



School of Veterinary Medicine Agriculture and Natural Resources Update February 2016

NEW FACULTY



Dr. Jennine Ochoa recently joined the California Animal Health and Food Safety Laboratory System and the Department of Pathology, Microbiology and Immunology as an Assistant Professor of Clinical Diagnostic Pathology.

Ochoa received her PhD from Washington State University in 2016 and her DVM from UC Davis in 2010. She completed a residency at Washington State University in 2015 and has extensive experience in a diagnostic laboratory environment. She has been a contributing author on 10 publications with an early focus on gastrointestinal inflammation and immunology and, later, on infectious diseases and immunology. She will provide diagnostic pathology and related diagnostic service primarily for livestock and poultry veterinarians and their clients at the CAHFS-Tulare laboratory.

VMTRC'S LEHENBAUER APPOINTED TO ANTIMICROBIAL RESISTANCE CORE COMPETENCIES WORKING GROUP

Terry Lehenbauer with the school's Veterinary Medicine Teaching Research Center (VMTRC) has been appointed by the *Association of American Veterinary Medical Colleges/ Association of Public & Land-Grant Universities* to an Antimicrobial Resistance Core Competencies Working Group. The group will develop a set of core competencies that students of varying educational levels – including 4-H, FFA, college undergraduates and professional veterinary students - should possess.



UC DAVIS AG SCIENCES AND VETERINARY MEDICINE REPRESENTED AT WORLD AG EXPO

The school highlighted its leadership role in agriculture and veterinary medicine to thousands at the 2016 World Ag Expo - the world's largest annual agricultural exposition. Held February 9-12 at the International Agri-Center in Tulare, approximately 100,000 individuals attended from around the world.

Representing UC Davis, the school's Dean Lairmore and College of Agriculture and Environmental Sciences Dean Dillard attended the expo and visited with industry partners, organizations and companies showcasing innovation and leadership in agriculture across the globe, as well as prospective students. UC cooperative extension specialist Maurice Pitesky participated in ANR's first-ever Newsmakers seminar for journalists attending the show. During the three-day show, attendees visiting the school's booth learned about the VMTRC's important role in training veterinary students and residents in dairy production medicine, and in conducting research and services to solve problems related to dairy production medicine, food safety, cattle welfare and ecosystem health. More than 1,400 exhibitors showcased the latest innovations and trends in farm equipment, communications and technology on 2.6 million square feet of exhibit space.

WORKSHOP HIGHLIGHTS NATIONAL COLLABORATION ON FOOD SAFETY IN ORGANIC AGRICULTURE

The school and its partners recently brought together more than 30 producers, industry members and experts from across the country to discuss food safety in the fast-growing segment of organic agriculture, as part of a project funded by USDA National Institute of Food and Agriculture (NIFA) Organic Research and Extension Initiative (OREI).

Participants included representatives from the UC Davis Western Center for Food Safety (WCFS), the Organic Trade Association, the FDA Division of Produce Safety and the Division of Risk and Decision Analysis, the USDA Agricultural Research Service, the Association of Compost Producers and the Organic Center. Information gathered at the workshop

on the industry's use of manure and compost will help project leaders develop a full-scale research proposal to assess the efficacy of practices in the U.S. to reduce the risk of foodborne pathogens on organic farms. It will also help inform and guide policy such as the FDA's Produce Safety Rule that is recommending more research on waiting periods between raw manure application and harvest. Facilitated by co-PIs Drs. Alda Pires, a UC ANR CE specialist at the school, and Michele Jay-Russell, program manager with the WCFS, the workshop featured In-depth discussions, surveys and listening sessions on issues important to organic farmers. Topics included the use of raw manure and compost, rotational grazing practices and extension needs including technology innovations and other tools to help them comply with new food safety regulations. This national project is a collaboration with the WCFS that conducts related research, and the school's [Western Institute for Food Safety and Security](#).



