UC DAVIS SCHOOL OF VETERINARY MEDICINE

Advance

Winter 2019

Feather, the goat, left the UC Davis veterinary hospital with owner, Jim, after 25 days of intensive care following the devastating Camp Fire.

RESPONDING TO DISASTER, One Animal at a Time

Wildfires in California that move into urban areas, affecting companion animals and livestock, have unfortunately become more common in recent years. So when the Camp Fire exploded in early November, the school quickly mobilized teams in the hospital and in the field to respond to animals in need.

Over the course of the next two weeks, rescue organizations, other veterinary clinics, private owners and the school's Veterinary Emergency Response Team (VERT) brought nearly 70 animals to UC Davis for treatment. Patients included dozens of cats, goats, pigs, a donkey, a llama, several horses, a mini horse, an ewe, chickens, a goose, ducks, goldfish, koi, a tortoise and even a bobcat.

Injuries included smoke inhalation, dehydration and mild to severe burns on ear tips, faces and feet. Depending on the nature of the wounds, in addition to immediate pain medication, veterinary teams gave the animals fluids, antibiotics and oxygen.

VERT responded to the large animal evacuation center at the Butte County Fairgrounds where they evaluated and treated hundreds of animals for flight-related injuries, stress, dehydration and burns.

continued on page 3

LAIRMORE ACCEPTS AAVMC Presidency

Beginning March 2019, Dean Michael D. Lairmore will assume the full duties as president of the Association of American Veterinary Medical Colleges, providing leadership to nationally promote veterinary education, translational research and innovative veterinary patient care. "It's my honor to accept this position," Lairmore said. "As a collaborative network of veterinary leaders, we are committed to preparing the future veterinary workforce to address societal issues in animal and public health, for which a veterinary degree provides the unique training and expertise to address."

YOUNG ALUMNI Support Scholarships

Jillian Mills ('06, DVM '13) and her husband Mike Mills ('05, MBA '14) believe that their education at UC Davis shaped who they are today and that it will continue to make a lasting influence on their careers. Grateful for that impact, they wanted to give back and decided to establish scholarships.

Jillian always enjoyed working with horses and knew from a young age that she wanted to become a veterinarian. She completed her undergraduate degree in animal science and management and continued to work on campus at the Center for Equine Health and the UC Davis veterinary hospital before entering veterinary school. Financial support from scholarship awards helped her realize her dream.

Mike initially thought that he would become a geologist, but became interested in studying business. While obtaining his MBA, he realized that he wanted to pursue the entrepreneurial and small business route.

"After a few speaking engagements at the Veterinary Business Management Association, along with help from Dr. Jim Clark (DVM '88), I was able to land a business internship at a large equine practice," Mike said.

The support the Millses received from the school through scholarships and involvement laid the foundation for their careers.

"As a scholarship recipient, I understood the impact that funds would have on the students who received them," Jillian said. "Together, we established scholarships to promote student interest within our specialized fields: equine sports medicine and entrepreneurship."

To support the next generation of world-class veterinarians and give to the DVM scholarship fund, visit **give.ucdavis.edu/GO/DVM19**. For more information, please contact our Advancement team at 530-752-7024.

RESPONDING TO DISASTER

continued from page 1

While the hospital's veterinary teams cared for patients, VERT responded to the large animal evacuation center at the Butte County Fairgrounds. They evaluated and treated hundreds of animals there—including horses, donkeys, goats, sheep, chickens, turkeys, geese, alpaca and pigs—over two weeks for flight-related injuries, stress, dehydration and burns. Many were able to be treated onsite while the most serious cases were brought back to the veterinary hospital.

Thanks to the generosity of donors, the medical costs of treating animals at the hospital and in the field were covered, relieving owners who lost everything in the fire from the financial stress of treating their pets.

"If you look at the magnitude of a situation like this, it can be overwhelming," said VERT Director John Madigan. "But you can make a difference one animal at a time." Full article and video

TERRIER Regains Her Bounce

After two failed surgeries to repair Ethel's broken right front leg, her veterinarians suggested amputation. But the Yorkshire terrier's owner refused to give up and sought a second opinion from Dr. Amy Kapatkin with the hospital's Orthopedic Surgery Service. Kapatkin has successfully regrown leg bones in more than two dozen dogs using a novel approach developed at UC Davis with bone morphogenetic protein (BMP).

