

VETERINARY MEDICINE

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New Treatment Option Improves Canine Mobility

Sophia, an 8-year-old Italian greyhound/Chihuahua mix, is able to play with other dogs in the park again thanks to her braces. A degeneration in the ligaments of her front legs broke down the ability of her "wrist" joints to function properly, causing them to fold under her weight. Now with orthotics provided by the veterinary hospital's Integrative Medicine Service, she can walk more easily and comfortably, without the need for further surgery.

Thanks to this innovative approach, there is new hope for dogs stricken with permanent joint damage or pain from arthritis and other debilitating injuries or diseases. Over the past year, Jamie Peyton, chief of the Integrative Medicine Service, has fit about a dozen dogs with orthotics—braces custom made to each dog's exact leg and paw dimensions.

The clinical application of orthotics is twofold. They are used as a treatment for pain management, as well as a means for better mobility. For

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Vaccine Field Trials for Deadly Cattle Disease Expand

8-year-old Sophia can walk more

comfortably with custom-fit orthotics

Thanks in part to school researchers, cattle ranchers in California, Nevada and Oregon are one step closer to having a vaccine to treat a tick-borne bacterial disease that kills cow fetuses—commonly known as foothill abortion. The USDA approved the expansion of ongoing field trials for an experimental vaccine developed by UC Davis after it was shown to be effective in preventing foothill abortion in more than 2,000 cattle. The expanded trials involving several thousand more cattle began last spring and will further establish the vaccine's effectiveness in varied conditions as well as provide relief to ranchers. The trials are expected to last into 2017.

Endemic in California's coastal range and the foothill regions of California, Southern Oregon and Northern Nevada, foothill abortion or *epizootic bovine abortion* annually causes the death of an estimated 45,000 to 90,000 calves and costs millions of dollars in losses.

The disease is transmitted by bites from the pajaroello tick—found only in the intermountain West and common in foothill rangelands. It became known as foothill abortion after ranchers in the 1930s and 1940s noticed that the pregnant heifers they sent to pasture in the foothills aborted after returning to valley pastures. Infected pregnant cows show no obvious symptoms but the bacteria can infect their fetuses in the first half

A new vaccine developed by veterinary immunologist Jeff Stott shows promise for preventing foothill abortion disease, which kills calves before or at birth.

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Commencement 2015



Graduates

From left to right, Jennifer Lew, Alice Chan, Damion Walters and Tarini Ullal celebrate their induction into the DVM family following the school's 64th commencement ceremony held on May 21st. In all, 134 students received their diplomas.



2015 Alumni Achievement Awards

Every year, the school proudly bestows Alumni Achievement Awards to outstanding alumni for their unique and valued contributions to veterinary science, veterinary practice, or the advancement of human welfare. The 2015 award recipients are (from left to right with Dean Lairmore in the middle): **Corrie Brown**, for her ceaseless dedication to excellence in teaching, veterinary science and control of infectious disease for the health of all; **Tim Carpenter**, for four decades of veterinary medical research, teaching and mentoring of students and colleagues; **Donald Janssen**, for his dedication to wildlife health and conservation across the world; and **Jack Harkema**, for exceptional leadership, commitment to teaching and outstanding scientific accomplishments in veterinary pathology.

Tips to Maintain Cattle Health During Drought

California's drought—now in its fourth year—is creating severe hardships for the livestock industry. Very dry conditions can increase the risks of animal poisonings and nutritional imbalances. The following important tips can help maintain cattle health and productivity during drought.

- Monitor water quality regularly. Water is the most critical factor in the diet of food animals. When they don't drink enough clean and safe water every day, feed intake and productivity declines. Monitor and test water for basic parameters such as total dissolved solids, sodium, sulfates, and nitrates/nitrites. Blooms of blue-green algae in water can produce toxins that can affect the liver and nervous system and cause weakness, staggering, photosensitization or sudden death in animals.
- Supplement feed to offset reduced production of quality forage. Feeding cattle poor quality forages or switching to alternative feed sources can affect animal

nutrition and increase the risk for intoxications. This can also exacerbate deficiencies of important minerals such as selenium, copper, and phosphorus and vitamins such as A and E, causing a variety of mild to severe symptoms. Give cows an injection of vitamin A and D about 30 days prior to calving, and give calves a vitamin A injection at birth. Provide additional protein and energy to livestock through supplemental feeding. In addition, monitor teeth for premature aging due to tough feed conditions. Supplemental feeding recommendations can be found at http://sfrec.ucanr. edu/files/183308.pdf.