UC DAVIS ZIKA VIRUS EXPERTISE TAPPED BY NATIONAL MEDIA

Zika virus, first identified in monkeys in 1947 and in humans in 1952, has become a major health concern since 2015, when health officials in Brazil began to notice that an outbreak of the virus coincided with a significant increase in newborn babies with microcephaly, or abnormally small heads. Zika virus was previously known only to cause relatively mild symptoms, including fever and rash, in infected people. The virus is transmitted to people by the Aedes group of mosquitoes and is known to be present in Africa, South



America, Central America and the Western Pacific. Researchers from the School of Veterinary Medicine and across UC Davis, whose expertise ranges from mosquitoes and mosquito-borne diseases to maternal and fetal health, have been available to reporters to provide expert opinion and information related to Zika virus. More information can be found at <https://www.ucdavis.edu/news/uc-davis-experts-zika-virus>

UC DAVIS INTERNATIONAL OUTREACH PROMOTES HUMAN-ANIMAL-ENVIRONMENT CONNECTION



Animal science and veterinary faculty from vocational colleges in Jiangsu, Ningxia, and Anhui provinces in China recently attended a **One Health for Food Safety Conference for Animal and Veterinary Scientists** sponsored by the school's Western Institute for Food Safety and Security (WIFSS). The three-week program included lectures and lab tours to provide a better understanding of the interconnectedness of animals, people and the environment in the food system.

A visit to the VMTRC in Tulare County provided an ideal opportunity to see firsthand the interrelationship of farming operations, along with the adjacent infrastructure of the California Animal Health and Food Safety Laboratory System (CAHFS) diagnostic laboratory, and the education and extension programs of the center.

According to Dr. Bennie Osburn, director for outreach and training at the WIFSS, these conferences have a multiplier effect. Faculty who take these courses return home to China to instruct their future workforce on the comprehensive One Health concept to address food safety in Asia. The conference included more than 30 faculty and experts from the school, Department of Animal Science, Department of Land, Air and Water Resources, CAHFS, VMTRC, and CDFA.

GERMAN DELEGATION VISITS UC DAVIS TO DISCUSS GMOS AND ANTIBIOTICS IN U.S. FOOD SUPPLY

Dr. Terry Lehenbauer at the VMTRC, along with Department of Animal Science Research Biologist Dr. Elizabeth Maga, met recently with a delegation from Germany participating in the U.S. Department of State's International Visitor Leadership Program. The purpose of the visit to UC Davis was to gain insight into the perspective of campus experts concerning GMOs relating to animals, and the use of antibiotics in animals in the United States.



Lehenbauer provided information on the school's preventive health programs for cattle, and ongoing changes taking place in the U.S. and California for improving veterinary oversight and judicious use of medically-important antimicrobials in food-producing animals, such as new FDA regulations, the veterinary feed directive and passage of the state's Senate Bill 27.

In related news – Dr. Michael Payne from WIFSS participated in the panel discussion at a **national summit held in Washington D.C on antibiotic stewardship** hosted by the Farm Foundation. The discussion, “Implementation through Collaboration,” addressed what UC Davis and the dairy industry in California are doing to protect the use of antibiotics. Drs. Payne and Lehenbauer joined more than 160 leaders in the livestock sector, the veterinary community, the human health community and the feed industry, as well as state and federal regulators to address how best to keep antibiotics effective for humans and animals alike.

SCHOOL AND ONE HEALTH FEATURED AT UC DAVIS CAPITOL SPEAKER SERIES



As part of the UC Davis Capitol Speaker Series, Dean Michael Lairmore and Associate Dean of Global Programs Patricia Conrad addressed legislative staff and others in January on how global issues of water quality, environmental and food safety, and diseases that can be transmitted between animals and humans, affect California’s health and economy. They discussed the

importance of the One Health approach in advancing the health of animals, people and the environment.

NEW UNIVERSITY OF CALIFORNIA REPORT PROVIDES INSIGHT ON VETERINARY EDUCATION

Veterinarians may be known for their care of animals, but increasingly they are needed to conduct biomedical research, oversee food safety and protect public health, according to a new report from the University of California, [“An Era of Change: A Closer Look at Veterinary Education and Practice”](#) that highlights emerging trends, and provides perspective on the veterinary workforce and schools of veterinary medicine across California and the nation.