While not all regrowth surgeries are the same, the basic premise of the procedure is to begin by removing any dead bone and failed implants. A scaffold, called a compression resistant matrix (CRM), is saturated with BMP and placed into the bone defect to stimulate bone growth between the ends of the healthy native bone. Rigid stabilization (bone plate) of the normal bone on either end of the matrix with BMP has to be used. The use of CRM and BMP is specifically targeted for large bone defects that lack blood supply to the area after at least one failed surgery.

Kapatkin agreed to take on the surgery, although she thought the chances were slim she would be able to save Ethel's leg. While BMP grows bone effectively, the bone still needs to be stabilized with a bone plate to work. Ethel was missing 50 percent of her distal radius and her remaining bone was smaller than most available bone plates. Despite these odds, the surgery was a success and the 2-year-old is now bouncing around on four legs.

"I'm proud to be part of the process of what UC Davis is doing with this technology," said owner MaryAnn Lawson. "Ethel has been such a blessing to us—she's our little miracle." Full article

CELEBRATING 50 Years

The Class of 1968 (pictured here) reunited in October to celebrate their 50th anniversary reunion. During the traditional Rose Ceremony, classmates shared fond memories and paid tribute to those who have been lost over the years. In honor of this milestone reunion, they established the Class of 1968 Scholarship Fund.

"Our class wanted to express its appreciation for the excellent education we received by paying it forward," said Dr. David Hird, who spearheaded this effort. "The fund will help SVM students participate in extracurricular projects overseas and in underserved populations in the USA."

If you would like to help make a difference for veterinary students, visit **give.ucdavis.edu/go/dvm1968**. For more information, please contact our Advancement team at 530-752-7024.

Dr. Jonathan Dear, a small animal internal medicine veterinarian and hobbyist beekeeper, is helping to train veterinarians about beekeeping and honey bee health.

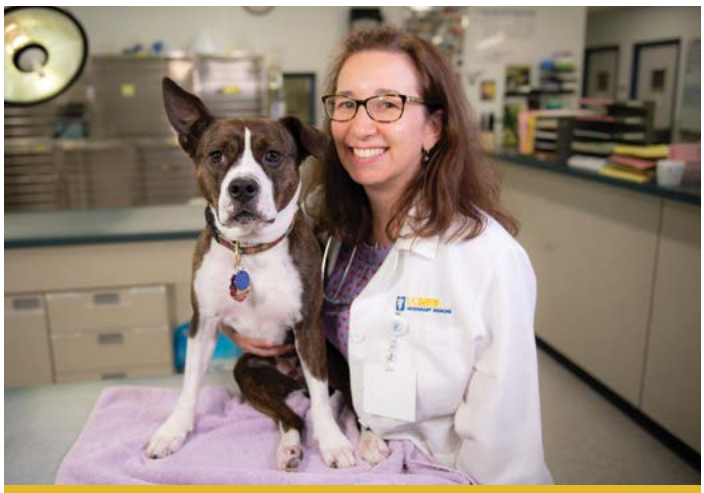
HEALTHY HONEY BEES
Equal Healthy Crops

Bees are critical pollinators for high-value specialty crops such as nuts, stone fruits, vegetables and berries. But they've experienced critical colony losses in the past several years due to a variety of environmental and biological causes, including bacterial diseases.

In an effort to protect honey bee health, the USDA has funded a $483,278 multi-state specialty crop project to develop continuing education training for veterinarians on bee health and antibiotic use—a practice that is now regulated under the Veterinary Feed Directive. The Western Institute for Food Safety and Security, UC Cooperative Extension, and UC Davis School of Veterinary Medicine are partnering with Oregon State University to develop a comprehensive bee biology online course and practical training for veterinarians and apiculture educators.

The ultimate goals include safeguarding valuable crops and supporting veterinary oversight in the use of antibiotics, which will lead to an overall reduction of antibiotic resistant bacteria in the environment.

"Honey bees are such an important part of our economy and, like any food producing animal, they can be affected by preventable and treatable diseases," said Dr. Jonathan Dear. "Our hope is that by educating veterinarians about honey bee health, they can play a key role in maintaining the health and wellbeing of this important species."



