

HEARTBEAT

UC DAVIS VETERINARY HOSPITAL

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Special Edition



UCDAVIS
VETERINARY MEDICINE

Planning for the Future

Miracles happen every day at the UC Davis veterinary hospital. World renowned research and diagnostic programs provide discoveries that support cutting-edge clinical care.



“To meet future animal health needs, the school envisions a comprehensive Veterinary Medical Center unlike any in the world—one that combines compassionate health care for animals with innovation, discovery, and education—all within a collaborative and fertile academic environment.”

– Dr. Jane Sykes, Chief Veterinary Medical Officer

To meet our future animal health needs, we envision a new Veterinary Medical Center (VMC). Phase I of the VMC will include the Livestock and Field Service Center, the Equine Performance Center and the All Species Imaging Center. Planning for Phase I is well underway with elevation concepts and floor plans.

The All Species Imaging Center, pivotal to the more than 30 hospital specialty services, will be centrally located to serve all patients, large and small. The strategic placement of imaging equipment and expertise will expedite diagnosis and patient care, reduce stress and wait time for our patients and maximize operational efficiencies. New imaging modalities such as positron emission tomography (PET scans) will enhance our technical advantages and strengthen the recruitment of excellent faculty and staff.

Advanced imaging is fundamental to patient care and supports scientific discoveries across multiple disciplines including surgery, oncology, neurology, ophthalmology and many more. This new center will bring together veterinarians, physicians, researchers and other scientists across multiple disciplines to advance innovation in imaging to enhance the health of animals and people.

The All Species Imaging Center, staffed by the largest veterinary diagnostic team in the world, will be at the cutting edge of detecting, diagnosing and treating disease and trauma. By utilizing information learned through research, radiologists and clinicians at the VMC will advance the care and rehabilitation of all animals.



On the front cover

Welcome to our fall issue! It's football season, and I eagerly return to my duties as the kickoff tee retriever at UC Davis games. To keep me in tip-top shape, my friends at the UC Davis veterinary hospital take great care of me.



I also enjoy cheering on one of my very good canine pals. On the front cover is Australian shepherd, AKC ASCA Multi-Premier Champion Stonepine Fuel Injected Enzo, or “Enzo” for short. Thanks to his veterinarian, Dr. Gary Shahbazian ('79), he is a picture of health. Enzo works hard competing in dog shows. When not strutting around the show ring, he likes relaxing by his swimming pool and lives the good life.

Pint 



The Heart of the Matter: An Inside Look at the Cardiology Service

With any species, the proverbial “center of its being” is the heart. In humans, the organ takes on an almost deified existence, complete with feelings and its own conscience. We transfer that importance to our animals’ hearts sometimes and make them synonymous with their affections – the root of their envisioned love for us. At UC Davis, we even named this newsletter after the heart, so it should be of no surprise that the Cardiology Service touches so many aspects and areas of the hospital.

“We are integrally involved throughout the entire hospital now,” said Dr. Josh Stern, explaining how he and his fellow cardiologists work collaboratively with other services. “That was a big goal of ours – to make cardiology a hospital-wide service. We now are able to help horses, livestock, and exotics, instead of just cats and dogs. We’ve been able to harness all those species under the cardiology umbrella.”

Research Support

As a research-based university, UC Davis’ top-notch clinical care is heavily supported by the research of its faculty members. Almost all clinical faculty participate in research, and the cardiology team is no different. Dr. Stern, along with Dr. Lance Visser, both lead laboratories that are contributing to breakthroughs in cardiology. They also collaborate with other researchers in the School of Veterinary Medicine (SVM).

Dr. Stern’s laboratory recently made a significant breakthrough in the understanding of hypertrophic cardiomyopathy (HCM), a disease that results in thickening of the walls of the heart ventricles and altering of heart function. The disease affects an astonishing one in seven cats, and also is seen in about one in 500 humans. Because the disease crosses species, veterinarians and physicians often work together to find a cure.

