

Leading the Way – the Veterinary Medical Center

Chancellor Gary May and Dean Michael Lairmore proudly announced in October the launch of the long-term plan to transform the UC Davis <u>Veterinary Medical Center</u> (VMC). The campaign, called "Leading the Way," marks the first phase and aims to raise \$115 million to update and improve three critical areas: the Livestock and Field Service Center, the Equine Performance Center and the All Species Imaging Center.

At the launch event, Chief Veterinary Medical Officer Jane Sykes remarked that each patient will receive attentive and personalized care in the center of a leading biomedical research hub. The state-of-the-art VMC will amplify the ability of veterinarians and scientists to collaborate and create innovative solutions for patients, setting a new standard for veterinary medicine.

Thanks to the generosity of philanthropic partners, the school has raised \$67 million so far from grateful clients, alumni, faculty, staff and friends. Second generation alumnus, Dr. Jon Klingborg ('92) and his classmates were the first to support this project with their 25-year reunion class gift. Other long-time partners include the Frank and Eva Buck Foundation, Glen and Peggy Jeckel, the Wayne and Gladys Valley Foundation, the Baileys Foundation and Dr. Alison Baileys ('16), and Dr. Morton LaPittus ('61) and his wife, Susan. "I'm so happy that my Class of 1992 is on the front edge of this fundraising initiative. It is our vision that others will join us to help build the new Veterinary Medical Center." – Dr. Jon Klingborg



Leading veterinary medicine, addressing societal needs

How Toxic is Wildfire Smoke?

Professor Kent Pinkerton has spent the past 30 years studying air pollution and how it affects respiratory, cardiovascular and neurologic health of humans and animals. So, when wildfires swept through vast areas of California in 2017, they became the center topic of a graduate course he was co-teaching on environmental health.

What are the health effects of wildfire smoke? And what are the components of that smoke when a wildfire hits urban areas like Santa Rosa or agricultural lands where human-made chemicals and pesticides become part of airborne particles?

"Most of the studies we've conducted over the years look at the effects of environmental tobacco smoke and combustion particles on lung growth and development," said Pinkerton who serves as director of the Center for Health and the Environment, as well as director of the Western Center for Agricultural Health and Safety. "We don't have the complete data on the complexity of wildfire smoke composition that may contain chemicals that are quite toxic."

Particles and gases in wildfire smoke can cause tightness and pain in the chest, wheezing, coughing and dizziness. There is a greater concentration of particles in wildfire smoke that vary in size and different constituents in those particles that may create a more toxic combination than researchers find in other sources of air pollution.

The health impacts on companion animals such as cats, dogs and horses are similar to what humans experience. Pinkerton explained that they share a similar lung structure and suffer from the same effects. Fortunately, some of those animals are more likely to breathe through their noses, which help to filter particles from the air better. The air from wildfire smoke poses a similar risk to animals outside and humans fighting the fires.

Lake County fire, August 2016

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The toxicology graduate students in the class Pinkerton was co-teaching with UC Davis Health Professor Jerold Last published a review paper in *Current Topics in Toxicology*. One recommendation was the need for more studies on the compounds found in wildfire smoke. With an increase in the number and intensity of these fires over the past couple of years, the need for this information continues to be urgent for several reasons, Pinkerton said.

For one, the amount of aerial fire retardant used in California from 2012 to 2015 increased from approximately three million gallons to about seven million. During the same timeframe, pesticide use in the state increased from about 186 million pounds to 194 million pounds. Fire retardant chemicals are necessary to suppress wildfire and keep it from reaching heavily-populated urban areas, but the health risks of the chemical compounds remain poorly studied.

"We see the strong emerging need for new research in this area to better determine the health risks of wildfire smoke to humans and animals," Pinkerton said. "The past few years have shown the prevalence of wildfires isn't going away any time soon."



Dr. John Madigan and students examine a horse they found on a search and rescue mission during the wildfires in Sonoma County.

School Steps Up During Wildfires

For nearly a month last fall, <u>the school helped</u> rescue and save animals injured and/or displaced by the California wildfires that ravaged much of the Napa Valley area. The Veterinary Emergency Response Team, and members from the Center for Equine Health and the veterinary hospital performed vital tasks to achieve this team effort. From search and rescue missions in the fire zones and aiding at evacuation centers, to caring for hospitalized animals, the school played a major role in helping the animals of Northern California. Those in the field treated scores of horses and livestock, while the hospital ultimately cared for 77 animals, including dogs, geese, chickens, llamas, horses, cats, and koi fish. <u>https://give.ucdavis.edu/</u> VMTH/V6TH631

Learning to Fail

Teaches Success

ailure has never been an option for Emily Brown. At age 4, she decided to become a veterinarian. At 10, she was convinced by a teacher that great vets come from Davis. In 2011, she completed an undergraduate degree in Animal Science with a focus in genetics at UC Davis, then launched immediately into the DVM program.

