



Returning to the Show

Hip replacement surgery is relatively common for people. Fortunately for Luna, a 1-year-old female Bernese mountain dog, the [UC Davis veterinary hospital](#) now offers it for small animals. The champion show dog broke the head of her right femur last December when she jumped out of a car window in her driveway.

Luna's owners, Mary Beam and Bobbie Hefner, were referred to renowned orthopedic surgeon Dr. Denis Marcellin-Little, one of the foremost authorities in veterinary orthopedics, who joined the school's faculty last August.

After considering several options, they decided a total hip replacement would give Luna the best chance of returning to a normal gait, continue to compete in shows, and prevent osteoarthritis in the long term. The surgery involved removing the head of her fractured femur and placing two implants: a cup in her pelvis and a stem in her thigh bone. The implants are made of titanium, with rough surfaces that Luna's bones will grow into and become permanently integrated.

The hospital's [Orthopedic Surgery Service](#) is expanding joint replacement offerings, including all types of total hip replacements and custom implants for patients with severe problems. The program will grow and incorporate knees, elbows, and other fully-custom joints.

Luna's surgery was successful and if she continues to recover well, may return to competition by this summer under her show name, Swiss Star's Chasing Moonbeams.

"I keep recommending UC Davis to everyone who is in need of specialty care," said Beam, who has been showing dogs for 15 years. "We felt that we were getting the best care for Luna by coming here."

Commencement 2018



At the [67th Commencement Ceremony](#) held in May, the school celebrated the graduation of 133 DVM students, 30 residents and seven MPVM students. The keynote speaker was Dr. Andrew Clark, who founded an innovative virtual CEO consulting business for veterinarians and business leaders, and the students selected Dr. Patricia Pesavento as their faculty speaker, who shared some insights and good wishes. The ceremony included words of celebration and life tips from Dean Michael Lairmore and Chancellor Gary May, and highlights from student speaker Jordan Cole.

Each year the school honors members of its alumni with [Alumni Achievement Awards](#) for outstanding personal and professional contributions to veterinary science, veterinary practice or the advancement of human welfare.



The 2018 award recipients are (from left to right):

Stanley Creighton – recognized for his vision, effort, and leadership as the founder of National Veterinary Associates; **Pamela Ruegg** – recognized for her extraordinary service to dairy farmers, dairy cows and consumers of dairy products around the world; **Howard Hill** – recognized for his contributions to the health and welfare of swine and to the nation's pork industry; **Philip Kass** – recognized for his outstanding achievements in epidemiological research, extraordinary collegiate support, and distinguished leadership to enhance veterinary medical faculty diversity and equity; and **Jon Klingborg** – recognized for his extreme dedication, leadership and tireless commitment to the health and welfare of the veterinary profession and animal patients.

Staying on Top for the 4th Consecutive Year

UC Davis maintained its premier place in veterinary sciences in the latest QS World University Rankings.

“We are very proud to be rated #1 for the fourth year in a row,” said Dean Michael Lairmore. “The rankings are a testimony to the excellence of our people and programs that strive every day to advance the health of animals, humans, and the environment.”



The school, also ranked #1 by *U.S. News and World Report*, is home to a robust research program with more than \$85 million in annual research funding and provides clinical services to more than 50,000 animal patients annually in 34 specialties. As strong leaders in veterinary medical education, faculty members teach nearly 600 DVM students, 170 graduate students and 110 clinical residents every year.

New Hope

for Treating Canine Epilepsy

Epileptic seizures—in dogs or people—can be frightening to witness. In either species, the seizure stems from a neurological disorder and manifests in loss of consciousness with involuntary jerking or twitching of limbs, vocalization, drooling, chomping and sometimes uncontrolled urination and defecation.

While there are some treatments for dogs with chronic epilepsy, there is still a subset of canine patients that doesn't respond to currently available medications. But hope for a new therapy is on the horizon from a somewhat surprising source—the [UC Davis CounterACT Center of Excellence](#), a federally funded program to combat chemical-threat agents.

Dr. Pamela Lein, a developmental neurobiologist and neurotoxicologist who serves as the center's director, explains that the center's research is relevant to epilepsy and to other types of seizures because they study seizure-inducing chemicals—in particular organophosphates (OPs) and tetramethylenedisulfotetramine (TETS).