Be aware of poisonous plants. In drought conditions, cattle will consume plants they normally would not find palatable. The potential for nitrate poisoning—one of the most common plant-associated intoxications diagnosed by the California Animal Health and Food Safety Laboratory (CAHFS)—increases when livestock water sources also contain elevated concentrations. The first sign is often

The Unsung Heroes of Clinical Care

Which nearly 50,000 patient visits a year to the veterinary hospital, there are many service units that play important roles in patient care. Anesthesia and Diagnostic Imaging Services contribute to the majority of visits, and are critical to the success of each case.

Consisting of nine anesthesiologists (eight of whom are board certified), the Anesthesia Service is vital to every surgery at the hospital. UC Davis has the only veterinary hospital in Northern California with multiple board-certified anesthesiologists offering a high level of specialized care to patients.

The service also consists of four resident veterinarians training to become anesthesia specialists, as well as 18 speciallytrained technicians. Some are Veterinary Technician Specialists, an advanced Registered Veterinary Technician certification indicating expertise in a specific area of care.

An equally impressive group of specialists and technicians that keep the hospital running at peak efficiency are the members of the Diagnostic Imaging Service. They provide expertise and support for all hospital specialty services through radiology, CTs, MRIs, fluoroscopy, ultrasound, and nuclear scintigraphy essential parts of properly diagnosing patients' conditions.

Recognized as some of the most successful diagnostic imaging clinicians in the world, the service's faculty members are



the sudden and unexplained deaths of one or more animals. Other signs include drowsiness, weakness, muscle tremors, increased heart and respiratory rates, staggering, and recumbency.

This information was adapted in part from "Drought-Related Poisoning and Nutritional Risks to Cattle," a research paper developed by CAHFS.



Members of the Diagnostic Imaging Service take radiographs of a horse's leg.

pioneering work in image modalities such as tissue engineering, cross-sectional imaging, and minimally invasive therapeutic techniques. They are continually seeking to discover new imaging procedures to improve patient safety and care.

Cattle Disease Continued from page 1

of gestation before they fully develop immune systems. Cows will carry the infected fetus to term, but the calves are born either dead or are weak and fail to thrive.

"Our Western cattle producers are desperate for some relief to stop their losses resulting from this disease," said Professor Jeff Stott, a veterinary immunologist with the school who has led the effort in collaboration with the California Cattlemen's Association, the USDA Center for Veterinary Biologics, the Animal Health Branch of the California Department of Food and Agriculture, the Nevada Department of Agriculture and the University of Nevada, Reno.

Fifth generation rancher Buck Parks from Lassen County was losing an average of 25-35 calves each year to the disease from a herd of 300 cows until participating in the field trials. He said about 20 percent of the losses are from "first calf heifers," or firsttime mother cows. Since the trials began four years ago, Parks sees significantly fewer losses, with only eight abortions this year.

Stott is confident this vaccine can help prevent foothill abortion for cattle producers like Parks and says there already has been interest from niche pharmaceutical companies in manufacturing the vaccine.

A news article about the UC Davis vaccine trials appeared May 8, 2015 in the journal *Science* and can be found at www.sciencemag.org/content/348/6235/626.full.

Welcome NEW FACULTY

Esteban Soto

Associate Professor, Department of Medicine and Epidemiology

Education

- Diplomate, American College of Veterinary Microbiologists
- PhD, Louisiana State University, 2010
- MS, Mississippi State University, 2007
- DVM, Escuela de Medicina Veterinaria, Universidad Nacional, Costa Rica, 2005

Recent Experience

• Associate professor, Ross University, 2010-2015

Special Interests

• Veterinary bacteriology, mycology and immunology; pathogenesis of important infectious diseases of wild and aquatic animals

Ann Della Maggiore

Assistant Professor, Department of Medicine and Epidemiology

Education

- Diplomate, American College of Veterinary Internal Medicine
- DVM, UC Davis, 2008

Recent Experience

- Staff veterinarian, UC Davis 2012-2015
- Resident, UC Davis, 2009-2012

Special Interests

• Endocrinology, infectious and immune mediated disease, minimally invasive diagnostic and therapeutic procedures

The school's faculty train tomorrow's leaders in veterinary medical practice, higher education, public health, research, disease control, food safety, environmental protection and biotechnology.