"I loved veterinary school," Brown said. "It was exactly what I thought it would be, but I was definitely missing some of the more basic science I'd done during my undergrad years."

Brown worked in Dr. Danika Bannasch's lab as an undergrad and knew about the <u>Veterinary Scientist Training</u> <u>Program</u> (VSTP), designed to allow DVM students to concurrently pursue a Ph.D. But the stress of four years of college had her wondering.

"What kind of person signs up for two graduate degrees at once?" she said. "One sounds overwhelming by itself. Why don't I just go be a vet and be happy with that?"

Brown's chance to present research in a poster session at an international conference in Sweden after her first year of veterinary school convinced her to reconsider.

"I thought, you know, a Ph.D. could be pretty cool!" Brown said. "Dr. Bannasch likes to joke that's how she hooked me in. So, I signed up for VSTP in the fall of my second year."

To complete a Ph.D., students step out of the DVM curriculum after two years and conduct research as long as it takes to finish the doctorate. That's when Brown said she began learning some of her biggest life lessons.

"It's ok for things to fail," she said. "Even proving a hypothesis wrong in research is still important in narrowing down the next steps."



Emily Brown with her Nova Scotia duck tolling retriever, Gilly, a daughter of Dr. Danika Bannasch's dog Pint.

In the end, Brown's participation in a major research project in the Bannasch lab paid off in a big way. She helped discover a genetic mutation across dog breeds responsible for chondrodystrophy (the skeletal disorder leading to shorter legs and abnormal intervertebral discs) and was first author on the paper published last October in the <u>Proceedings of the</u> <u>National Academy of Sciences</u>.

Brown will receive her DVM in 2019, and plans to pursue equine/large animal medicine with an emphasis on endocrinology and reproductive medicine, where she can use her genetics knowledge in clinical practice. She also hopes to follow Bannasch's example and mentor students through teaching and research.

Brown credits the philanthropic support from several programs that made her career path possible: VSTP, <u>Students Training in Advanced Research</u> and the <u>Yearlong</u> <u>Exposure to Advanced Research</u>.

"The funding I received through these programs was huge," she said. "I couldn't have done it otherwise. I was able to focus 100 percent on the science and I will forever be thankful to donors to these programs that made that possible." <u>https://give.ucdavis.edu/go/dvmscholfund</u>

2018 Renal Week

March 19-24, UC Davis

The Center for Continuing Professional Education is teaming up again with the International Renal Interest Society (IRIS) to present this year's IRIS Renal Week. This is an internationally recognized nephrology conference, featuring topical issues in renal medicine presented by world leaders in the field. To register and learn more: www.vetmed.ucdavis.edu/ce.



Veterinary Medical Center -

INE PERFORMANCE CENTER

The proposed Equine Performance Center will revolutionize health care for horses.

Equine Performance Center

The school will enhance clinical care and advance equine health studies through the most up-to-date performance center in veterinary medicine.

Equine clinicians and researchers learn from each other, but rarely work hand-in-hand on horses with lameness or other gait abnormalities. Researchers study movement, analyzing data from hundreds of past patients to determine injury patterns. Clinicians attempt to identify lameness issues through observation, local anesthetic nerve or joint blocks, and diagnostic imaging techniques.

This state-of-the-art Equine Performance Center will blend clinical services and data collection for research. The facility will include an arena with high-speed motion cameras (utilized by researchers) to help detect subtle gait abnormalities. The ability to observe a horse under saddle, performing the complex movements associated with its discipline, before and after diagnostic nerve blocks, can greatly improve the accuracy of an examination and subsequent treatment plan. The cameras capture 1,000 frames per second, which will help to uncover potential injuries at an early stage or find the optimal movement pattern for a horse to perform at its highest potential.

The Gait Analysis Diagnostic Unit—which provides sophisticated kinematic analyses of a horse's gait and the efficacy of treatment of a musculoskeletal injury or disease will be integrated into the arena and adjacent trotting lane. A force plate embedded in the trotting lane will help determine the distribution of weight throughout all four limbs.

The center will also include a new farrier station to perform and evaluate shoeing interventions. <u>https://give.ucdavis.edu/Go/VetMedCenter</u>

Research Aids Clinical Treatment and Diagnosis

By bringing aspects of the J.D. Wheat Veterinary Orthopedic Research Laboratory (VORL) directly into the clinic, equine veterinarians will be able to utilize proven research results and sophisticated analytical equipment. With VORL focusing much of its attention on racehorse injuries, the integration of the lab's expertise into the diagnostic arena will bring added benefit to horses brought to the Equine Performance Center.