OP compounds are typically found in pesticides, jet fuel and as additives in paints and other products. They are also used in nerve agents such as soman and sarin—deadly chemical warfare compounds used in recent terror attacks in Syria. TETS is a powerful neurotoxin once used as a rat poison and now banned in most parts of the world.

Thanks to the use of advanced imaging techniques such as positron emission tomography or PET scans, and magnetic resonance imaging or MRI, at the UC Davis Center for Molecular and Genomic Imaging, CounterACT researchers are able to see what happens in a rodent's brain in real-time during a seizure and in the days, weeks

and months following the seizure.

"The activity in the rodent brain during and following chemical exposure is very similar to what's been seen in humans and animals who have status epilepticus [a condition in which epileptic seizures follow one another without recovery of consciousness between them]," Lein said. "So, this basic science has implications for improving human and animal health."

She is now working with some of the school's neurology faculty—Drs. Pete Dickinson, Beverly Sturges, Maggie Knipe and Karen Vernau—on the steps needed to design and launch a veterinary clinical trial using a promising new anti-seizure medication for dogs with chronic epilepsy that don't respond to other types of medication.

This new drug therapy could prolong the life of dogs with chronic epilepsy who don't respond to treatments currently available.

"Chronic seizures in dogs are a common clinical problem in veterinary medicine and can severely affect the quality and length of the patient's life, especially in dogs that don't respond well to medications," Knipe said.

"We know that epileptic dogs are good models for seizure disorders and treatments in humans, and having novel therapies as options for these patients will dramatically increase our ability to provide exceptional, state-of-the-art care."



Evening of Gratitude

In April, Dean Michael Lairmore (center right) hosted the [Evening of Gratitude](#), an annual celebration that brings together scholarship and fellowship donors with student recipients. Mike Baker (second from the left) gave moving remarks about his late parents, Ann and Dr. Robert Baker ('54)—remembered through scholarships established in his name and awarded to students with an interest in large animal medicine. Other family members attending were (from the left) Lin Baker, Erin Capobianco, Ryan Baker and Kaylor Capobianco. An additional scholarship, created through the Bakers' estate, will be awarded next year to students with an interest in livestock. [To support the DVM Scholarship Fund](#)





A Black-chinned hummingbird in Dr. Bret Moore's hands before an ocular exam.

Training Beyond a DVM

Many veterinarians, upon completing their DVM program, seek opportunities for additional training and experience through residencies, internships and fellowships. Those positions are commonly referred to as house officers at UC Davis, which provides the largest training program in the country.

With 34 disciplines, the program currently hosts 115 veterinarians seeking advanced training in specialty services. While training for the majority of the disciplines takes place at the veterinary hospital in Davis, several of them take place at partner locations throughout California. [The California Animal Health and Food Safety \(CAHFS\) program](#) is the largest of these with several positions at three locations. Veterinary pathology and toxicology positions are available at the CAHFS laboratory on the Davis campus. A veterinary avian medicine program is available at the laboratory in Turlock. Additionally, two opportunities are offered at the San Bernardino laboratory—veterinary pathology and musculoskeletal pathology of racehorses.

The [Veterinary Medicine Teaching and Research Center](#) in Tulare, home to the dairy production medicine residency, is located in the heart of California's dairy industry. Tulare County is the leading milk production county in California with more than 285 dairies with an average herd size of 1,700. The program utilizes these important resources and provides participants quantitative skills that can be utilized in the interest of controlling and preventing economically important diseases and improving the efficiency of dairy cattle production.

The laboratory animal medicine (LAM)/primate medicine residency partly takes place at the California National Primate Research Center at UC Davis. It is designed to prepare veterinarians for a career in LAM and fulfill eligibility requirements for the American College of Laboratory Animal Medicine certifying examination. The residents work closely with campus attending veterinarians in compliance with animal welfare laws and with the Institutional Animal Care and Use Committee staff in proper animal use protocol.

The three-year [residency in zoological medicine](#) provides the necessary requirements to help the resident become certified in the American College of Zoological Medicine. This multi-site residency begins with a year at the Sacramento Zoo, followed by a year at the San Diego Zoo, and concludes with a third year at the San Diego Zoo Safari Park and SeaWorld San Diego.