Jonathan Dear

Assistant Professor, Department of Medicine and Epidemiology

Education

- Diplomate, American College of Veterinary Internal Medicine
- DVM, University of Georgia, 2007

Recent Experience

- Resident, UC Davis, 2008-2011
- Staff veterinarian, UC Davis, 2011-2015

Special Interests

• Infectious diseases of the blood and respiratory tract; minimally invasive procedures of the lower urinary tract

Mathieu Spriet

Associate Professor, Department of Surgical and Radiological Sciences

Education

- Diplomate, American College of Veterinary Radiology
- Diplomate, European College of Veterinary Diagnostic Imaging
- MS, University of Montreal, 2004
- DVM, Ecole Nationale Veterinaire de Lyon, France, 2002

Recent Experience

- Director, radiology residency program, UC Davis
- Associate Professor of Clinical Diagnostic Imaging, UC Davis, 2013-2015
- Assistant Professor, UC Davis, 2007-2013
- Resident, University of Pennsylvania, 2004-2007

Special Interests

• Equine musculoskeletal diagnostic imaging





Research Investments Will Pay Future Dividends

To support research and discovery, the school has invested in several pieces of major equipment. Technologically advanced instrumentation is often expensive and highly sensitive, requiring specialized training in order to promote their efficient and sustainable operation. The school maximizes the impact of such investments by providing shared access to this state-of-the-art



Ingrid Brust-Mascher uses a Leica Super High-Resolution Confocal Microscope at the school's Advanced Imaging Facility.

equipment by multiple users across the campus, and promoting new collaborations across disciplinary boundaries. Examples include:

The Advanced Microscopy Facility

includes two cutting-edge imaging tools available to veterinary, medical, and biological sciences faculty:

The Multiphoton Confocal Microscope with CLARITY allows research-

The Seven Strategic Goals

- Educate world leaders in academic veterinary medicine
- Perform high-impact transdisciplinary research
- Develop cutting-edge clinical programs
- Promote animal and human well-being
- Maintain school infrastructure and sustainable resources
- Retain excellent faculty and staff
- Promote academic, government, industry collaboration

ers to peer deeply into intact biological specimens and reconstruct detailed 3-dimensional visual images of tissues and the cells within them. Faculty use this new technology to image brain, spleen, or even the entire nervous system of a developing zebrafish embryo to answer questions about health and disease.

The Leica 3D Super-Resolution STED (STimulated Emission Depletion) Confocal Microscope permits researchers to view subcellular structures as small as 50 billionths of a meter (50 nanometers), allowing detailed visualization of cells, the structure of viruses and the interactions among individual proteins within cells.

The Bio-Analytical Research Core provides a broad array of mass spectrometer systems whose capabilities of identifying small molecules such as drugs and environmental contaminants are unparalleled in terms of their sensitivity and accuracy. The instrumentation available permits basic researchers and clinician scientists to unequivocally identify tiny levels (well below 1 part per billion) of one or several small molecules of interest for drug development or environmental health of animals and humans.

The Electron Paramagnetic Resonance (EPR) Spectrometer Resource Facility is used by biochemists, toxicologists and cell biologists to understand the mechanisms underlying mitochondrial dysfunction in several metabolic diseases such as diabetes, aging and certain neurodevelopmental disorders.

The High-Content Analysis Core provides researchers an automated microscope capable of rapid throughput analysis of cells, tissue sections, and small organisms. Researchers in the NIH-funded CounterACT Center of Excellence are using this equipment to identify medical countermeasures for neurotoxic chemicals that cause seizures in humans.

