers have recognized this looming shortage and have developed legislation providing economic incentives to students who pursue careers in veterinary medicine. Missouri Gov. Matt Blunt recently pledged $500,000 in Fiscal Year 2009 to fully fund the state's new Large Animal Veterinary Student Loan Program. The program offers student loan debt relief to veterinary students who agree to provide large-animal care in underserved regions of the state. Pending federal legislation known as the Veterinary Public Health Workforce Expansion Act of 2007 will establish a competitive federal grant program to expand research, diagnostic and training capacity in the nation's veterinary medical colleges.

These funding programs can be valuable resources as the University of Missouri College of Veterinary Medicine attempts to address the local and national deficit of veterinarians. We must prepare to educate substantially more veterinarians than the 76 students per class who currently pass through our classrooms, labs and hospital each year.

Our facilities are already too crowded and outdated to properly serve the new students we accept. Beginning by re-examining the 20-year master plan for the East Campus, in which the Veterinary College has a majority stake, we must move boldly forward to construct new academic facilities. Although at first glance there appears to be a generous amount of available real estate, as evidenced by an aerial map of the East Campus (above), the number of suitable building sites for large structures are, in fact, quite limited. Our goal must be to generate enough money in private donations from our generous supporters to leverage adequate state and federal funds for a new veterinary medical academic building and to renovate research labs. We must also begin to plan for the renovation and expansion of Clydesdale Hall in the not-too-distant future.

As we work vigorously through development to acquire donations for these building projects, it is with the recognition that our facilities must advance in concert with our programs. Client giving frequently comes from positive experiences at our teaching hospital, making the hospital a significant cog in revenues for program growth. Those funds can be reinvested in additional resident and faculty positions, and create more opportunities for graduate students.

We must find benefactors for more endowed chairs, we must train students in business skills to complement their scientific education, and we must continue to serve referring veterinarians. Our Veterinary Medical Diagnostic Laboratory will maintain current services providing diagnostic support to practitioners, the food-animal industry, companion-animal interests, conservationists and other scientists. But we should also be prepared to expand our research into naturally occurring diseases and we must secure a venue where additional clinical trials can occur. Indeed, the College of Veterinary Medicine is a key component of three other campus-wide initiatives that will affect our operations: the Regional Animal Biocontainment Laboratory; the National Institutes of Health Clinical and Translational Science Awards application; and the proposed Comparative Medicine Center, which will allow us to collaborate with those physicians and researchers in human medicine to seek out answers for our common conditions and diseases.

These are exciting and challenging times for our college — the list of needs is daunting, but doable. Working together, we can move forward to meet the 21st century educational aspirations of our students, the animal-care expectations of our constituents and the public health demands of our society. Ark

NEW DEVELOPMENT OFFICER JOINS TEAM: KELLEY ROHLFING MARCHBANKS

It is with much excitement that I introduce myself as the new development officer for the College of Veterinary Medicine. I joined the college in July after spending three years at the Mizzou Alumni Association. I am a central Missouri native and a graduate of the MU College of Agriculture. In August, Greg Jones, director of development, left the university to pursue his dream of opening a law practice. As of Dec. 1, the director position remains vacant. In the absence of a director, I am honored to give a brief update on the College of Veterinary Medicine.

Our most exciting news is the announcement of our new dean. Dr. Neil Olson came to the College of Veterinary Medicine from North Carolina University. Dr. Olson truly hit the ground running. He understands the vital importance of development and is dedicated to cultivating and maintaining relationships with alumni, students and friends of the college. In the coming year, both the dean and I look forward to traveling around the state and nation to meet as many of you as possible.

As always, there are incredible things going on at the College of Veterinary Medicine. With our first-class faculty, staff, students and the vision and leadership of Dean Olson, we look forward to sharing all the wonderful things ahead. If I can ever be of service, please don't hesitate to contact me.

There are only 80,000 veterinarians practicing in the United States.

