

School Update and Impacts November 2016

WELCOME TO THE CLASS OF 2020!

Our new class of 145 veterinary students (125 women/20 men), like so many before them, comes with their own histories, talents, and dreams. The incoming class is an amazing group of students with a variety of life experiences including: biking from Vancouver to San Diego; serving in Ecuador in wildlife conservation; working with non-human primates and bats; working as a professional photographer; runners including a marathon runner and a triathlete; a fast pitch softball player for the Puerto Rico National Team; a black belt in Aikido and many musicians. One student is a twin with younger siblings that are triplets and many come to us with multicultural backgrounds (42%) and speak several languages. The mean overall GPA = 3.63. The incoming class career interests are: private practice/specialty practice (109); academics/research/teaching (26); and public health (10). We will offer them unique opportunities to explore research, participate in outreach activities and provide them the fundamental knowledge for future treatments of animals and people.



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](#) was held October 28, 2016.

VISION FOR THE VETERINARY MEDICAL CENTER

The school's vision for the future includes the planning of the new Veterinary Medical Center (VMC), a place of discovery, innovation and healing. This state-of-the-art facility will transform the experiences of our animal patients and their human companions through innovative building designs, coordinated patient care with experts in more than 34 specialties, and unique technical advances in diagnostic services. The facility will include a number of new buildings and renovation of existing facilities to achieve an optimum physical plant with a coordinated flow of activities and program adjacencies. Project construction will be choreographed to ensure that patient care operates smoothly throughout the 10-year phased plan. Planning efforts for the new VMC have identified a number of project groups to be constructed in sequence:

- Small Animal Clinic Examination Rooms (Remodel)
- Large Animal Support Facility
- Livestock and Field Service Center
- Equine Performance Center
- All Species Imaging Center
- Small Animal Hospital East Wing
- Small Animal Hospital West Wing
- Community Practice Consolidation
- Equine Surgery and Critical Care Center
- Equine Isolation



Each of these structures will advance our ability to handle the hospital's large and challenging caseload, allow for the adoption of the latest technologies, and provide the infrastructure and efficient services to facilitate translational research.

ADVANCED TRAINING PROGRAM MAKES WORLDWIDE IMPACT

Beyond providing clinical training to DVM students, the 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. The program routinely attracts candidates from around the globe; currently veterinarians from 19 foreign countries (on six continents) and 21 states are enrolled. 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, providing extensive caseloads for advanced training. 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 and present that project at the annual Gerald V. Ling House Officer Seminar Day in March. By including international veterinarians in the program, faculty are raising the quality of veterinary care throughout the world.

GLOBAL ONE HEALTH DAY - NOVEMBER 3-5, 2016

On November 3rd, individuals and groups from around the world, from academic to corporate and non-profit organizations, students to established professionals, had the opportunity to implement One Health projects and special events under the auspices of “One Health Day.” Projects highlighted 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. At UC Davis, the One Health Day activities extended across three days:



- **Thursday, November 3rd:** The One Health Institute and School of Veterinary Medicine joined 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 hosted 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 hosted 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.

HIGH SCHOOLERS IN VET SCIENCE CLASS GET A PEEK INTO THE FUTURE AT UCD

Thanks to a new partnership between Davis High School (DHS) and UC Davis School of Veterinary Medicine, 30 high school students are participating in a pilot program to introduce students to veterinary and animal science career applications and situations. Taught by DHS’ Alex Hess — who teaches agricultural engineering and animal science, as well as being the adviser for Future Farmers of America — a course on veterinary science is being offered for the first time at DHS. Hess and his students recently took a field trip to the Veterinary Medical Teaching Hospital as part of this program.



Sean Owens, professor of clinical pathology, microbiology and immunology, acted as the school’s ambassador for the teens. He enthusiastically welcomed the group and outlined the day’s activities. On Nov. 10, the group will return to the school to participate in a lab field day and take the same course on

hematology that Owens gives to first-year veterinary students. They will use a microscope to see blood smears of dogs and cats, identifying the cells.