New Leadership



Pam Hullinger returned to her alma mater to serve as the new Large Animal Clinic Director. She was most recently the Chief Veterinary Officer of the Agricultural Security Program at the Lawrence Livermore National Laboratory and also had an appointment in the school's Department of Medicine and Epidemiology as a Specialist/Clinical Diagnostic Epidemiologist and Lecturer.

Hullinger is a 1990 graduate of the school and completed a residency in large animal internal medicine (equine emphasis) in 1996 and a master's in preventive veterinary medicine in 2001.

Hullinger's strong working relationships with diverse segments of the equine and livestock industries, practicing veterinarians, academic centers, and governmental organizations (locally, nationally, and internationally) will substantially benefit the large animal clinical programs. She will work with the faculty and staff to implement a strategic planning effort to enhance the clinic's excellent level of equine and livestock programs.

2015 El Blanco **Award Recipients**

he school's El Blanco Award honors significant contributions that animal owners and other benefactors have made to clinical veterinary medicine. The honorees for 2015 are Pam Green of Davis, and the Nicoli Nicholas Family and the Nicholas Livestock Company of Nicolaus, California.

Green is recognized for her longtime

support of the companion animal medicine



Dean Michael Lairmore and Pam Green



Nicoli Nicholas Sr., Dean Lairmore and Nicoli Nicholas Ir.

program and her commitment to shelter and rescue animals. Dedicated in her search for new knowledge, she has been an active participant in the teaching aspect of her dogs' clinical care.

Nicoli Nicholas Sr. and his late wife Barbara, Nicoli Nicholas Jr. and the Nicholas Livestock Company have made many contributions to clinical veterinary medical education for more than five decades. Since they first started using the school's herd health and livestock medicine services, more than 50 classes of DVM students and 100 residents have had opportunities for hands-on livestock education and experiences with the family's herd of Charolaise cattle.

Improving Canine Mobility Continued from page 1

dogs with joint breakdown, the orthotic holds the joint steady and allows them to have proper function of that joint again. Orthotics also provide joint support for dogs that have endured traumatic damage to their joints or are born with congenital abnormalities.

Evaluation of dogs as candidates for orthotics includes a physical examination, as well as capturing and studying video of the dog's physical limitations. If the dog is deemed a candidate, a fiberglass impression is made of the dog's lower leg and paw. This impression is sent to an orthotic fabricator who uses 3D printing to recreate the exact dimensions of the impression into a custom-fit orthotic.

Once fit, dogs must go through a 10-week rehabilitation course in order to learn to use the brace. Recheck examinations are also required at two weeks, two months, six months, and one year after the fitting. Initially, dogs only wear the orthotic a few hours a day and then gradually

increase their use as they get more familiar with it and realize how it helps them.

The service anticipates an increase in the use of orthotics as more veterinarians begin to utilize them as either an alternative option to surgery or as a tool to assist in the recovery from surgery. In cases where dogs are not candidates for surgery due to age or underlying diseases, orthotics may give them and their owners new hope for a better quality of life.

Did You Know?

You can designate the School of Veterinary Medicine as a beneficiary of your Individual Retirement Account? For more information on how you can advance the health and well-being of animals, give the Office of Development a call at (530) 752-7024.



Help Investigate a **Fatal Horse Disease**

Equine researchers at the school need your help to investigate a devastating disease in horses-Silicate Associated Osteoporosis or SAO

The disease occurs where soils contain high concentrations of certain toxic forms of the mineral crystal, silica dioxide. When inhaled, the crystals cause chronic lung disease, much like COPD (chronic obstructive pulmonary disease) or silicosis in humans. Affected horses also suffer profound osteoporosis which gradually weakens the skeleton. With no known cure, most afflicted horses are euthanized for humane reasons. You can help researchers better understand the mechanism that causes the bone disease and the relationship of the two diseases by contacting the school about horses whose condition warrants humane euthanasia due to SAO, or other conditions. For more details, please contact Regina Zavodovskaya at rzav@ucdavis.edu; (530) 754-0156.

THANK YOU NOTES

Philanthropic Partners Honored

Dean Lairmore welcomed nearly 200 guests to the eighth annual Spring Showcase and Heritage Society for Animals reception. As valued partners, they share in the school's commitment to improve animal health and make a difference through their generosity.