Out For a Good Walk

Human-Animal Center Establishes Walk a Hound, Lose a Pound Program to Help People Lose Weight and Adopt Shelter Animals

Walk a Hound, Lose a Pound encourages individuals and families to engage in physical activity while increasing the chances that shelter dogs will find good homes.

Two societal problems, obesity and unwanted pets in shelters, may have a common solution. A research program at the Research Center on Human Animal Interaction (ReCHAI), College of Veterinary Medicine, University of Missouri, pairs people needing exercise with shelter animals wanting a walk.

Research shows the benefits of people walking dogs to lose weight and maintain active lifestyles, says Rebecca Johnson, PhD, RN, ReCHAI director and Millsap Professor of Gerontological Nursing at the MU Sinclair School of Nursing. A previous ReCHAI study showed that enjoyable interaction with a dog changes body chemistry that enhances a person's physical well-being. Another study demonstrated that commitment to a dog prompts people to exercise more through dog walking, with the exercise promoting weight loss.

The high rate of obesity in U.S. adults and children creates a compelling need for innovative projects aimed at increasing physical activity, Dr. Johnson states. A community dog-walking project increases physical activity among children and adults, educates the public about the health benefits of walking, increases community awareness about dogs available for adoption, and increases shelter dog adoptability.

A Mid-Missouri Pilot Program

The program, which began this spring in Columbia, Mo., is a joint project by ReCHAI, the Columbia Parks and Recreation Department, the Central Missouri Humane Society (CMHS), and the Missouri Department of Health and Senior Services. Participation fees of $10 per walker are donated to local shelters.

In Walk a Hound, Lose a Pound, adults and families with children come to the CMHS animal shelter to walk shelter dogs on the Bear Creek Trail in north Columbia. Shelter dogs participating in the walks are selected by shelter staff based on adoptability, amicable personality, and ability to be walked.

Program participants receive a T-shirt, and are given the opportunity to enroll in a study of their weight, blood pressure, mood, and physical activity patterns before and after participating in the program. The Missouri Department of Health and Senior Services provides health and nutritional information.

"We anticipate that there will be weight loss and an increase in physical activity outside of the weekly dog walks among those who participate in the study," Dr. Johnson relates. "We will also monitor dog adoption rates at the shelter before and after implementation of the project. Similar projects have been conducted in Indianapolis and Lubbock with favorable outcomes in people and in shelter adoption rates."

More Than Just a One-Day Event

Dr. Johnson has found that people who start the project want to continue each week. In the earlier Walking for Healthy Hearts project, 72 percent of participants consistently walked the dogs because they believed the dogs needed the walking.

For those not electing to participate in the study, the Walk a Hound program is a fun, family-oriented way to increase physical activity, Dr. Johnson says. She states that there is no reason why this pilot program could not be emulated statewide, particularly in rural areas where obesity is a greater problem.

ReCHAI researches ways that positive human-animal interaction can provide non-pharmaceutical therapy and health benefits to humans and animals. Other projects are showing how pet attachment enhances health and well-being among older adults, and how pets can help older adults who must move to a nursing home better adjust to their new surroundings.

Another of ReCHAI's programs will provide online training and certification for those who want to have their dogs certified to visit hospitals, schools and nursing homes. This program is funded by the Dr. Joe and Mrs. Judy Roetheli Lil Red Foundation of Kansas City.

Helping to document the benefits of human-animal interaction is both rewarding and fun. ReCHAI's growing group of projects is testament to the importance of this CVM center. Ark

For more information about ReCHAI, see the Web page at: http://rechai.missouri.edu/

For more information about the MU College of Veterinary Medicine Veterinary Medical Teaching Hospital, see its Web page at: **www.vmth.missouri.edu**
For information about helping support the HOPE Project, contact Kelley Rohlfing Marchbanks, development officer, at 1-888-850-2357.

Tigers Helpin

Sulley's Only Chance

A Malnourished Bengal Tiger Comes to MU for an Orthopedic Operation to Save His Life

For an animal renowned for its leaping and running prowess, Sulley, a Bengal tiger, could barely walk.