FOUR PAWS up for Lecture Series

In the summer of 2018, the school launched "An Evening with Vet Med"—a public lecture series to welcome visitors to campus and educate them on various pet health topics. Once a month, faculty and staff members present hour-long seminars that are geared toward both large and small animal owners interested in learning the latest in caring for their four-legged family members. The events, which are free and open to the public, have been met with rave reviews.

WE'RE ON TV!

We're getting national attention on a new ABC Saturday morning show entitled "Rescue Heroes" and a segment of "Ripley's Believe it or Not." Film crews came to interview UC Davis veterinarians for their efforts to help animals injured during California wildfires. They featured Dr. Jamie Peyton's use of tilapia skin as a biological bandage on bears, mountain lions, horses, and owls. They also highlighted the efforts of Drs. Esteban Soto and John Madigan in rescuing dozens of koi fish after the 2017 Napa and Sonoma fires. The Ripley's segment will focus on the Veterinary Genetics Laboratory's method of analyzing genetic components in dog feces to solve crimes.

Tilapia skin is sutured to a bear's burned paw to help with the healing process.

IMPROVING VISION for Snow Leopard Cub

UC Davis veterinary specialists and the Sacramento Zoo veterinary team performed a rare eyelid surgery on Coconut, the zoo's snow leopard cub, to correct a congenital ocular deformity.

"If you don't do any type of corrections for these animals, they will develop recurrent irritation," said UC Davis veterinary ophthalmologist Brian Leonard (far right in photo). "Then you can have a much more severe scenario."

The eyelid surgery has been a possibility since UC Davis and Sacramento Zoo veterinarians first examined the young cub. After months of regular monitoring, as well as daily eye drops and periodic examinations, the two teams decided in late September to proceed with the eyelid surgery.

The procedure took place at the zoo's Dr. Murray E. Fowler Veterinary Hospital and was open to the public via the viewing window at the hospital. The team used cryotherapy to freeze Coconut's eyelid hair follicles to keep them from growing into the eye and causing damage.

While the cub was under anesthesia, Dr. Denis Marcellin-Little, a UC Davis orthopedic specialist, was able to perform an evaluation to assess the cub's muscles and bones related to an additional abnormality commonly referred to as "swimmer's syndrome." Since his birth, the zoo's animal care team has been working with Coconut to help treat his physical deformities and improve his mobility.

After a couple weeks off exhibit to recover, Coconut is back on display with his mom. Overall, the surgery was a success. He is holding his eyes open more widely and seems more comfortable. There are a few hairs that have regrown on the right eyelid that the team plans to remove at his next annual examination using the same technique. Full article and video

SURGERY on a Fish?

Madonna, a 6-year-old koi fish, recently presented to the UC Davis veterinary hospital's Aquatic Animal Health Unit of the Companion Exotic Animal Medicine and Surgery Service with a grossly distended abdomen.

A series of diagnostics—including radiograph, ultrasound and CT scan—were unable to determine the tissue of origin, but did show the mass pushing on her heart and posing a serious health risk. Madonna's owners opted to have the tumor removed, despite the high possibility of surgical complications. One of the primary concerns was how to keep the fish safely and adequately anesthetized during the procedure, which was led by aquatic specialist Dr. Esteban Soto.

Throughout the 90-minute surgery, the team used a pump that allowed anesthetized water to flow through a tube into Madonna's mouth and perfuse her gills. They kept a close eye on her opercular rate that indicates respiration in fish, and used Doppler to monitor the flow of blood through her heart to ensure a delicate balance of anesthesia.

Madonna remained stable for the entire surgery and the veterinarians removed a softball-sized, 1.1-kilogram gonadal tumor—nearly half her total body weight. After surgery, Madonna recovered at the UC Davis Center for Aquatic Biology and Aquaculture, located on campus near the veterinary hospital. Her sutures were removed after three weeks and she remained an additional week before returning to her home pond with more than 20 other fish in Northern California. Full article

A 1.1 kg tumor was removed from a 2.3 kg koi fish.

Developing a Better **SALMONELLA VACCINE**

Salmonella bacteria (red) invading human cells.