The integration of orthopedic research into the Equine Performance Center will directly benefit sport horses.

The majority of fatalities due to fracture of a long bone are caused by the transient weakening associated with attempted healing of a pre-existing stress fracture. Researchers have discovered that pre-existing injuries also play a role in fractures of the proximal sesamoid bone that result in fetlock breakdown, the most common cause of death in Thoroughbred and Quarter Horse racehorses. Knowing that catastrophic injuries represent a more chronic process, clinicians are studying the injury development to determine strategies for treatment, and more importantly, to help guide owners and trainers on steps to prevent injuries.

As the VORL continues to lead the way, advancing knowledge of equine musculoskeletal problems, the use of its

sophisticated equipment in the clinic will foster a creative environment for clinically-applied equine musculoskeletal research. This collaborative environment will continue to improve the understanding of equine musculoskeletal diseases and lay the foundation for the future of clinical care.

LEADING THE WAY >>

Livestock and Field Service Center

The Veterinary Medical Center will bring together a community of scholars, clinicians, veterinary students, clients, ranchers and animal patients in facilities designed to provide efficient patient care with immediate access to state-of-the-art technologies.

The Livestock and Field Service Center has been designed in consultation with Temple Grandin, Ph.D., well known for her groundbreaking work in engineering humane animal facilities.



The design of the Livestock and Field Services Center emphasizes animal welfare.

Grandin partnered with the planning team to refine preliminary designs to provide the best possible environment for livestock patient handling and care, and clinical teaching emphasizing animal welfare and student safety.

Basic technical skills and knowledge of livestock are an important part of the student educational experience. Students and residents working and learning in the Livestock and Field Service Center will participate in surgeries such as castrations, common abdominal surgeries, C-sections and leg fracture repairs. They will also gain experience with radiology, ultrasound, endoscopy, laparoscopy, CT and MRI. <u>https://give.ucdavis.edu/VVMC</u>

A Career with Cows

Fourth-year DVM student Ethan McEnroe seems born to be a livestock veterinarian, following in the footsteps of his father, a food production vet from Bakersfield. As a boy, he often accompanied his father to work and would fall asleep to bedtime stories by veterinary author James Herriot. He decided early on to spend his life looking after the livestock of California's farmers and ranchers.

"It's important for California's economy that we continue to lead the nation in dairy production. To do that, we need large animal veterinarians who can help ensure safe, affordable and nutritious animal-based proteins for decades to come," McEnroe said. "I hope to take care of dairies that supply high quality products to people throughout the state, country and world. I want to make sure that the animals that supply us with meat and milk are cared for with the utmost respect and compassion."

As a fourth-year student, McEnroe has participated in clinical rotations through the <u>livestock services</u>, gaining valuable hands-on expertise. Students pursuing a livestock career path pay field visits to local farms, ranches and production facilities. They learn the value of herd health, while clinic experiences such as surgery, imaging and diagnostic analysis hone their internal medicine skills.

As the school strives to give McEnroe and every student the best-rounded veterinary education possible, the new Livestock and Field Services Center will play a vital role in that process, enhancing the learning environment for the next generation of livestock veterinarians.

> DVM student Ethan McEnroe (right) examines a cow's eye.

Veterinary Medical Center - LEADING THE WAY

All Species Imaging Center

Advancements in medical technology are rapidly driving a new age of diagnostic imaging. The All Species Imaging Center (ASIC), staffed by the largest veterinary diagnostic team in the world, will be at the cutting edge of detecting, diagnosing and treating disease and trauma. Pivotal to more than 30 hospital services, the ASIC will bring together radiology, ultrasound, nuclear scintigraphy, magnetic resonance imaging (MRI), computed tomography (CT), and positron emission tomography (PET) under one roof to better serve all patients large and small.

 A

The strategic placement of imaging equipment

and expertise as a hub of the <u>Veterinary Medical Center</u> (VMC) will expedite diagnosis and patient care, reduce stress and wait time for patients, allow different imaging tests to be conducted at the same time, maximizing efficiencies, and promote integrated care and research of the highest quality.

Advanced imaging is fundamental to patient care and supports scientific discoveries across multiple disciplines including surgery, oncology, neurology, ophthalmology and many more. By utilizing information learned through research, radiologists and clinicians at the VMC will advance the care and rehabilitation of all animals. <u>https://give.ucdavis.edu/VVMC</u>



Corvus' diagnosis was the result of just one of nearly 17,000 imaging procedures performed every year at the school's veterinary hospital.