Snatched from his mother before he was weaned, Sulley lived as an underfed photo prop on the fair and carnival circuit. Living in a cage and fed store-bought milk, his front legs twisted and bowed as he grew. Even after he was taken to a wildlife sanctuary, his malformed limbs caused him to walk on the sides of his paws, creating painful arthritis in his joints.

The exhibition trade of such tigers, particularly in the South, generates numerous crippled cats like Sulley. Without an effective medical technique to straighten the limbs, these cats almost always must be euthanized.

Sulley, however, would be the first tiger to get another chance. His rescuers at the Wild Animal Sanctuary and the orthopedic faculty at the College of Veterinary Medicine, University of Missouri, were ready to develop another option. Based on their own research, and research from colleagues in human medicine, MU surgeons were ready to create and implement a new way to realign the malformed leg, making it useful and pain free. Never before tried on a tiger, a successful surgical procedure could be used to help other survivors from the exhibition trade.

Photos by Howard Wilson, College of Veterinary Medicine, University of Missouri, unless otherwise noted.

A Tiger Cub's Career

Sulley was barely 3 months old when purchased, along with his four siblings, from a breeder in Texas.

> "Sulley was a magnificent member of an often mistreated and misunderstood species. He and thousands of others like him in this country deserve better than this. Hopefully, his story will awaken people to the plight of privately owned, captive wild animals that are so often exploited and suffer at the hands of human entertainment for monetary gain."
>
> —Dr. Derek Fox

There are several such wild animal exhibition companies in the United States. They usually travel to carnivals and fairs making money displaying tiger cubs and other exotic cats. Typically, they charge $25 per person to have a photo taken with a tiger cub. These firms often spend months on the road driving from one fair or shopping mall to the next.

To supply adequate baby tigers, exhibitors have several pairs of breedable tigers at their home base. Tiger cubs sometimes are taken from their mothers at just 10 days of age and sent off to a traveling road show to replace tiger kittens that have gotten too big.

Away from their mothers, the cubs are fed whatever is available to replace mother's milk — sometimes 2 percent milk from store shelves. Later, the cats get a calorie-rich, but nutrient-poor diet of various pet food types. These growing tigers can be handled all day and evening at these fairs, then have to endure living in plastic dog crates at night and when the shows travel.

Several years ago, the USDA created a new rule designed to solve mistreatment of these cats — cubs had to be at least 8 weeks of age to go on the road and be "retired" at 12 weeks.

The rule was supposed to help enhance the youngsters' quality of life and help protect the public from adolescent cats. But, the new regulation had an unintended consequence — the traveling road shows now needed a new set of cubs every four weeks. This caused the breeders to increase breeding operations — the larger ones cranking out 70 to 100 tiger cubs a year to supply the traveling shows.

This left a trail of 12-week-and-older tiger cubs behind the shows, the cubs finding temporary jobs in advertising or in homes of people who are later unprepared when they see their cute kittens develop into full-grown tigers.

There are an estimated 5,000 to 10,000 such tigers and large cats living outside zoos and sanctuaries — far more animals than there are permanent homes.

After his initial tour, Sulley and his four brothers and sisters were purchased by an unlicensed exhibitor. The exhibitor arrived in New Orleans living out of his car with the five tiger cubs in it. He would stand on a street corner or in a shopping center parking lot holding one of the cubs to draw attention.

The cute animals attracted a crowd, and a Polaroid camera was used to take instant pictures. This went on until one of the five cubs, then 6 months old, died in the overheated car, and the exhibitor was arrested for drunk driving. Unable to post bail, he found a bondsman willing to spring him from jail in return for one of the cubs.

SULLEY'S DIAGNOSIS

Sulley's left forelimb was noticeably misshapen, his right forelimb was bowed and twisted, making it the limb that gave the big cat the most problems with mobility and pain. MU surgeons straightened the right limb sufficiently to improve its function and to reduce stress on the joints.

A radiograph of Sulley's right forelimb shows the degree to which both bones were malformed. The bow shape of the bones placed abnormal loads on his elbow and wrist joints, causing him to essentially walk on the side of his paws. This was creating additional orthopedic damage such as arthritis.