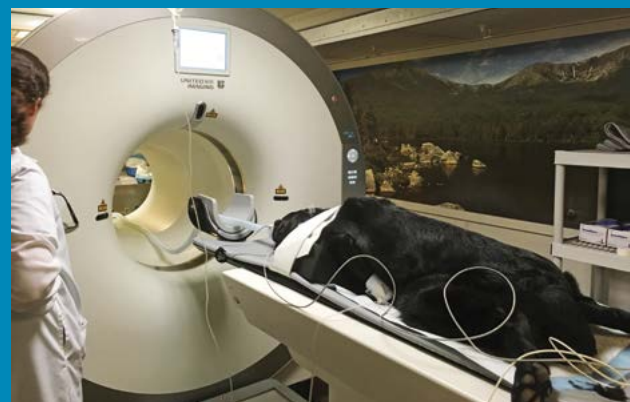
For the past 40 years, the house officers have gathered annually to present research studies at the Gerald V. Ling House Officer Seminar Day. With centers like the [Center for Companion Animal Health](#) and the [Center for Equine Health](#) financially contributing to these projects, house officers have the ability to pursue a vast array of research subjects from ocular disease in hummingbirds to the effect of NSAIDs and antihistamines on antibody production in horses when concurrently administered with bacterin-toxoid vaccine.

Upon completion of a residency program and passing of examinations, these veterinarians become board-certified specialists in their particular field of interest, opening doors to many new career opportunities and providing advanced animal health care.

Leading the Future of Imaging

What do you get when you combine a biomedical engineer, a physicist, and veterinary diagnostic imaging specialists? A new and improved PET scanner known as the Mini Explorer II. This advanced imaging system is designed to provide veterinarians with greater detail on a patient's anatomical functioning or existing pathologies.

"The applications of this machine will be above and beyond typical PET scans," said Dr. Derek Cissell, assistant professor of diagnostic imaging who also holds a Ph.D. in biomedical engineering. "We'll get better spatial resolution and sensitivity that will aid in providing the best care possible for our veterinary patients."



Clinicians prepare a dog to undergo scanning in the Mini Explorer II.

Advances in Cat Care

From surgical procedures to groundbreaking disease treatments, the school's clinicians and researchers team up to help cats live all their nine lives. The [veterinary hospital](#) treats more than 5,000 cats per year, and has designated a feline only area of the waiting room to make cats more comfortable. Some of those patients are recipients of the most advanced feline treatments in veterinary medicine.

When Dr. Boaz Arzi saw many of his dental patients suffer from [feline chronic gingivostomatitis \(FCGS\)](#), he collaborated with Dr. Dori Borjesson and other researchers to develop a novel stem cell treatment that saw tremendous success in a clinical trial. FCGS is a painful and debilitating severe oral inflammatory disease that is estimated to affect up to 12 percent of the general cat population. Previously, the only treatment option was a full mouth extraction, diminishing a cat's quality of life.

On the surgery side, cardiologists, neurologists, ophthalmologists and soft tissue surgeons are all making strides to improve feline health. One of the hospital's most prominent cases in recent years was Vanilla Bean, a 1-year-old female Burmese, who was seen for respiratory distress. She was diagnosed with a rare congenital heart defect that does not allow blood to flow properly through the chambers. This disease is also seen in children so pediatric cardiologists from the UC Davis Medical Center assisted veterinary cardiologist Dr. Joshua Stern to position catheters and balloons within her heart, allowing blood to flow through it regularly.

In another case, [Gray, a 9-month-old male cat](#), came from Hawaii for treatment after becoming acutely

paralyzed. Often, this can mean that a tumor or disk disease is compressing the spine. Upon discovering an infection of his spinal cord and surrounding vertebrae, the veterinary team immediately took him into surgery within hours of getting off the plane. Neurosurgeons removed part of his vertebrae in order to eliminate any infected material and decompress the spinal cord. Gray was walking again in just a few weeks.

Minimally invasive surgical procedures are helping cats recover faster and offering treatment options that weren't available less than a decade ago. With the advancement of equipment and surgical acumen, Kinako, an 8-year-old female domestic shorthair cat, had her chronic blocked tear duct problem resolved. By using a camera small enough to fit into her tiny drainage ducts, surgeon Dr. Bill Culp teamed up with ophthalmologists to identify and remove the obstruction and permanently open her ducts.

With the broad array of health specialties located in one place, cat owners are well served by the veterinary hospital and its teams of experts.