\$1.89 MILLION FOR FOOD EMERGENCY PREPAREDNESS AND RESPONSE

The [Food Emergency Response Network \(FERN\)](#) has awarded the [California Animal Health and Food Safety Laboratory System](#) a five-year grant for food safety emergency preparedness and response totaling \$1.89 million. It will increase the capacity of the lab’s toxicology services to respond to contamination threats in the American food supply involving food animals, and in their day-to-day diagnostic and early detection activities.

CAHFS is one of the busiest toxicology labs in the world and offers comprehensive, rapid and reliable diagnostic testing for contaminants that can affect animals and humans, and analyses of suspected contaminated animal feeds and animal-based foods that could prompt regulation to ensure a safe food supply. In the last ten years, the lab’s toxicologists have responded to several high profile events including testing seafood following the Deepwater Horizon oil spill in 2010 for the presence of carcinogenic polyaromatic hydrocarbons.

Supported by the FDA and USDA, FERN integrates the nation's food-testing laboratories at the local, state, and federal levels into a network that is better able to prevent and respond to widespread and

complex emergencies involving biological, chemical, or radiological contamination of food. CAHFS is the only veterinary diagnostic laboratory funded by FERN and one of only 14 labs in the United States receiving resources and equipment support over the last ten years totaling more than \$4.5 million.

LIVESTOCK AND FOOD SAFETY OUTREACH

Rob Atwill with WIFSS was a featured speaker at two recent events focusing on beef cattle and food safety. He provided an update on research on *E. coli* O157:H7 in beef cattle herds along California's central coast to the San Luis Obispo Chapter of **the California Cattlemen's Association** in Paso Robles. Royce Larsen, UCCE Area Natural Resource Watershed Advisor, helped organize the meeting where county ranching leadership was present. This region produces millions of servings of produce for the US consumer each year, and there continues to be much industry and regulatory concern about livestock as a potential source of bacterial contamination for produce. Also, in cooperation with Ken Tate and Samuel Sandoval of CAES, Atwill spoke at the **Salinas River Symposium** in Paso Robles regarding waterborne microbial pathogens, on-farm good agricultural practices, and water availability in face of the drought. This meeting was organized in part by Larsen with assistance from Devii Rao, a Livestock and Natural Resources Advisor for San Benito, Monterey, and Santa Cruz Counties. Discussion focused on contributions of wildlife relative to beef cattle regarding pathogen contamination of surface water sources and the potential for produce contamination.

NEW PROJECTS TO FOCUS ON AVIAN INFLUENZA, DAIRY INDUSTRY ANTIBIOTIC USE REDUCTION

Through the 2015 ANR Competitive Grants Program, school faculty and extensions specialists received support for projects in areas including highly pathogenic avian influenza (HPAI), alternative forages for nutrient management and feeding systems in California and antibiotic use reduction therapy for the dairy industry.



For example, the antibiotic use reduction research will deliver a useful, accurate and low-cost tool to aid producers in not only reducing antibiotic use on their dairies while maintaining milk production and quality, but also reducing their pharmaceutical bills furthering their competitive edge. In addition to these recent grant awards, an ANR-funded project is already underway to develop a technology mobile application tool for risk assessment of bovine respiratory disease.

UC DAVIS HELPS NEVADA RANCHER INTRODUCE GASCON CATTLE TO THE U.S.

Rancher Paul Plouviez, owner of the 600,000-acre Bench Creek Ranch east of Fallon, Nevada, noticed that his terrain and climate closely resembled the southern Pyrenees mountain range of his native France and believed his ranch might be ideal land to raise Gascon cattle, a breed which thrives in the Pyrenees. In order to introduce a new breed of cattle into the United States, Plouviez imported Gascon



embryos with hopes of implanting them in American cattle, as well as Gascon semen to be used in a cross-breeding venture. He imported the first embryos in 2012, and experimented with crossbreeding Gascons with Black Angus, Red Angus and Limousine cattle. After being unsuccessful in producing many viable calves with his embryos, he reached out to the school's Livestock Herd Health and Reproduction Services, and in fall 2014, a UC Davis team of veterinarians and students visited his ranch to implant 25 Gascon embryos into Angus surrogates. By summer 2015, it resulted in 14 healthy pure Gascon calves and helped Plouviez quickly increase his Gascon and Black Gascon herds. His pure Gascon bulls have allowed him to start selling Gascon semen for crossbreeding, as well as increase his own herd. He has found that the best outcome is with Black Angus, resulting in black calves with no horns. He is calling this crossbreed *Black Gascon*, and believes it combines the best qualities of each breed with a superior quality of the meat.

