



School of Veterinary Medicine Agriculture and Natural Resources Updates and Impacts August 2016

NEW LEADERS



Dr. Jane Sykes has been appointed as the Chief Veterinary Medical Officer (CVMO) of the William R. Pritchard Veterinary Medical Teaching Hospital (VMTH). She will also serve as Associate Dean of Veterinary Medical Center Operations. Dr. Sykes has administrative responsibility for the management and fiscal integrity of the VMTH, ensuring the academic quality of the clinical learning environment for DVM students and house officers and provision of state-of-the-art clinical care and operational efficiency of all academic and clinical service activities. Dr. Sykes is a veterinarian, specialty boarded in Internal Medicine. She is an international authority on infectious and immune mediated diseases in dogs and cats, holds leadership positions in several national and international professional organizations, and was recently appointed to a national taskforce on antimicrobial stewardship in companion animal medicine.

Dr. John Angelos has been appointed as Chair of the Department of Medicine and Epidemiology. He will be the primary departmental representative at administrative meetings; have oversight and management of departmental budget and staff; primary responsibility for writing departmental letters for career advancement of I&R faculty; mentorship of department faculty; allocation of space, and other department matters not assigned to the Vice-Chair Lisa Tell. Dr. Angelos is a veterinary internist with expertise in livestock medicine and surgery, whose clinical competency is outstanding and recognized nationally. His research is focused on understanding the pathogenesis of infectious bovine keratoconjunctivitis (pink-eye), an economically important disease in cattle, and systematic efforts to develop an efficacious vaccine.



CURRENT FACULTY RECRUITMENTS

- **Director, California Animal Health and Food Safety Laboratory.** Final candidate interviews completed.
- **Specialist in Beef Cattle Herd Health and Production.** This is a statewide position to support California's extensive beef industry (cow-calf, stocker/feeder, seed stock, feedlot production), with a discipline focus in internal medicine, epidemiology and preventive medicine, theriogenology or infectious disease.

- **Specialist in Dairy Cattle Production Health Management.** This statewide position will focus on enhancing competitive, sustainable dairy cattle production systems in California through discovery, development and application of economic tools needed for decision support and improvement of health productivity of dairy cattle herds.

CALIFORNIA ANIMAL HEALTH AND FOOD SAFETY LABORATORY SYSTEM



Located adjacent to the existing Veterinary Medicine Teaching and Research Center in Tulare County, the new branch laboratory of the California Animal Health and Food Safety Laboratory System will provide complex diagnostic procedures to support ongoing food production industries, flock and herd health monitoring, food safety programs and surveillance for foreign and emerging diseases. Services offered will include Necropsy, Bacteriology, Histology, Antigen Detection, Immunology, Biotechnology, and Metabolomics testing. This \$47.5M state funded project continues the long-term partnership between the university and the California Department of Food and Agriculture (CDFA) in protecting human and animal health. A dedication ceremony is being planned for October 28, 2016.

Highlights from the [August CAHFS Connection](#) e-newsletter:

Bovine: Ten out of 60 nursing beef calves died of Bovine Respiratory Syncytial Virus (BRSV) infection. The calves had been previously vaccinated with a multivalent vaccine containing killed BRSV.

Small Ruminants: Herpesvirus-like particles were associated with late term abortion in a yearling ewe with a single fetus which was autolyzed.

Porcine: Porcine epidemic diarrhea virus (PEDV) infection was diagnosed in eight piglets from two different litters (5 and 7 days of age respectively), submitted from a commercial hog farm.

Poultry and Other Avian: Histomoniasis was diagnosed in a 2-month-old bronze turkey based on gross lesions of multiple “bullseye lesions in the liver and transmural necrosis in the cecum, and intralesional protozoa observed microscopically.”



VETERINARY MEDICAL CENTER

For nearly half a century, the veterinary hospital has delivered health care to animals in California and beyond. Our current facility, opened in 1970, was designed to serve 3,000 patients each year. Our veterinarians and staff now see more than 50,000 patients annually. Our clinical expertise has grown to include 34 specialties, including 24/7 emergency and critical care, cardiology, internal medicine, oncology, ophthalmology, neurology and surgery.

As the world leader in veterinary sciences, we are committed to improving the health and well-being of animals. This transformational new facility will give our clinicians access to the latest technology and provide the infrastructure and efficient services to facilitate translational research that also has implications for improving human health.