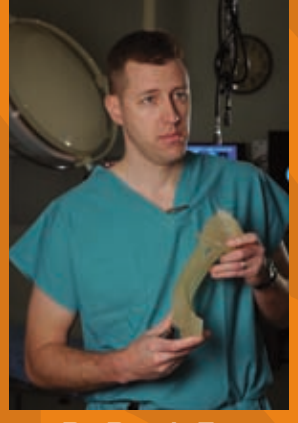
A computed tomographic (CT) scan provided invaluable data that surgeons studied to better understand Sulley's leg deformity.

Courtesy Alameda East Animal Hospital, Denver, Colo.

CT data was used to create a virtual three-dimensional model of Sulley's affected forelimb bones that surgeons studied and used to test their surgery plan during a rehearsal surgery. The model was donated by the ProtoMED company of Arvada, Colo. With this view of Sulley's angulated bones, surgeons were able to plan the precise way that they would surgically alter Sulley's forelimb that would assure the best alignment for function and comfort.

With Sulley under anesthesia, Dr. Cook and Dr. Fox examine Sulley's right leg and discuss surgery plans.

ng A Tiger



Dr. Derek Fox
Assistant professor of veterinary medicine and surgery
College of Veterinary Medicine
University of Missouri

Dr. Jimi Cook
Director of the Comparative Orthopaedic Laboratory
University of Missouri

That cat, the only female in the group, died within two weeks because the bondsman didn't know what to feed her. By this time, the New Orleans Society for the Prevention of Cruelty to Animals obtained a warrant to arrest the exhibitor.

This is where the Wild Animal Sanctuary, Keenesburg, Colo., came in. The SPCA didn't have a place to keep the sick and malnourished tiger cubs that were now as big as a large breed dog. All of the tigers also had varying stages of leg deformities.

At the sanctuary, a large habitat that allows rescued cats to live nearly as they were intended, the three adolescent cats were put on a carnivore milk formula diet. The legs of two of the tigers, Diesel and Kamal, began to straighten as they went through a growth spurt. Sulley's hindlimbs improved, but his front legs only got worse.

Colorado veterinarians were cautiously hopeful — Sulley had one more growth spurt and another two years of growing before he reached maturity. That hope turned to dust as Sulley grew in the next six months. As he gained weight, his front legs got worse, especially the right forelimb.

Tigers Helping a Tiger

Sulley's bowed and twisted forelimbs are technically called antebrachial angular limb deformity including procurvatum, varus and internal rotation. The condition does not heal without intervention. Sanctuary director Pat Craig and his consulting veterinarians contacted the orthopedic surgeons at the College of Veterinary Medicine, University of Missouri, who had earned a reputation for successfully treating these cases in dogs.

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SULLEY'S PREP

Anesthesia technician Jennifer Haight and former intern Dr. Jocelyn Cooper prep Sulley's leg for surgery.

Dr. James Tomlinson, professor of veterinary medicine and surgery, and Dr. Fox measure key distances on radiographs of Sulley's right leg. Dr. Tomlinson was one of Sulley's three surgeons.

SULLEY'S SURGERY

The surgery to reconstruct Sulley's right leg involved three surgeons and took about eight hours to complete.

Dr. Keith Branson, assistant professor of veterinary medicine and surgery, directed anesthesia.

A three-dimensional model donated by the ProtoMED company made from a CT scan of Sulley's leg is compared to the abnormal bone. This helped the surgeons make corrections to the affected limb.

Battling for Big Cats

Mizzou's Mascot Conservation Program Raises Awareness

As Sulley's story illustrates, crowded cages and traveling carnivals are not an appropriate setting for tigers. However, threats to the species extend far beyond breeders and exhibitors who mistreat and neglect the tigers and other big cats that they keep in captivity. Tigers born in the wild face their own set of perils. The numbers are telling; three of eight tiger subspecies have become extinct during the past century and a fourth has not been seen in the wild for 25 years.