Benchtop to Bedside

“We’ve built a program that can take research from benchtop to bedside seamlessly,” Dr. Stern said. “Between my state-of-the-art molecular biology laboratory and genetics laboratory, and Dr. Visser’s clinical laboratory (to conduct clinical trials), we can take a research question and run it from start to finish.”



Dr. Catherine Gunther-Harrington and Debra Bugarin, RVT, perform a cardiology exam on a parrot.

One such collaboration recently led a group, including Dr. Stern, to discover a new drug that eliminates left ventricular obstruction. The novel drug is the first in its class and uniquely addresses the functional changes that are seen in human and feline HCM.

“This is an exciting discovery for both animals and humans – an excellent representation of the One Health concept in action,” said Dr. Stern. “These positive results show that this drug is viable for use in cats as a possible option to halt or slow the progression of HCM.” A future clinical trial on the drug is planned, while a separate clinical trial on HCM just began at the hospital.

Clinical trials are an important part of Dr. Visser’s laboratory, which is focused on utilizing diagnostic imaging to better diagnose, treat, and prognosticate animals with cardiac disease. Recent discoveries include improving the diagnosis of high blood pressure in the lungs (pulmonary hypertension) in dogs, improving the assessment of heart size on x-rays, and discovering how the right-sided pumping chamber (right ventricle) is involved in HCM in cats. Recent clinical trials led by Dr. Visser have investigated the effects of an antiarrhythmic drug on heart function, and have evaluated new methods to assess the severity of a common congenital heart disease called pulmonic stenosis. Dr. Visser has collaborated with the hospital’s internal medicine and respiratory disease specialist, Dr. Lynelle Johnson, due to the intimate relationship between heart and lung disorders.

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Historic Residency Program

Practicing alongside them in the clinic is Dr. Catherine Gunther-Harrington, a newly-appointed addition to the faculty. Dr. Gunther-Harrington is not only an alumna of the SVM, but also of the hospital's esteemed cardiology residency training program. Already having the largest cardiology residency in the country, the program just got bigger by reaffirming its commitment to training cardiologists with an interest in research and adding a fourth year to the residency that is largely devoted to research.

Having trained more board-certified cardiologists than any other residency program in the country, UC Davis leads the way in treatment of cardiac cases. Cardiology was the largest growing service in the hospital last year, amassing an increase of nearly 20 percent in its caseload. With three faculty cardiologists and four residents, the service is seeing nearly 2,000 patients a year. They are continually expanding the ability to perform clinical trials, and have recently upgraded many pieces of equipment. A new fluoroscopy unit supports interventional cardiology procedures in surgery, and two echocardiography machines allow clinicians to perform ultrasounds in the cardiology suite.

University-wide Collaborations

Outside of the immediate clinical team, the cardiologists also collaborate with other faculty at UC Davis, both in the SVM and the School of Medicine.

Drs. Ron Li and Fern Tablin have collaborated with Dr. Stern's laboratory looking at how genetics influence the

way cats respond to clopidogrel, a drug used to treat arterial thromboembolism. The group recently published a paper on the research, and Dr. Li won the 2017 Phi Zeta Research Award on the topic for "Most Outstanding Manuscript in the Basic Sciences Category."

The Morris Animal Foundation (MAF) funded the research, as well as provided a fellowship grant for Dr. Stern's PhD student, Dr. Yu Ueda. MAF's partnership with the group is long standing, as both Drs. Li and Stern were also MAF fellows.

The Cardiology Service also interacts with UC Davis Health physicians on several fronts. Since veterinarians and physicians see many similar disease processes, the opportunity to learn from one another is a natural fit.

"UC Davis physicians see a lot of complex congenital lesions that aren't common in dogs and cats," said Dr. Stern. "Conversely, we see cardiac conditions that are not common in humans. There is much we can learn from each other."