The school is in the early stages of developing the physical layout of the center using a phased, sequenced approach that allows for new construction and the ongoing smooth operation of clinical services and patient care. The planning effort— guided by leadership from the hospital as well as faculty, staff and house officers — has identified major areas to be constructed in sequence over the next 10 years. Those include:

- Livestock and Field Service Center
- Equine Performance Center
- All Species Imaging Center
- Small Animal Hospital East Wing
- Small Animal Hospital West Wing
- Community Practice and Surgery
- Equine Surgery and Critical Care Center
- Equine Isolation Unit

Planning for the first phases of the livestock, equine, and laboratory projects is underway.



COMBATING ANTIBIOTIC RESISTANCE IN HUMANS AND ANIMALS

Antibiotics can be wonder drugs, clearing up infections and treating common diseases that may have even proved fatal in the past. But some infections are becoming trickier to treat as bacteria "learn" to outwit the pharmaceuticals that once killed them, leading to antibiotic-resistant bacteria. According to the Centers for Disease Control, [each year in the U.S. at least 2 million people become infected](#) with these resistant bacteria and, as a direct result, approximately 23,000 die annually.



Veterinarians are also finding that treating illnesses like pneumonia or mastitis (a potentially fatal mammary gland infection in cattle) is more difficult due to antibiotic resistance. [Improper antibiotic use in food-producing animals can have a negative impact on public health.](#) Resistant bacteria in food animals may directly or indirectly result in antibiotic-resistant infections in humans.

The [recent passage of California Senate Bill \(SB\) 27](#) makes the state the first in the nation to require a veterinarian's prescription for therapeutic antibiotic use in livestock. It also supplements new Food and Drug Administration guidelines to phase out the use of antimicrobial drugs to promote growth in

animals. Furthermore, the bill places tough restrictions on all antibiotics used in livestock that are also medically important for humans.

[Human and veterinary medicine professionals at UC Davis](#) are constantly faced with determining proper treatment for their patients — whether it’s an ear infection in a child or pneumonia in a calf — while working to minimize the misuse or overuse of antibiotics that could lead to antibiotic-resistant bacterial infections.

CALIFORNIA HOUSEHOLD MOSQUITO COULD AMPLIFY ZIKA VIRUS SPREAD

Brazilian researchers believe the *Culex* mosquito, which is common in urban and rural areas across Central and Southern California, can carry and possibly transmit the Zika virus. The *Culex* is more common in the state than the two types of *Aedes* mosquito that are currently the confirmed transmitters of the disease.



Until last week, researchers believed the virus could only be spread by two types of *Aedes* mosquito that are much rarer in California and the U.S. But new research by a UC Davis ecologist and a top Brazilian science institution pins the southern variety of the *Culex* mosquito – known as the southern house mosquito – as a potential vector of the disease, which can only be transmitted when a mosquito bites an infected person and then bites someone else.

Walter Leal, a chemical ecologist at UC Davis and a collaborator on the research, helped make the finding. “Everyone thought the yellow fever mosquito was the only vector, but if you look at the data from Recife, there are places where the population of the yellow (fever) mosquito didn’t justify the high number of (Zika) cases,” Leal said “Now that we have *Culex* also in the picture, we have to be careful about that as well.”

There still isn’t sufficient evidence, however, to show that the *Culex* mosquito can pass the virus on to humans, said Chris Barker, an epidemiologist with the School of Veterinary Medicine at UC Davis who has been studying the mosquito’s transmitting capabilities in a lab. There are two types of *Culex* mosquitoes – the southern house mosquito studied in Brazil and the closely related northern house mosquito, which sticks to cooler climates. Southern California is a hot spot for the southern variety. The Sacramento area is home to the northern variety as well as northern-southern hybrids, both of which transmit West Nile virus, Barker said.

The news of a potential new vector comes amid growing concerns about Zika spread in the United States--there have been roughly 1,400 Zika cases in the U.S. and 98 cases in California since the Brazilian outbreak began.

BIZARRE BACTERIA CAUSING MAJOR CATTLE DISEASE NAMED BY UC DAVIS RESEARCHERS

After more than 50 years of research, the tick-borne bacterium responsible for one of the most troubling and economically devastating cattle diseases in the western United States has been named and genetically characterized by researchers at the University of California, Davis.