An Inside Look

Corvus, a 10-year-old male Labrador retriever, is a typical lab. He likes to run and play...and he likes to chew up and eat things. Anything. One particular evening, Corvus' owners came home to find a rug destroyed. Since Corvus has a 4-legged companion, his owners weren't sure which dog did it, or if either of the dogs had ingested any of the rug. When Corvus started defecating pieces of rug two days later, however, it was obvious he was the guilty party. For the next three days, he continued to pass bits of the rug, until becoming lethargic, vomiting and not eating.

Radiographs and an ultrasound taken by the <u>Diagnostic Imaging Service</u> showed the rug was blocking his entire small intestine, a condition that would require immediate surgical intervention. Thanks to the clinician's ability to quickly assess his condition through imaging, Corvus did eventually recover.

Corvus' diagnosis was the result of just one of nearly 17,000 imaging procedures performed every year at the school's veterinary hospital. The new comprehensive Imaging Center will further benefit animals like Corvus, saving them from their mischievous behavior.

Celebrating 50 Years of Global Health

ore than one hundred alumni, faculty and friends gathered to celebrate 50 years of the Masters in Preventive Veterinary Medicine (MPVM) program last September. This enthusiastic group shared memories and stories, and "traveled through the decades"

Participants also heard from Dr. Stephanie Ostrowskithis year's Robert Dyar Labrador Memorial Lecturer in Epidemiology. Ostrowski served in the U.S. Public Health Service as a Commissioned Officer (Veterinary Category),

remembering founding faculty Drs. Calvin W. Schwabe and Walter Sadler, and contributions from Dr. George West, who served as the California Department of Food and Agriculture's liaison to the program for more than 25 years.

The MPVM program,

established in 1967, has graduated more

than 1,000 veterinary professionals prepared to investigate and evaluate disease and production problems in animal populations, and to design and implement disease control programs. MPVM grads come from 86 countries in addition to the U.S. and hold top-level positions in government, private industry, and academic institutions worldwide, impacting and improving animal and human health on a global level.

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achieving the rank of captain following 20 years

of service. She shared her experience addressing the African Rinderpest pandemic and engaged the crowd with a review of her diverse career in public health. Ostrowski worked on health issues such as: environmental health and lead exposure; enforcement of animal quarantine at U.S. entry ports;

polio eradication; participation in the

2001 U.K. foot and mouth disease outbreak; cleanup of contaminated buildings following the 2001 anthrax terrorist attacks; and emergency response to natural disasters.

"This event was a testament to the value of an MPVM education and the worldwide impact of its graduates," said Ashley Hill, MPVM program director. https://give.ucdavis.edu/ Go/MPVM

The day's festivities

included a keynote address by Dr. Marguerite Pappaioanou, an epidemiologist and veterinarian with more than 30 years' experience improving global and U.S. public health. For 24 years, Pappaioanou worked at CDC on global emerging infectious and zoonotic disease surveillance, prevention and control programs. She assessed the effectiveness of malaria drugs in Africa, and directed a USAID funded global capacity building project to strengthen evidence-based public health policies and programs in Africa, Asia, and South America.



MPVM alumni celebrate international impacts of classmates and colleagues.



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Veterinary Continuing Education

Calendar

530-752-3905 Fax: 530-752-6728 svmcontinuinged@ucdavis.edu

The school is committed to lifelong learning through its Veterinary Continuing Education by providing nearly 20 annual offerings.

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

February 24-25 Wildlife & Exotic Animal Symposium, UC Davis

March 19-24 Renal Week, UC Davis

April 9-11 2018 Veterinary Society of Surgical Oncology Meeting, Maui, HI

April 28 Special Guest Temple Grandin, UC Davis



www.vetmed.ucdavis.edu

New SVM App

In January, the school launched a new mobile app. It includes information about the hospital and its services, upcoming continuing education events, the latest news from around the school, and up-to-date clinical trials information. Download it at the <u>Apple</u> and <u>Android</u> app stores by searching "UC Davis Veterinary Medicine".

Fall Festival Alumni Reunion Celebration



The Class of 1967 (pictured above) celebrated their milestone 50th anniversary reunion in October. Grateful to the school for their education and rewarding careers, classmates generously gave back through a class gift that will make a significant impact on replacing aged facilities at the California Raptor Center. The Fall Festival Alumni Reunion Celebration this year will take place October 5-7, and honor the classes of 1952, 1958, 1968, 1978, 1988, 1993, 1998 and 2008. For information, please contact the <u>Office of Development</u> at 530-752-7024 or <u>svmreunion@ucdavis.edu</u>.