Dr. Stern and pediatric cardiologists received national press after teaming up to save a cat suffering from a rare heart condition also seen in children.

The relationship with the health system also affords an opportunity for veterinary residents to rotate through the UC Davis Medical Center in order to spend time with doctors who see similar cardiac conditions.

All of this ultimately leads to optimal cardiac care and an exciting future of new treatment options for veterinary patients.

"UC Davis is certainly at the forefront of advancing the cardiac health of animals," said Dr. Stern. "Thanks to generous donors helping to improve our facilities, and the outstanding work of our dedicated team, we are creating a bright future for the animals in our care."

Dr. Lance Visser and DVM student Sarai Milliron ('18) perform an echocardiogram on a cat with potential heart failure.



Honoring *compassionate care*

John and Kate Mustain consider their senior beagle, Callie, the light of their life. Her loyalty, sweetness and sense of humor are just a few of her endearing qualities. Dedicated to keeping her healthy, the Mustains are enormously grateful to their veterinarian, Dr. Mia Tomola ('06), for her compassion and the excellent care she provides for Callie.

To honor Dr. Tomola, they established an endowed fund in her name through a gift to the school. The Mia M. Tomola, DVM Fund for Treatment of Senior Beagles, Hounds and Other Dogs supports medical treatment at the UC Davis veterinary hospital for dogs who are at least 7 years old and whose owners have demonstrated financial need.

"It would be difficult to overstate how much we, as pet owners, appreciate Dr. Tomola for her compassion and expert knowledge," the Mustains said. "She is a remarkable doctor, a gifted diagnostician, and we are very grateful that she's our vet."

"We very much like the idea that, through our gift, we can help make a difference to companion dogs in perpetuity. We find hope and satisfaction in the knowledge that Dr. Tomola's fund will help beagles and other dogs long after we are gone."

— John Mustain

Kate and John appreciate Dr. Tomola's dedication, excellent communication skills and availability for consultation. Through the power of teamwork, they are able to determine the best course of treatment.

"There are no words to express how grateful I am to John and Kate for this honor," Dr. Tomola said. "They are amazing clients who care deeply for their beloved beagles. Their devotion inspires me each day to provide the highest level of care."

The Mustains' love of beagles began about a decade ago when they adopted Lily, a rescued senior beagle found wandering



Dr. Mia Tomola with John and Kate Mustain and their beagle, Callie.

on the streets of San Jose. With Dr. Tomola's unflagging help and loving care, they were able to enjoy five years with Lily.

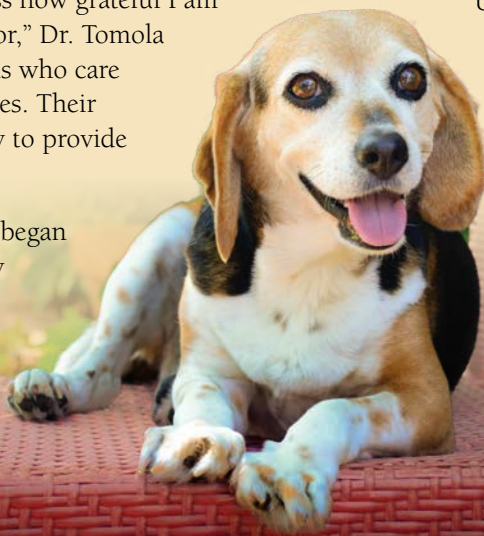
"After losing Lily, we were sure it would be months before we would be ready to adopt again. But we soon fell in love with Clio, a beagle estimated to be 9 years old," Kate said. "Through an online listing, we learned that she was located at a county shelter in Southern California, unclaimed for some weeks and due to be euthanized imminently."

Within minutes of seeing Clio's video, the Mustains jumped in their car and drove for hours on a whirlwind trip to rescue her. Clio enjoyed five years of devoted care and reciprocated affection before succumbing to heart disease. During Clio's final weeks, Dr. Tomola was in touch with the Mustains each day, checking on Clio's condition.