“This is a most unusual bug, a ‘Ripley’s Believe It or Not’ bacterium, and the tick that carries it is equally bizarre,” said veterinary immunologist Jeffrey Stott, who has led the effort to develop a preventive vaccine for foothill abortion disease.

Using an electron microscope, Stott and colleagues physically examined the bacterium in tissue sections taken during postmortem exams of aborted calves. They then characterized it by partially sequencing three of its genes and named it “*Pajaroellobacter abortibovis*,” recognizing the Pajaroello tick that carries the bacterium as well as its abortion-inducing impact on infected cows and their fetuses. The findings of this study are reported in the August 30 issue of the journal *Veterinary Microbiology*, [now available through ScienceDirect](#).

The disease, which occurs in California’s coastal mountains and the foothill regions of California, southern Oregon and northern Nevada, annually results in the death of an estimated 45,000 to 90,000 unborn calves. Vaccine trials to prevent the disease are now in the second year, thanks to a longtime partnership between UC Davis, the University of Nevada, Reno, and the California Cattlemen’s Association. During the first year, some 9,000 heifers throughout California were inoculated with the live vaccine several months before they became pregnant. The current vaccine appears to be more than 95 percent effective in preventing the infection in pregnant cows and their fetuses and may provide lifetime immunity for the vaccinated cows.

“The Pajaroello tick is as intriguing as the disease-causing bacteria it carries,” Stott said. Unlike more common ticks that burrow their way into the skin of people and animals to feed, the Pajaroello is a soft-bodied tick and does not embed itself in its hosts. Instead, the Pajaroello lives in the decomposing plant litter at the base of trees, shrubs and rocks. It is attracted to cattle by the carbon dioxide the animals give off. Only once every few months, the tick makes the effort to pierce the cow’s skin and feed on its blood for about 20 minutes. Once in the cow’s tissue the bacteria travels to the cow’s uterus; in cows and other ruminants, no antibodies are passed between the mother and the fetus. As the fetus matures, it begins to develop an immune system, eventually triggering an immunological response to the presence of the bacteria. The fetus essentially destroys itself and usually dies about four months after the cow is infected.

EGGS FROM FIELD TO FOOD BANK

Within the campus’s Robert Mondavi Institute for Wine and Food Science, hundreds of eggs are stacked in cardboard flats in a processing plant’s large food cooler. But despite the industrial-like setting, it is

personal. The labeling that identifies the size and grade of the eggs also indicates who collected and washed them. On the label for one stack is handwritten “Hannah.”



Hannah Southgate, an animal science major, is among the dozens of UC Davis students who are involved in a research project with 150 laying chickens that provide some 800 eggs to the Yolo Food Bank weekly. The [Pastured Poultry Farm](#), a project of the School of Veterinary Medicine and partners, is a living laboratory where students and researchers hope to develop solutions benefiting pasture-based poultry farms and backyard flocks.

The farm started operations in February, and the food bank loves being able to distribute the eggs, valued as a good source of protein — some directly to clients but most to partner agencies that provide meals. “It’s great to have a steady supply,” said the Yolo Food Bank’s Representative.

2016 CALIFORNIA STATE FAIR ACTIVITIES

The UC Davis veterinary hospital continued its long-standing, mutually beneficial partnership with the California State Fair, with an even larger presence and more public interaction this year. In addition to its annual support for the junior livestock residue avoidance program, as well as the provision of state-of-the-art veterinary care for livestock and horses at the fair, the hospital provided educational and entertaining animal-related content to fair attendees. These daily educational seminars in the Cavalcade of Horses Arena and the Animal Adventure Stage provided veterinary expertise on topics of importance to small and large animal owners. More than 20 faculty provided seminars and 40 staff volunteers helped in the informational tent.



UC DAVIS LIVESTOCK VETERINARIANS SAVE CALF FROM DEADLY PROTOZOAL INFECTION



Brownie, a 6-month-old Jersey heifer calf, was stricken with a severe case of bloody diarrhea, lethargy and anorexia. She was diagnosed by her referring veterinarian with coccidiosis, an infection of the intestinal tract caused by an ingestion of parasites (coccidian protozoa). By the third day of treatment, she still had not responded, and stopped eating and drinking. Brownie’s owners brought her to the UC Davis veterinary hospital where she was seen by the [Livestock Medicine and Surgery Service](#).