The program's theme of "It Takes a Team" reflected the collaborative spirit of veterinarians and scientists at the school, leading to innovations that have changed the face of veterinary medicine. Through their combined efforts, center directors Michael Kent and Claudia Sonder assembled the informative program. Faculty members Dori Borjesson, Jenna Burton and Karl Jandrey gave presentations highlighting some of their latest clinical techniques and research. Tours followed and showcased innovations in small animal and equine health.

Also during the event, Dean Lairmore welcomed 28 new members to the Heritage Society for Animals. The society has recognized more than 700 individuals who have chosen to express their commitment to animals through planned gifts to the school.

For more information about joining the Heritage Society for Animals or planning for an estate gift, please contact the Office of Development at (530) 752-7024.



Heritage Society for Animals member Donna Sleight Hopkins was pleased to see her recognition on the new digital display honor roll.

Center for Equine Health Endowed Directorship

hanks to the generosity of philanthropic partners, the school established the Center for Equine Health "Endowed Directorship Fund." The \$1.8 million endowment, a culmination of a multiyear effort, provides perpetual support for the directorship and is a critical component of sustained funding for the center. It complements the \$3 million endowment to support the center's operational, educational and research efforts created by a gift from the William and Inez Mabie Family Foundation.



The Center for Equine Health has had exceptional leadership since its inception in the 1970s. Pictured are Claudia Sonder, the center's current director, and Gregory Ferraro, director emeritus.

Since its inception, the center has been at the forefront of advancing the health, well-being, performance and veterinary care of horses for more than four decades. Endowments help ensure that horse owners, riders, trainers and veterinarians will have continued access to the finest health care research, public education and service available.

For more information about endowment funds or about contributing to the Center for Equine Health, please contact the Office of Development at (530) 752-7024.



Evening of Gratitude

Scholarship and fellowship donors and student recipients came together in spring at the school's special annual event, Evening of Gratitude. Among those honored was Kimberly Dodd, this year's recipient of the Dr. Jacob Traum Endowed Scholarship for her extraordinary accomplishments in microbiology. Traum's family established the scholarship as a fitting tribute to his accomplishments as a renowned microbiologist and as one of the founding faculty members of the school. Pictured (from the left) are Jeff Traum, Arthur Traum, Dean Michael Lairmore, Kimberly Dodd, Tylar Traum and Mike Traum.



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CE Calendar

Veterinary Continuing Education

(530) 752-3905 • Fax: (530) 752-6728 tweddale@ucdavis.edu

The school is committed to life-long learning through its Veterinary Continuing Education this program thrives with a variety of nearly 20 annual offerings. A few of the programs are highlighted below but this list is not complete. *For a comprehensive listing of events, visit* www.vetmed.ucdavis.edu/CE/.

> August 29 One Health Symposium, UC Davis

September 25-26 Ophthalmology Symposium, Lake Tahoe

> October 18 Year in Review, UC Davis

November 6-8 Donkey Welfare Symposium, UC Davis

> **December 2-6** Explorer Series, Costa Rica

> > 2016 -

January 22-24 MATS: Infectious Disease, Napa Andaz Hotel

January 23 Heumphreus Memorial Lecture, UC Davis

Explorer Series 2015: Costa Rica

Last December an intimate group of 12 DVMs and RVTs spent five fabulous days in Costa Rica at the Hyatt Andaz Resort on the Papagayo Peninsula. In the mornings they listened to engaging presentations. In the afternoons, participants relaxed by the pool while howler monkeys jumped through the



trees, sipped umbrella drinks, ventured to the cloud forest or nearby volcano, or took a canyoning tour (a step beyond zip-lining for the adrenaline junkie). Participants raved about the collegial atmosphere where real learning took place. There was also plenty of time to speak with and get to know UC Davis faculty and fellow program participants. Feel like you missed out? Fear not, the Center for Continuing Professional Education is offering a similar program this December at the same family-friendly resort in Costa Rica. This year's topics include: animal behavior, dentistry, emergency and critical care, stem cell therapy, transfusion medicine and more, presented by some of the world's best veterinary educators. Got questions? Call (530) 752-3905. Register today at: www.vetmed.ucdavis. edu/ce/.

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