UC Davis researchers recently announced in the *Proceedings of the National Academy of Sciences* a breakthrough in understanding which cells best protect against *Salmonella* infection—a critical step in developing a safer, more effective vaccine against a bacterium that annually kills an estimated one million people worldwide.

They found that non-circulating memory T cells in mice protected against reinfection from *Salmonella* Typhi, a strain that causes life-threatening enteric fever commonly in Africa and parts of Asia.

"Our goal is to understand the mechanisms of protective immunity in mice to learn tricks of the immune system and then develop a vaccine that could replicate that to use for people who live in these areas," said Professor Stephen McSorley, interim director of the Center for Comparative Medicine, who led the research team. "We found that you absolutely need these non-circulating T cells to protect against *Salmonella*. It's a new cell population we haven't looked at before and they're very effective. They may be part of the answer to developing vaccines against a variety of pathogens." Full article

PET IMAGING Advances Treatments

Positron emission tomography (PET) scanning has been in place at the veterinary hospital for more than two years. In 2016, UC Davis became the first hospital in the world to implement an equine PET scanner, and added a small animal scanner in 2018. The program enjoyed a successful second year with many exciting developments.

Through collaborative support from the Center for Equine Health and Brain Biosciences, specialists with the Diagnostic Imaging Service completed more than 85 equine PET research studies and scanned more than 40 clinical patients, acquiring useful information for case management. PET has proven to be more valuable than CT imaging alone in determining the location and extent of lameness in horses, and also played an important role in laminitis research, exploring unknowns on the origin and development of the disease.

Small animal clinicians used the technology to gain further knowledge of oral tumors and orthopedic issues, successfully completing clinical trials that confirmed the value of PET scanning for treatment planning.

CT/PET fused images (bottom) show much greater detail of lesion location than CT images alone (top).

RARE BLOOD DISORDER Discovered in Cat

Miao Miao, a 4-year-old male domestic shorthair cat, was brought to the veterinary hospital with persistent nosebleeds. Based on previous medical issues, his owners were aware that he had some variation of a blood platelet disorder (causing an inability to properly clot blood), but the exact make-up of that was never discovered. Through a collaboration of UC Davis emergency, internal medicine, and research specialists, a unique cause of Miao Miao's bleeding was found.

Critical care specialist Dr. Ronald Li operates a state-of-the-art platelet physiology laboratory with equipment and capabilities found in only a handful of veterinary centers around the world. Li analyzed Miao Miao's platelets and discovered that he has a congenital platelet disorder—Glanzmann thrombasthenia (GT)—that has never been reported in a cat. GT causes Miao Miao's platelets to be nonfunctional and lack expression of a protein called integrin, which is important for the formation of blood clots.

In humans and dogs, GT is caused by a genetic mutation in the genes responsible for making a platelet protein that is essential for clot formation. Li is currently analyzing Miao Miao's DNA to further characterize his genetic mutations. He hopes to identify the mutation so that cats with a similar bleeding disorder can be tested in the future.
Full article

Miao Miao is the first cat ever diagnosed with the congenital platelet disorder Glanzmann thrombasthenia.

Expanded Space for **EXOTICS**

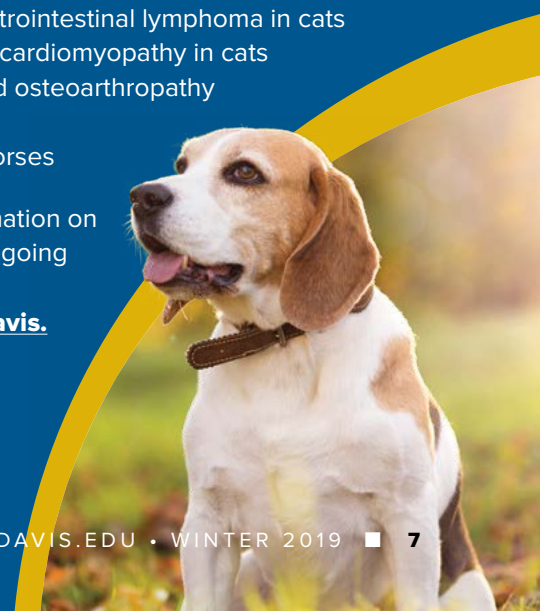
Renovation and expansion of the Companion Exotic Animal Medicine and Surgery Service is complete with three new examination rooms to enhance capabilities for treating patients and provide examination space dedicated to exotics. This project is part of the first phase of the UC Davis Veterinary Medical Center (VMC). Pictured from the left are veterinary student Marlene Haggblade, Dr. Michelle Hawkins, Dr. Joanne Paul-Murphy, chief of service, and Dr. David Sanchez-Migallon Guzman. The school has planned for phased construction of VMC projects to ensure the continued smooth operation of clinical services and patient care. Read more about the school's vision for the new VMC at **www.vetmed.ucdavis.edu/giving/vmc**.