But as long as there are Mizzou Tigers, there are people willing to fight to preserve tigers in the wild. Mizzou Tigers for Tigers was organized in 1999 as the nation's first mascot conservation program. Since then, other universities have also organized groups to preserve the real animals that embody their mascots, including two more chapters of Tigers for Tigers at fellow tiger schools, Auburn and Clemson. Tigers for Tigers includes faculty, staff, students and alumni who work together to elevate awareness of the tiger's plight, raise funds for conservation efforts and hope to develop an academic program focusing on tiger conservation and other large carnivore issues. Students involved in the program have varying academic interests, including veterinary medicine, fisheries and wildlife, arts and sciences and psychology.

Members of Mizzou's Tigers for Tigers visit the Kansas City Zoo.

Dana Morris, who has a doctorate in biological sciences from the University of Missouri, is the program coordinator. She said Mizzou Tigers for Tigers provides students with professional development, and experience in running a nonprofit organization, coordinating research and fundraising. But her long-term goal is to offer students tiger research opportunities.

"The tiger provides a wonderful subject for conservation study because of the issues that are speeding their decline, such as habitat loss, poaching and loss of prey," Dr. Morris said. "Along the way, tigers provide the opportunity to study human-wildlife conflict. From a conservation perspective they're especially important because they're one of the last remaining top carnivores."

The students have the opportunity to hear speakers, interact with wildlife experts and participate in behind-the-scenes tours of zoos and sanctuaries. Much of the students' efforts on behalf of the organization focus on raising funds through raffles, silent auctions, merchandise sales and donation solicitation, with habitat conservation benefiting from the fundraising. Encroachment by a burgeoning human population, logging, and conversion of forests into commercial plantations such as oil palm and pulpwood made habitat loss one of the biggest threats tigers faced in the last century. Historically, the tiger ranged from Turkey eastward to the coasts of Russia and China, and from as far north as eastern Siberia to the Indonesian island of Bali. Over time, that range has been compressed to the Indian subcontinent, Southeast Asia, and the Russian Far East, with a small number of tigers still surviving in China and possibly North Korea. Most of the habitat preservation focus has been on India and Nepal, India being home to the Missouri tiger mascot, the Bengal subspecies.

With only 3,000 tigers left in the wild, their survival depends on coordinated efforts. Tigers for Tigers is on the verge of launching a new campaign to raise $75,000 to combat tiger trade and poaching. The strategy involves coordinating a national competition with the Auburn and Clemson Tigers for Tigers organizations to recruit new members and raise money and awareness. Money raised will help game wardens in tiger ranges enforce wildlife park boundaries to stop poaching before it happens. The competition will also generate funds to set up an enforcement network in marketplaces where tiger bones are sold for their purported, but unproven, medicinal and aphrodisiac properties.

Members of Tigers for Tigers would also like to address the problem Sulley tragically embodied — tigers in captivity. There are between 5,000 and 10,000 captive tigers in the United States, however, there is little licensing or oversight at many of these so-called big cat sanctuaries. In Missouri, permits are required to keep captive native species, but no permit is needed to own exotic big cats. Mizzou Tigers for Tigers is supporting legislation that would regulate permits, care and facilities for lions, tigers and bears. At the federal level, Tigers for Tigers also supports "Haley's Act," named for a Kansas teen killed by a Siberian tiger at a USDA wildlife facility. The act, which has become law in Kansas, would prohibit direct contact between the public and big cats and increase penalties for violations of the Animal Welfare Act.

For information about Mizzou Tigers for Tigers or how you can help to protect tigers in the wild and in captivity, log on to http://tigers.missouri.edu. Ark

Perils of Percy

▪ *Continued from page 1*

Dr. Carolyn Henry, *associate professor and director of the Scott Endowed Program in Veterinary Oncology, and Dr. David Bommarito, radiation oncology resident, join Percy near MU's veterinary linear accelerator, the device that directs cancer-killing radiation at tumors.*

spotted him. Scores of *Joplin Globe* newspaper stories kept readers apprised on the mystery.