CALIFORNIA ANIMAL HEALTH AND FOOD SAFETY LABORATORY SYSTEM (CAHFS)

Highlights from the [February CAHFS Connection](#) include:

Bovine

- **Infectious bovine rhinotracheitis (IBR)** virus caused **conjunctivitis** in 5% of a group of 200, 8-month-old Holstein heifers.
- **Epizootic bovine abortion/foothill abortion** and **Bovine viral diarrhea virus** concurrent infection were diagnosed in a newborn male Black Angus calf that had gross and microscopic lesions consistent with EBA in several organs, including lymph nodes, thymus, spleen and liver.
- **Mycotic navel infection** resulted in severe necrotizing hepatitis in a 3-day-old beef calf.



Porcine

- ***Haemophilus parasuis*** (Glasser's disease) and **Porcine reproductive and respiratory virus (PRRSV)** co-infection was responsible for the death of a 30 lb. pig.
- **Porcine Circovirus 2 (PCV-2)** systemic infection was identified in a litter of 25-day-old pigs.

Small ruminants and camelids

- **Ovarian carcinoma** was diagnosed in a dwarf doe goat that died following chronic illness.
- **Interstitial pneumonia** was the cause of acute onset of respiratory distress and death in a juvenile llama.
- **Polyserositis and septicemia** due to ***Streptococcus equi ssp zooepidemicus*** caused the death of one of three alpacas that died suddenly over a 2-week period on the same property.

Poultry

- **Lead exposure** was identified in aged hens submitted for necropsy. Routine lead analysis of the liver revealed a low level (2.5 ppm) in one hen and a high potentially toxic lead level (41 ppm) in another hen from a different premise.
- **Infectious laryngotracheitis** associated with vaccination in a flock of 8-week-old layer pullets caused increased mortality and "wet" eyes. The flock had been vaccinated for ILT in the drinking water at 6 weeks of age.

- **Wet pox and fowl cholera** were diagnosed in 2-year-old turkey breeders with a history of lethargy and swollen eyes.

CONTINUING EDUCATION

The 5th Annual Beef Improvement Symposium took place January 9 and was hosted by the Food Animal and Reproduction Medicine (FARM) club, a student organization of the school. The symposium attracted local ranchers and producers, as well as veterinarians and students. Speakers included Dr. Michael Payne from the WIFSS; Dave Pratt, the owner of Ranch Management Consultants; Dr. Kasey Deatley from Chico State College of Agriculture; Chris Kerston from Allen Savory Institute; Dr. Jessica Light from Zoetis; and Dr. Eric Davis and Dr. Bret McNabb from UC Davis. The speakers engaged the audience with lectures, discussions and a hands-on wet lab. A highlight of the day was a talk on “Diagnostic Investigations of Herd Mortalities” by Dr. Leslie Woods from CAHFS.



Backyard Poultry was a featured track at the 2016 WINTER CONFERENCE held February 20-21 at the school’s Gladys Valley Hall. UC Davis recently unveiled a new Pastured Poultry Farm, home to 150 young laying chickens and a living lab where students and researchers hope to develop innovative solutions benefiting pasture-based poultry farms, integrative crop-and-poultry farms, and backyard flocks.

The new 4.5 acre farm, located about one mile west of central UCD campus, includes a seeded, irrigated pasture, where chickens can forage, as well as a bright red, student-built Eggmobile for protection and overnight housing.

In addition, this year the Livestock Symposium took place in conjunction with the Winter Conference and featured veterinary immunologist Dr. Jeff Stott and a new vaccine that shows promise for preventing foothill abortion disease, which kills calves before or at birth.