Veterinary Center for **CLINICAL TRIALS**

The Veterinary Center for Clinical Trials is dedicated to accelerating the identification and development of diagnostics and therapeutics for the benefit of veterinary and human patients. There are more than 50 ongoing veterinary clinical trials in different specialties and species, including:

- Megaesophagus in dogs
- Diabetes in dogs
- Jaw joint pain in dogs
- Small cell gastrointestinal lymphoma in cats
- Hypertrophic cardiomyopathy in cats
- Temporohyoid osteoarthropathy in horses
- Laminitis in horses

For more information on these and other ongoing clinical trials, visit: **www.vetmed.ucdavis.edu/clinicaltrials**.



UC DAVIS
VETERINARY MEDICINE

www.vetmed.ucdavis.edu

(VMDN)
School of Veterinary Medicine
University of California
One Shields Avenue
Davis CA 95616–8736

Advance is published by the University of California, Davis, School of Veterinary Medicine: Michael D. Lairmore, dean; Tom Hinds, director strategic planning and communications; Trina Wood, editor; Katie Blakewell, Don Preisler, Carolyn Sawai, Robert Warren, Rocky Mountain Laboratories, NIH, contributors. For subscription questions contact the Office of Advancement 530-752-7024 or svmdevelopment@ucdavis.edu. *The University of California does not discriminate in any of its policies, procedures or practices. The university is an affirmative action/equal opportunity employer.*

Help us go green! Subscribe to our electronic publications by visiting www.vetmed.ucdavis.edu/go/subscribe.

Nonprofit Org.
U.S. Postage
PAID
UC Davis

Veterinary Continuing Education **CALENDAR**

530-752-3905
svmcontinuinged@ucdavis.edu

The school provides lifelong learning through more than 20 annual offerings in the Veterinary Continuing Education program.

For a complete listing of events, visit: www.vetmed.ucdavis.edu/CE/

2019 Feline Symposium: Off to a Purrfect Start – Raising Healthy Kittens
April 27
UC Davis

12th Annual Back to School RVT/Veterinary Technician CE Seminar
July 20-21, 2019
UC Davis

www.vetmed.ucdavis.edu

VetMedJobs

A FREE JOB BOARD and Mentorship Resource

Are you a DVM looking for a job or an employer searching for the right veterinarian to add to your team? Check out our free online resource! This unique, robust system also houses a Mentor Network where you can either register as a mentor to offer advice or seek out a mentor to ask questions. Whatever your needs, check out VetMedJobs today at: **https://ucdavis-svm-csm.symplicity.com/**

New Veterinary Business Certificate Program

Want a stronger skill set for building your practice? Join us for "Foundations in Veterinary Business," a new business certificate program designed to strengthen practical skills required to manage and lead successful veterinary practices. Designed for associate DVMs, practice owners, or leaders of large corporate practices. For more information go to: **https://tinyurl.com/vetbusiness**, or contact the Graduate School of Management at 530-752-6840.

Thank you!

We're so grateful for all of our donors! You've helped us treat animals burned in the Camp Fire, established scholarships for first-generation college students, provided research fellowships to expand students' career aspirations, endowed teaching chairs, expanded our facilities and financed state-of-the-art equipment. Your philanthropy enables us to make a difference locally and globally. We're pleased to recognize Chancellors Laureates and Dean's Circle members through honor rolls at **www.vetmed.ucdavis.edu/honor-roll**.

Check out program highlights, research opportunities and facilities on campus that have been made possible by your generosity by visiting this map online: **giving.ucdavis.edu/map-philanthropy-uc-davis**.