Mr. Belk let it be known that a cat carrier would be placed at the museum's door with a "no questions asked" plea to return the stolen kitty. The next morning, Percy was found in the carrier no worse for wear.

Percy's Cancer Treatment

Percy received 20 individual doses of radiation treatments at MU. He was treated once a day, Monday through Friday for four weeks. He exhibited the same personality at the hospital that endeared him to museum staff and visitors. He prowled the rounds room while students discussed cases and treatment options, making sure he was the center of attention.

Dr. Henry was pleased that Percy showed no signs of side effects of the treatment, something that human patients with the same disease sometimes exhibit. A patch of Percy's blue-gray hair will probably turn white where the radiation passed through his fur. If the treatment is successful, Percy could live a healthy and full life.

Percy is one of about 1,200 animals that come through MU's veterinary oncology program each year. This program mirrors human medicine treatment techniques including chemotherapy, radiation, and surgery. The teaching hospital is home to the newest advances in radiopharmaceutical sciences, thanks to collaborations with researchers at the Radiopharmaceutical Sciences Institute at MU. Radiopharmaceuticals are designed to target tumors, delivering a radiation payload directly to the tumor cells.

While most veterinary medical teaching hospitals boast one veterinary oncologist, MU has three medical oncologists, one board-certified radiation oncologist and four residents.

Such veterinary oncology efforts are increasingly being asked for as animals, safely inside the house, are living longer and experiencing the diseases of old age.

Research from such veterinary care at MU benefits human patients as the veterinary oncology section scientists routinely team with their human medicine counterparts in the human teaching hospital nearby. A decade ago, such a collaboration resulted in the creation and subsequent FDA approval of a new radiopharmaceutical that relieves the pain of bone cancer in both people and animals.

Recently, the MU veterinary team became one of only four Clinical Oncology Trials Consortium of the National Cancer Institute member institutions to participate in the first two trials comparing novel treatment results on dogs with soft tissue sarcomas, malignant melanomas, and osteosarcoma.

For Percy, however, his visit to MU's Veterinary Medical Teaching Hospital probably seemed like another adventure to make new friends. And while he will always be welcomed back as a friend, it is hoped that his life will settle down and he can concentrate on his job at the museum. Ark

For more information about the MU College of Veterinary Medicine Veterinary Medical Teaching Hospital, see its Web page at: **www.vmth.missouri.edu**
For information about helping support the college's research efforts, contact Kelley Rohlfing Marchbanks, development officer, at 1-888-850-2357.

Sulley's Only Chance ▪ *Continued from page 5*

A rehearsal surgery was completed on the bone model prior to the actual surgery, giving the surgeons an opportunity to practice the procedure.

A radiograph after the surgery indicates the number of surgical metal plates and screws used to reconstruct Sulley's leg. These materials would remain in place even after Sulley's leg healed to provide him additional support.

At MU, Sulley was examined by three clinician-scientists in orthopedics surgery: Derek Fox, James "Jimi" Cook, and James Tomlinson. Drs. Cook and Fox were "Tigers" themselves, both receiving their PhDs from the home of the Tigers, MU. Dr. Cook's DVM is also from MU and he is director of the university's Comparative Orthopaedic Laboratory, a unique research organization that partners experts in veterinary and human medicine to tackle problems that span the species.

MU's orthopedic team is known for tackling the toughest cases with innovation and imagination. With a strong research background in both veterinary and human orthopedic medicine, the team represented Sully's only chance at a normal life.

This team had seen, and helped, a case like Sulley's before. A bowlegged Kansas greyhound had been adopted by a kindly animal breeder who couldn't bear to euthanize the sad-faced dog. A pioneering surgery successfully addressed the twist, bend, and deformation of this dog's legs. Today, a photo of this dog happily running with his friends graces the office of one of the surgeons.