The veterinary hospital treats more than 5,000 cats per year, including Piglet who was treated for feline chronic gingivostomatitis. ►

The impetus to build the Mini Explorer II came from a collaboration with Simon Cherry, a UC Davis biomedical engineer and Ramsey Badawi, a physicist in the Department of Radiology at UC Davis Health. Their end goal is to build a full human-size PET scanner, larger than any currently available. But they needed to start with a scalable model first.

In consultation with Cissell and Drs. Erik Wisner, Allison Zwingenberger, and Mathieu Spriet, the team built Mini Explorer I for testing at the veterinary hospital for approximately five months before it was moved out to the California National Primate Research Center. They followed with a slightly larger model—Mini Explorer II—designed to fit a medium-sized dog and other small animal patients.

"It takes a long time to collect data for the entire body," Cissell said. "Typical scans are acquired in separate pieces over a patient. This advanced imaging will allow clinicians to collect all of that information simultaneously, offering better patient outcomes by scanning faster, reducing patient stress and offering enhanced imaging quality to look at disease processes with greater sensitivity and precision."

The Mini Explorer II is up and running in a temporary location until its permanent space is available in the future [All Species Imaging Center](#).

"The sky is the limit for future clinical and research applications," Cissell said. "This is a perfect example of creative interdisciplinary approach and synergy."

Healthy Chickens, Healthy Communities

Dr. Rodrigo Gallardo may be a poultry medicine specialist who helps improve the wellbeing of chickens through research and education, but he also sees the far-reaching impact of his role.

“By helping villages in other parts of the world maintain healthier poultry flocks, we’re assisting communities as a whole,” Gallardo explained. “If families can increase egg and meat production in their chickens because they are healthier, they have more financial resources to spend on health care and sending their children to school.”

For the past five years, shortly after joining the school’s faculty, Gallardo has visited villages in Nicaragua to help them establish biosecurity procedures and vaccination protocols against virulent [Newcastle disease virus \(NDV\)](#), a deadly poultry respiratory infection causing up to 80 percent mortality in village poultry. While NDV is found world-wide, it is difficult to control outside of the U.S., especially in Central American and African countries because the strains in those countries are highly lethal and also due to the lack of infrastructure to keep vaccines viable and education to administer them correctly.

“Since there is a live virus involved, the vaccine needs to be kept chilled,” Gallardo said. “If it gets too warm, the virus will die or the titer is reduced to be nearly ineffective



Dr. Rodrigo Gallardo working with poultry scientists and veterinarians in Tanzania.

in the generation of immunity against NDV. It’s a basic problem, but in these areas, it’s a big deal.”

Following the success in assisting Nicaraguan communities, Gallardo focused on a project for USAID in Africa. Over the past five years, he has been collaborating with UC Davis Animal Science Professor Huaijun Zhou in a proposal for USAID that tackles the same problem of NDV, but with a different approach.

Due to the high stress that NDV causes to chickens in Africa, it is common to see some of them showing some degree of resistance. The researchers are investigating village poultry populations’ genetic conformation looking for resistance to this lethal disease. The chickens found to be resistant to NDV and heat stress—one of the biggest problems in Africa—will be bred into the chicken population, creating poultry that are stronger immunologically and also more fit to their environment. This project is close to being renewed for five additional years by USAID.

Part of the project relies on extension outreach and training to community members, Gallardo explained. The other component is determining how to breed chickens more naturally resistant to heat stress and NVD using basic science.

“Using basic research to provide a solution is novel in this case, we needed to be more creative in finding a solution,” Gallardo said. “This is [One Health](#) at its best.”

An Enduring Commitment to Animals

Jonathan Ferrini is a visionary philanthropic partner who shares the school’s commitment to improve animal health. With his generosity, he is making a difference in multiple ways and ensuring that animals will receive the best veterinary care for generations to come.

His love for animals was inspired by his late parents, who had a passion for Thoroughbreds. A favorite family pastime was experiencing the thrill of attending horse races. His father was an athlete who appreciated the fitness of both the horse and jockey.

To memorialize them, Ferrini made a planned gift to establish the Dante and Sharon Ferrini Endowed Chair, which will be instrumental in developing innovative medical and surgical procedures to heal injured Thoroughbreds and reduce the need for euthanasia. He

believes that horses should be treated no differently than human athletes who suffer catastrophic injuries in the performance of their sport.