Upon arrival at UC Davis, Brownie was down and so weak that she could barely stand. She was severely dehydrated, had abdominal pain, and exhibited signs of shock. A team of livestock veterinarians, technicians and students immediately started her on IV fluids, drew blood for testing, and stabilized her condition. With bloodwork off the charts — some revealing levels not compatible with life — it was clear that Brownie was a more complicated medical case than initially suspected.

Brownie's tests confirmed the coccidia specific to cattle, which is a common disease in calves greater than 21 days of age. Brownie was hospitalized for five days where she received: intensive fluid therapy to combat the dehydration, acid-base and electrolyte abnormalities; a regimen of anti-coccidial medications to kill the protozoa infecting her; and gastric acid suppressants to treat and prevent any gastric ulcers.

Just one month after discharge, Brownie was well enough to compete in her first show, taking 4th place in "showmanship" and 2nd place in "breed" in the winter division at the San Joaquin County Fair. Ten year old Mila is raising Brownie for 4H. Mila, who wants to be a veterinarian, plans to show Brownie next year in the winter yearling division.

ULTRASOUND ENHANCES LIVESTOCK MEDICINE

The use of ultrasound, both in-house and in the field, has increased the level of care and productivity of the hospital's livestock services. By utilizing either the [Large Animal Ultrasound Service](#) or performing their own ultrasound examinations, livestock clinicians are able to enhance service offerings to clients, quickly discovering the root of some injuries or illnesses.

In the [Livestock Medicine and Surgery Service](#), ultrasound is used daily to assist with diagnosis of a range of conditions. The imaging can

achieve simple tasks such as a better look at an abscess before draining, or more advanced tests like performing complete abdominal scans to help clinicians decide whether or not to take an animal to surgery. The service recently acquired a new ultrasound machine with advanced image quality and other capabilities such as color flow Doppler which will allow clinicians to examine vessels and hearts more thoroughly.



The [Livestock Herd Health and Reproduction Service](#), which travels to ranches and breeding operations to more easily treat large herds, routinely uses portable ultrasound units to perform pregnancy diagnosis in the field. In its treatment of cows, sheep, goats and pigs, the service performs transrectal and transabdominal ultrasounds nearly every day in its reproductive work and to detect diseases like early pneumonia or to discover evidence of inflammation or infection and chronicity of diseases. Early detection of diseases can change the entire future for a calf in terms of its susceptibility to disease and how it will perform throughout life.

GLOBAL ONE HEALTH DAY - NOVEMBER 3, 2016

On November 3, individuals and groups from around the world, from academic to corporate and non-profit organizations, students to established professionals, will have the opportunity to implement One Health projects and special events under the auspices of "One



Health Day.” Projects will highlight the benefits of a One Health transdisciplinary approach towards solving today’s critical global-planetary health challenges. One Health is a movement to forge co-equal, all-inclusive collaborations, in both research and applied sciences, between human and veterinary medical healthcare providers, social scientists, dentists, nurses, agriculturalists and food producers, wildlife and environmental health specialists and many other related disciplines.

Student Competition: While anyone can participate, One Health Day especially encourages students (secondary, undergraduate, graduate, and professional) to set up One Health events that facilitate student delegates working together from different academic disciplines/backgrounds. For fun and added incentive, student teams organizing an event for One Health Day may enter their event to compete for a \$5,000 cash prize. Three award-winning events will be selected by a jury of renowned international One Health experts.

Here at UC Davis, the One Health Day activities will extend from November 3rd through November 5th.

- **Thursday, November 3rd:** The One Health Institute and School of Veterinary Medicine will be joining colleagues from around the world while staying on the Davis campus by live-streaming and interactively joining One Health Day events in other national and international locations.
- **Friday, November 4th:** The Students for One Health will host a panel discussion to give current veterinary students a chance to interact with several experienced faculty members and PhD students on educational and career choices that enhanced their ability to work in One Health fields.
- **Saturday, November 5th:** The Students for One Health and the One Health Institute are hosting the *2016 UC Davis One Health Symposium*. The theme of this year’s symposium is “Collaboration in the Face of a Changing Environment.” Discussion topics will range from Zika virus and the distribution of mosquitos and other vectors, to respiratory disease caused by environmental particulates, to disaster preparedness and response. The deans of the UC Davis Schools of Nursing, Medicine and Veterinary Medicine will give the day’s capstone address. The program will be followed with a networking reception. A full list of speakers and topics, along with the day’s agenda will be published at the beginning of fall semester.