Sulley's surgery would be the next generation of that procedure, using new bone-healing research, cutting-edge hardware, three-dimensional CT images, and computer limb modeling that wasn't available when the Kansas dog came to MU. Still, there were challenges. The lithe greyhound wasn't putting more than 400 pounds of body weight on his healing limbs and didn't have sharp carnivore's teeth to rip off bandages and surgical casts. A single tiger leap, something an adolescent cat freed of his pain might easily attempt, could shatter the healing bones, plates and screws.

Sulley's bones were almost fully formed upon his presentation at MU. Radiographs of his forelimbs confirmed the presence of severe multiplane bony deformities resulting in the bones not only being bent, but twisted. By essentially walking on his "wrists," Sulley put abnormal weight on his joints, causing them to become malformed, resulting in arthritis and pain.

The examination's only good news was that his left forelimb was not as badly affected as the right, meaning that Sully could achieve near normal and pain-free mobility with just one operation.

While it is difficult to measure such an animal's pain, his depressed attitude and inactivity indicated that Sulley's arthritic joints were making his life miserable — something that would only increase as the arthritis worsened. Without surgical intervention, he would have to be put down within a year. There was no option other than to try a corrective operation.

Sulley's Surgery

The MU surgeons rehearsed the surgery using life-sized plastic models of Sulley's bones based on CT scan information. Using the models, donated by the ProtoMED company of Arvada, Colo., the surgeons drilled, sawed, sculpted, and experimented with a range of mechanical devices used in both animal and human orthopedic corrective surgery. They discussed what minimally invasive ways could be used to line up Sulley's leg from his shoulder through his elbow to his wrist so he could walk like a normal tiger.

The nearly eight-hour surgery duplicated the rehearsal with the exception of the incredible density of the forelimb bones and the difficulty moving the tiger's sturdy muscles out of the way — the muscles were as strong as steel bands, indicative of their role in helping these fast animals chase down speedy prey.

For such a dramatic correction, only a single specialized cut in each of the two bones was needed to separate Sulley's forelimb so that it could be repositioned to deal with the twist and bending problems. The two pieces were then realigned, and held together with oversize surgical screws and two large metal plates designed to correct orthopedic problems in horses. The hardware was donated by the Synthes Company.

After the surgery, surgeons measured the new forelimb to see if they had hit their most difficult mark — aligning the shoulder and forearm so that Sulley's paw could hit the ground flat under his shoulder joint. Sulley's alignment was everything the surgeons hoped for.

Everything that could be done surgically for Sulley had clicked into place. Now Sulley would have to cooperate. For his bones to have a good chance to heal, he would need to leave his bandages and cast alone and keep significant weight off the limb for the eight to 12 weeks needed for the bones to mend — a tall order for a young and vigorous cat.

To discourage Sulley from chewing at his bandages, the surgical team used an old veterinary trick — a soft-padded protective cast fashioned from plastic buckets and hose clamps was initially placed on the limb after surgery.

They were hopeful that Sulley would wake up from anesthesia in a mobility-restrictive enclosure and ignore the strange multiple layers of bandages and special cast material. He didn't. With a powerful thrust from the claws of his hind leg, he violently ripped the structure to pieces. MU veterinarians and technicians scrambled to assemble another cast. Sulley was quickly transported back to his familiar Colorado habitat where it was hoped that his tiger friends would distract him.

That worked for a while, but he tore off the new cast, too. It was decided not to attempt another. Local veterinarians monitored the incision for postoperative infection. Such a problem did not occur.

Sulley's initial recovery went better than expected. Mr. Craig and his team did a remarkable job in managing the incision, giving Sulley antibiotics and pain relievers, and padding his enclosure. Sulley was entertained and distracted to keep him as quiet as possible.

For three weeks, Sulley made progress and demonstrated that he was no longer in pain. Suddenly, three weeks after surgery, an abrupt change occurred and the worst fears were realized. The implants had broken, portions of his forelimb bones were fractured, and the limb was malaligned and painful again. No one knows what happened, whether he had a traumatic event overnight or whether the repetitive stress of bearing more than 400 pounds on the corrected forelimb caused the fixation failure.