The Mustains have found great joy when sharing their lives with a senior beagle. With Dr. Tomola's help, they plan to always have one as a beloved member of their family.

"When we learned that Dr. Tomola's alma mater is the UC Davis School of Veterinary Medicine, it seemed appropriate to direct our support to the school, for the animals it serves and in admiration of her," Kate said.

"We very much like the idea that, through our gift, we can help make a difference to companion dogs in perpetuity," John added. "We find hope and satisfaction in the knowledge that Dr. Tomola's fund will help beagles and other dogs long after we are gone."



Collaborative Effort Saves Stormie

Following Heartworm Migration



Stormie, a 4-year-old female Siamese cat, has had a history of heartworm disease since she was adopted at 1 year of age. She and her owner live in Los Angeles, but were visiting family in the Bay Area when she developed pelvic limb lameness. Fearing she had fallen off something or down a staircase, Stormie's owner brought her to a local veterinary emergency room in Berkeley, where she informed them of the history of heartworm disease. After ultrasound showed a suspected heartworm in the arterial system, and a heartworm antigen test resulted in a strong positive, Stormie's owner was advised to bring her to specialists at the UC Davis veterinary hospital.

Once at UC Davis, the Cardiology Service responded to Stormie's emergency arrival, and confirmed the referring veterinarian's diagnosis. To get a better idea of the exact location of the worm and to form a treatment plan, the cardiologists performed an echocardiogram. The imaging test revealed a heartworm in the pulmonary artery. They also saw evidence of pulmonary hypertension, or high pressure in the lungs, from the heartworm disease.

An abdominal ultrasound followed, and confirmed that the heartworm extended into her abdominal aorta and down her leg into the right femoral artery. The worm was cutting off

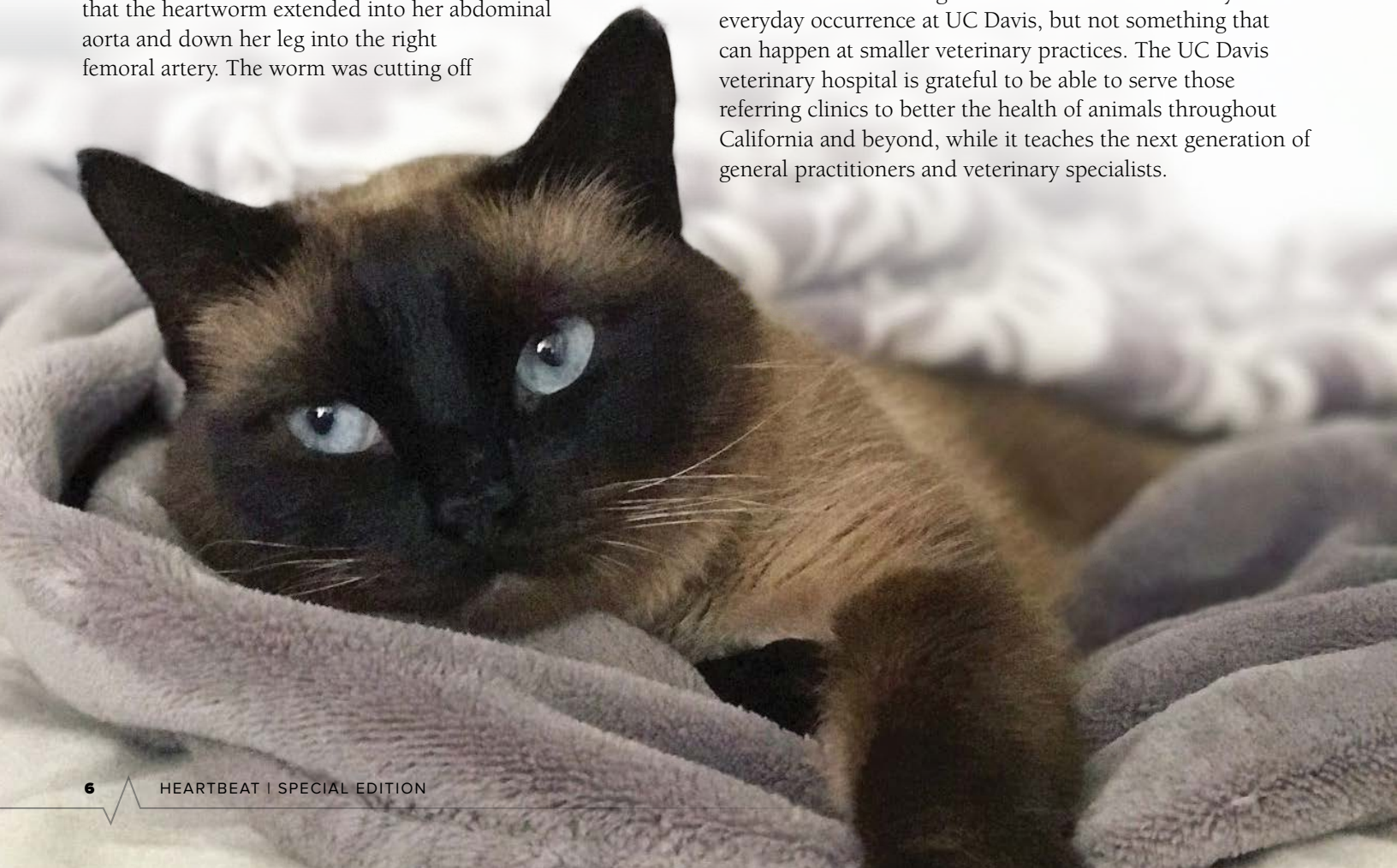
blood supply to the right leg and needed to be addressed immediately in order to avoid amputation.