DVM TALES - MONGOLIA ADVENTURES IN RESEARCH

*Excerpts from article by Devin von Stade, Class of 2017
(second from the left)*

This summer I realized a dream to explore Mongolia with one of my best friends. This unusual experience allowed me to face natural and cultural challenges, encounter new animals while camping under a foreign sky, break down preconceptions and answer questions from scratch. This adventure was as much entwined with the fantasy of youth as it was with a scientific approach. I went to Mongolia to test a field microscope as part of my summer Students Training in Advanced Research (STAR) project, where I was assessing the capabilities of a low-cost digital microscope for veterinary tele-medical applications.





We were an interesting research team: three veterinary students with independent research projects and their veterinary advisor, a biomedical engineer/cinematographer (my childhood friend), two field agents for a non-profit, a driver/geologist, a translator/photographer and a score of supportive individuals along the way, from research staff and rural veterinarians to street-wise liaisons.

We coordinated our goals to involve the same animal sample sets so that we could maximize the amount of data we got on any individual, share resources and save time. As with any plan involving so many factors, we had to adapt much of it as one challenge after another popped up. Half of our time was spent piled into two SUVs, one filled with people and equipment, the other people and Bankhar puppies—the national livestock guardian dog. We would pick up a local veterinarian on our way to the herders that would be adopting a puppy, to meet with them and their family in their ger (yurt).

First we would talk about the weather, the upcoming festival and family relations for a bit through our translator while drinking hot salted milk tea and indulging in cheese curds and candies, or a soup of previously dried goat and noodles.

Our translator would ensure that we followed customs and would help us talk comfortably with the family before we would begin to discuss business. This would often happen three to five times in a given day before and sometimes after getting blood, milk and fecal samples from their livestock and dogs.



The other half of our time we spent in Ulaanbaatar, the capitol city where most of the veterinarians were now staying to work. There we processed our samples and began our analyses at the national veterinary diagnostic laboratory. When I didn't have my eyes glued to the microscope or hands at a sink diligently staining blood smears, we would often join with contacts from the lab or others we worked with to pick their brains about how Mongolia was developing, where it was headed and what the veterinarian's role in all of this would be.

This was an amazingly multifaceted experience, filled with adventures I have and will continue to learn from. I am very grateful for the SVM International Externship Fund's help in realizing a decade's worth of dreaming with a lifetime's worth of experiences.

UC DAVIS SCIENTISTS WORK TO ENSURE SAFETY OF U.S. FOOD SUPPLY

Within the past year alone, dozens of food-borne disease outbreaks have impacted the U.S. food supply, implicating all sorts of ingredients. Contaminated cucumbers have been blamed, along with tomatoes, cilantro, pork, turkey, tuna and raw milk. Pathogenic bacteria, viruses, parasites and toxins can all cause food-borne diseases, and every year, 128,000 Americans are hospitalized and 3,000 people die as a result, according to the [U.S. Centers for Disease Control](#). It's estimated that food-borne illnesses [cost the nation](#) \$77 billion annually.

A research microbiologist, Michelle Jay-Russell, (first on the right) has worked for the university for eight years. Her current research involves spraying harmless strains of *E. coli* on raw manure fertilizing crops to test how long the bacteria survives in the soil and how much gets onto the produce harvested months later.



In 2006, a large [E. coli outbreak](#) associated with contaminated baby spinach sickened 205 people and resulted in three deaths nationwide. In response, the U.S. Food and Drug Administration buckled down on food safety — the FDA and USDA jointly funds Jay-Russell's raw manure experiment. "It's expensive to buy treated manure and it's really convenient to get your neighbor's [raw] manure," she explains. But it may not be the best practice.

Currently, the U.S. Department of Agriculture allows organic farmers to wait only four months between the application of manure and harvest of crops. "This standard is not based on any science, just on what's convenient for farmers because it's about four months between [crop] cycles," Jay-Russell says. But the FDA's [Food Safety Modernization Act](#), considered the most sweeping reforms to food-safety laws in the last 70 years, proposes nine months. Organic farmers are left confused: Two different government entities are telling them two different things.