“I wanted to honor my parents in a most prestigious way,” Ferrini said. “It was a perfect decision to pay tribute to them through UC Davis, the world’s leader in Thoroughbred horse racing medicine. I believe the endowed chair will keep UC Davis at the cutting edge of preventive medicine to help Thoroughbreds.”

In addition to horses, Ferrini loves companion animals. Through the years, he adopted several homeless dogs and cats and describes them as changing his life forever. In their memory, he established an endowment to create the Belzer, Duke, Midas, Thomas and Willy Ferrini Award for Genetic Research, recognizing exceptional, promising scientists.

Verona (left), her companion Shaymin, and their care team at the Large Animal Clinic. The veterinary hospital encourages owners to allow companion animals to be housed with certain patients.



New Knees for Verona, *the Alpaca*

Verona was only a few months old when her owners noticed she had difficulty walking. As she grew, her hind leg deformities progressed and she spent more time lying down and had difficulty standing for long periods.

Her owners brought Verona to the UC Davis veterinary hospital's Large Animal Clinic to be evaluated by Dr. Julie Dechant who has a special interest in camelid medicine. Dechant and a team of other veterinarians, technicians and students examined Verona, took x-rays, and consulted with Drs. Amy Kapatkin and Denis Marcellin-Little of the Orthopedic Surgery Service.

There was a general consensus that Verona's stifles (joints in hind limbs of quadrupeds that are equivalent to human knees) suffered severe damage or were possibly missing cruciate ligaments since birth. Regardless of the cause, she needed a surgical procedure on both legs called a tibial plateau leveling osteotomy (TPLO), which would stabilize her stifle joints.

The surgery changes the orientation of the joint so ligaments are no longer needed to keep it together. Verona's

surgeries were staged one leg at a time in order to give each the proper capacity to heal.

Since this surgery is often performed on dogs—and an alpaca's stifle is similar to a dog's—Kapatkin directed Verona's surgeries with assistance from the Equine Surgery Service. After her first procedure, Verona remained hospitalized for 23 days for ongoing care and monitoring before continuing her recovery at a nearby alpaca farm.

Two months later, she returned for TPLO surgery on her other stifle. Unfortunately, that procedure proved to be more challenging and required three plates and a wire to stabilize the repair, with surgery to correct a luxated patella three weeks later.

During her two additional months of convalescence at the Large Animal Clinic, Verona received acupuncture and physical therapy treatments by Dr. Jamie Peyton of the Integrative Medicine Service. Thanks to the compassionate care of many UC Davis veterinarians, technicians and students, Verona made a steady recovery.

"This endowment honors my pets in an impactful way by funding cutting-edge advances at the [Center for Companion Animal Health \(CCAH\)](#)," Ferrini said. "Genetics is the foundation of understanding and treating diseases that will help pets like those I have cherished."

In addition to investing in future veterinary scientists, he is ensuring that the impact of genetic research will continue for generations to come through a planned gift to the CCAH.

"Jonathan is a forward-thinking leader, and we are most grateful to



Jonathan Ferrini's love for animals was inspired by his late parents, Dante and Sharon Ferrini (pictured above), who had a passion for Thoroughbreds.

him for his generosity," Dean Michael Lairmore said. "We value his partnership, and it is our honor to recognize him as a member of the prestigious Heritage Society for Animals for his enduring commitment to animals."

To learn more about supporting the school and becoming a member of the Heritage Society for Animals, please contact the [Office of Development](#) at 530-752-7024.

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Veterinary Continuing Education

Calendar

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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/

11th Annual Back to School Seminar

July 21-22 • UC Davis

2018 Fall Festival

October 5-7 • UC Davis
(CE Event on October 7)

Spring Showcase



At the school's annual Spring Showcase, tours included a visit with Petri (above) and her surrogate mom, Isis. Petri is the first foal produced with intracytoplasmic sperm injection (ICSI), a unique in-vitro fertilization process, done entirely at UC Davis. During the program, Directors Carrie Finno, Kirsten Gilardi and Michael Kent highlighted some of the latest advancements in animal health at their centers. In special recognition, Dean Michael Lairmore welcomed new members to the Heritage Society for Animals, honoring donors who have included the school in their estate plans. He also presented the 2018 El Blanco Awards to Tom and Julie Atwood, and the DMARLOU Foundation in memory of Dorothy and Martell Kaliski, for their significant contributions that have led to important advances in clinical veterinary medicine.



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