Cardiologist Dr. Catherine Gunther-Harrington and surgeon Dr. Ingrid Balsa, assisted by cardiology resident Dr. Maureen Oldach, collaborated to successfully remove the 13 centimeter heartworm from Stormie's right femoral artery without breaking it. Because there was normal blood flow through the artery once the worm was removed—and the leg tissue still looked healthy—the artery was repaired, and the doctors decided that amputation was not necessary.

Removal of a heartworm via the femoral artery is extremely rare in veterinary medicine. It has been reported on only a few occasions in dogs, but never in cats.

To avoid a potential future amputation, Stormie's owner has her in physical rehabilitation and is hopeful that she will continue to improve.

This procedure is a wonderful representation of the benefits of certain cases being seen at a large specialty hospital. The ability of board-certified specialists in five different disciplines to collaborate on saving animals like Stormie is nearly an everyday occurrence at UC Davis, but not something that can happen at smaller veterinary practices. The UC Davis veterinary hospital is grateful to be able to serve those referring clinics to better the health of animals throughout California and beyond, while it teaches the next generation of general practitioners and veterinary specialists.



INNOVATIONS IN IMAGING TECHNOLOGY

helping to provide the highest standard of care for our patients

Accurate diagnostic imaging is vitally important to helping our patients reach a positive outcome. To provide the highest standard of care for patients, the UC Davis veterinary hospital is committed to staying at the forefront of innovations in imaging technology.

In 2015, veterinary radiologists from UC Davis were the first to image a horse using a prototype of a newly created positron emission tomography (PET) scanner. PET had been used minimally in a few small animal hospitals, but never on horses due to the small configuration of available machines. In 2016, the school acquired its own scanner, and became the first equine hospital in the world to offer PET scans for horse patients.

By 2017, UC Davis veterinarians were making breakthroughs in demonstrating the success of PET scanning. Its ability to detect lesions is superior to other advanced modalities (such as CT or MRI), and it can also determine whether a lesion—identified with another modality—is clinically significant. By fusing PET and CT or MR images together, active lesions can be anatomically mapped for accurate diagnosis and for surgical, medical

or radiation treatment planning.