Jay-Russell's team is applying *E. coli* to different animal manures — goat, horse, steer and chicken — then performing tests to determine the die-off rates. The team's first field trial involved tomatoes and occurred from 2013-15 during California's historic drought; the *E. coli* died off within 60 days. The team soon found that bacteria still lived in the soil and had gone dormant; a heavy spring rain allowed it to grow back. After the rain stopped, the bacteria died off again within 60 days. But there are so many variables at play with this research. "My feeling is 120 days is not going to be enough," Jay-Russell says.

When it comes to agriculture, manure type isn't the only cause for concern. There's also water (among many other factors). Ronald Bond and Melissa Partyka, researchers with the [UC Davis Western Institute for Food Safety and Security](#), are examining the food-safety implications of sediment basins, which capture water runoff from farms to later be re-applied to fields; specifically, how long it takes microbial levels in the water to drop. They also help growers adapt to new requirements for water testing under

the Food Safety Modernization Act — how to sample, where to sample, when to sample. “We’re empowering them so that it doesn’t have to be scary,” Partyka says.

Every year, 48 million Americans — or one in six — get sick from food-borne illnesses. When outbreaks happen, they can be limited to one place or can spread across several states. Every step of the supply chain — from the farmer or rancher, to the processor or slaughter house, packager and distributor, to the retailer — can pose a risk to our safety, including the consumer. We’re throwing things into juicers that never used to be raw — beets, kale. When something is raw, there’s a greater chance it harbors harmful bacteria. We also rely on a global food supply, in which different countries have different food-safety standards and inspection practices.

While our food supply is in good shape, Jay-Russell says, “There’s no such thing as no risk. We always use the term ‘risk reduction.’” Her job is to help reduce the chances that serious outbreaks affect American consumers.

ADVANCED TRAINING PROGRAM MAKES WORLDWIDE IMPACT

Beyond providing clinical training to DVM students, the UC Davis veterinary hospital also plays an important role in training veterinarians to become board-certified in a specialty field. The [veterinary hospital’s house officer program](#), which offers residencies, internships and fellowships, is the largest of its kind at any veterinary hospital in the country, and is known the world over.

The program routinely attracts candidates from all corners of the globe. Its current makeup consists of veterinarians from 19 foreign countries (on six continents) and 21 states. Since 2010, it has drawn participants from 32 countries and 39 states, as well as the District of Columbia and Puerto Rico.

The hospital annually sees more than 50,000 patients, and nearly every one of those appointments is an opportunity for house officers to hone their skills.

The house officer program currently trains 109 veterinarians – 99 residents, seven interns and three fellows. Their one- to four-year appointments provide opportunities in 34 specialty disciplines (more than any other veterinary hospital), including cardiology, dairy production medicine, oncology, radiology, dentistry and oral surgery, anatomic pathology, dermatology, marine mammal medicine, ophthalmology, livestock medicine, zoological medicine, and behavior.

In addition to hands-on advanced clinical training, the program also provides additional educational and research opportunities. Many house officers are required to complete a research study during their time at UC Davis, and present that project at the annual Gerald V. Ling House Officer Seminar Day in March. Some residency positions include degrees built in to the completion of the program. Dr. Yehonatan Berkowic, a second-year resident from Israel in the [Livestock Herd Health and Reproduction Service](#) (LHHR), is currently completing his [Master of Preventive Veterinary Medicine](#) (MPVM) degree. All LHHR residents suspend clinical responsibilities in their second year to pursue the MPVM.



“The MPVM is one of the main reasons why I came to UC Davis,” Dr. Berkowic said. “In Israel, I was treating a lot of sick cattle, but we weren’t doing much to prevent illnesses.”

When he finishes his residency, Dr. Berkowic plans to return to Israel where he has a position waiting for him, and where he will be, to his knowledge, the country’s only board-certified veterinarian in theriogenology (reproduction). He hopes his three-year residency—and his MPVM—will allow him to help other Israeli veterinarians focus on preventive medicine to improve livestock health.

“It’s important we include international veterinarians in our house officer program,” said Dr. Jane Sykes, chief veterinary medical officer of the UC Davis veterinary hospital. “By doing so, we are not only improving veterinary medicine in California, but we are playing a part in raising the quality of veterinary care throughout the world.”