Whatever the cause, the result and the devastation was the same. Sulley was in trouble. Frantic phone calls and e-mails began in earnest. The sanctuary team and the MU surgical team investigated and pursued every possible option in an effort to save Sulley's life. At the end of a long 48 hours, the decision was made that there was no reasonable alternative to euthanasia for this magnificent cat who had already endured so much.

There was no chance for a second procedure. Sulley was humanely euthanized.

The result was a blow to the team of faculty, researchers and clinicians who worked on Sulley and who formed an amazing bond through the attempt to save him. Information gleaned from the procedure, however, stands ready for modification and a new attempt — perhaps helping a tiger cub now being photographed in a traveling carnival. **Ark**

For more information about the MU College of Veterinary Medicine Veterinary Medical Teaching Hospital, see its Web page at: **www.vmth.missouri.edu**
For information about helping support the college's clinical efforts, contact Kelley Rohlfing Marchbanks, development officer, at 1-888-850-2357.

Remembering a Precious Pet
Through the Pet Memorial Program

Eight years after the death of his dog Choo-Choo, Howard Adkins still treasures the memory of the beloved Lhasa Apso. Choo-Choo's full name, he explains, was Chattanooga Choo-Choo, a reference to her puppyhood habit of puffing like a locomotive as she dashed through the Adkins home. The name Choo-Choo also proved descriptive in another way. The little dog notoriously gnawed a few items of furniture to pieces, but a mangled bit of wood was a small price to pay for Choo-Choo's companionship.

"She was a wonderful dog," Mr. Adkins says, simply.

When Choo-Choo died in 1996, her veterinarian, Beverly Scott, MU DVM '78, of Gilbert, Ariz., made a gift to the University of Missouri College of Veterinary Medicine in Choo-Choo's memory as part of the college's Pet Memorial Program.

"It still touches me," Mr. Adkins says. "She did something that touched my life and in an extremely emotional, stressful time."

Mr. Adkins is not Dr. Scott's only client to have been touched by a memorial gift. She has participated in the Pet Memorial Program for more than 15 years. "It's a good way to try to recognize special owners' special pets and the bonds they have had," she says. "It's also a good way to support my College of Veterinary Medicine."

When the college receives a gift through the Pet Memorial Program, a personalized card is sent to the pet's owner expressing the veterinarian's condolences and explaining how the gift will benefit animal health.

Mr. Adkins was so touched by Dr. Scott's thoughtfulness that, though he is not an MU alumnus, he, too, now gives to the college, on the anniversaries of Choo-Choo's birth and death.

"I contribute," he says, "not just to keep the memory of Choo-Choo alive — she'll never die in my mind — but also to honor Dr. Scott."

The Pet Memorial Program is an awesome program. I'm not sure that veterinarians are aware of it, how easy it is to do, and how much of an impact a small donation can have on clients, veterinarians, and the College of Veterinary Medicine.
— Denise Roche, MU DVM '91

Our family was overwhelmed when we learned of the Memorial Gift in honor of our dog, Tiffany. Over the many years that our pets have been patients, our veterinarians have demonstrated the highest degree of care and compassion. Thank you.
— Veterinary Client

I had many clients show the sympathy letters to their friends, whose reaction was most often, "That's really nice; my vet never does that." I even sent a Pet Memorial donation for people that only came to my clinic to have their family member euthanized. A good percentage of those people later brought their new pets to my clinic.
— Bert Childers, MU DVM '67

It's easy for veterinarians to participate in MU's Pet Memorial Program. Contact the college's Development Office at 1-888-850-2357 for the participation forms. You can download forms at: www.cvm.missouri.edu/giving/PetMemorialForm.pdf

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***Arkeology* Offices:**

W-203 Veterinary Medicine Building
University of Missouri
Columbia, Missouri 65211
(573) 884-2215

www.cvm.missouri.edu
www.vmth.missouri.edu

Editorial Board:

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University of Missouri
College of Veterinary Medicine
W203 Veterinary Medicine Bldg
Columbia, MO 65211