Now, PET use for small animals is coming to the school. The next generation Mini Explorer II PET scanner is expected to be operational within the next few months. It will provide a significant increase in sensitivity for total body imaging and perform scans more quickly.

The Mini Explorer II is made possible by a gift from the estate of the late Ernest and Madeline Wellington to the Center for Companion Animal Health (CCAH). The Wellingtons were animal lovers and especially devoted to their dog, Bonnie Girl. Their devotion inspired them to include the CCAH in their estate plans because of the impact the center has on advancing animal health.

“The legacy the Wellington Estate brings to the school is a whole new type of imaging that will help countless animals by diagnosing disease earlier and more completely,” said Dr. Michael Kent, radiation oncologist and director of the CCAH. “It will help us develop, plan and direct treatments for our patients.”

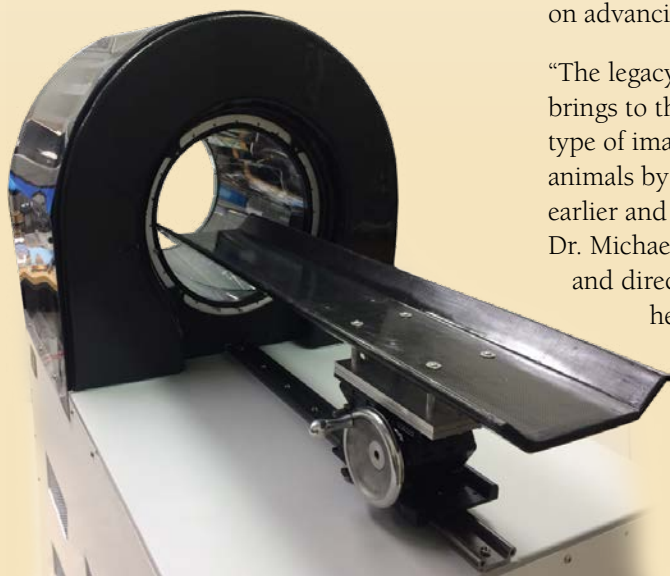
Siting of the Mini Explorer II at the school is a collaborative effort by UC Davis biomedical



Precise imaging helped solve Bella's chronic lameness issue that had stopped her work as a family riding horse. The PET/CT revealed that the main cause of pain in Bella's hock was osteoarthritis, rather than the degenerative changes in her joints that were identified with radiographs and MRI. Clinicians were able to focus on the real root of her problems, and quickly returned Bella to a healthy state, allowing her family's children to ride her again.

engineer Dr. Simon Cherry (College of Engineering), medical physicist Dr. Ramsey Badawi (School of Medicine) and the veterinary hospital's Diagnostic Imaging Service. The school's multidisciplinary approach discovers new ways to prevent, diagnose and treat diseases by harnessing the expertise and resources of the entire university behind each veterinarian.

“Innovations in diagnostic imaging technology are critical to our school's comprehensive vision for the future,” said Dr. Erik Wisner, associate director of Imaging Services. “This includes an All Species Imaging Center as a central feature of the future Veterinary Medical Center. We are committed more than ever to leading the way toward innovation and discovery to improve the health of our patients.”



Small animal PET scans will soon be available at UC Davis.



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Honoring enduring commitment to animals



Recognizing individuals who have chosen to express their commitment to animals through a planned gift. For more information about estate planning, contact the Office of Development at (530) 752-7024.

Mark Your Calendars

**California Raptor Center
Fall Open House**
October 21, 2017

Wildlife & Exotic Animal Symposium
February 23-24, 2018

UC Davis Picnic Day
April 21, 2018

Dr. Temple Grandin
World-renowned livestock behaviorist
April 28, 2018

If you are interested in attending these events, please contact us for more information at (530) 752-7024.

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