A tour of the school helped the students see themselves in future careers. While in the anatomy lab, Sarah Ferrell, a junior at Da Vinci, said she is taking this class as a “natural progression” from FFA, which she has done all through high school. She is also taking physiology and anatomy for her science requirement.



As the tour moved into the necropsy lab, three researchers were working on what appeared to be a horse’s leg. Owens told the tour group, “This is where we figure out why animals die,” as well as see what a healthy animal looks like.

At the Small Animal Clinic, the students saw blood in various stages of separation, a pathology lab, dogs being given ultrasound exams and operating rooms where dogs were being prepped and undergoing surgery.

“The School of Veterinary Medicine’s strategic plan seeks to attract, mentor and support the best and brightest students,” said Michael Lairmore, dean. “We find that reaching out to high schools in our region with programs like this builds early opportunities to inspire future veterinarians and scientists.”

STUDY HARNESES HEALING POWER OF HORSES FOR DEMENTIA PATIENTS



A groundbreaking program that has helped people with dementia by having them interact with horses launched at the UC Davis School of Veterinary Medicine at the end of October after a test run at Stanford University.

The veterinary school, the UC Davis School of Medicine’s Alzheimer’s Disease Center and the nonprofit group Connected Horse will collaborate on a clinical trial, which will pair people undergoing early stage dementia and mild cognitive impairment and their caregivers with horses in the hopes of improving the patients’ demeanor and communication skills.

Grooming and walking the horses can have a therapeutic effect on people with memory loss, who often feel isolated and anxious while their memory is slipping, said Nancy Schier Anzelmo, founder of Alzheimer’s Care Associates in Rocklin and a faculty member of the Department of Gerontology at California State University, Sacramento.

Schier Anzelmo and senior living consultant Paula Hertel created the research study, including conducting a pilot study with 10 participants at Stanford University last spring. Initial results found that people were more energized and exhibited more positive facial expressions by the end of the horse workshops. The study facilitators also noted that the participants with dementia were better able to follow instructions and social cues than they were at the start of the pilot.

“Horses have this innate ability to sense nonverbal communication and mirror it back,” Hertel said. “Participants learn from that - they look at what the horses are doing and they modify their behavior and learn how to work with a horse. With a 1,200-pound animal, you can’t force them to do something - it’s really a collaborative activity.”

The stress of a dementia diagnosis often takes a toll on both the patient and their partner, Hertel said; the program is designed to help both people in a relationship.

Alzheimer's disease, the most common form of dementia, affects one in nine people over age 65. By 2050, the number of people with Alzheimer's may nearly triple, from 5.2 million to a projected 13.8 million, according to 2016 data from the Alzheimer's Association.

With that in mind, it's important to think of more creative and effective ways to serve dementia patients, said Sarah Tomaszewski Farias, a researcher at the UC Davis Alzheimer's Center who will work on the study. Horse programs are used to treat children with autism, veterans and former inmates, she said, but people with dementia have yet to undergo such studies. Current treatments available for individuals with Alzheimer's disease are not very good and don't alter the disease course much. This type of program seeks to identify how to make people's lives better despite having the disease.

PETS POTENTIALLY MORE AT RISK IF RECREATIONAL MARIJUANA LAW PASSES

If Californians vote to legalize marijuana for adult recreational use there's a growing concern about an unintended consequence – more cases of dogs digesting cannabis products.

“Dogs can die from this. It is uncommon but it's possible,” said Dr. Karl Jandrey, Associate Professor of Clinical Surgical & Radiological Sciences at UC Davis School of Veterinary Medicine. “We probably see one a week but some of my colleagues in private practice in the Bay Area may see more like one or two a day.”



The Pet Poison Helpline found that in the past five years, there has been an alarming jump in the number of dogs accidentally poisoned or intoxicated by marijuana – a 330% increase in cases across the nation. The number one source in dog intoxications are edibles intended for human consumption that are rich in tetrahydrocannabinol (THC), the primary psychoactive cannabinoid in marijuana.

One very potent source of THC used in making baked goods is cannabutter. It's made by steeping marijuana and butter for hours, straining the plant matter from the butter, and then re-solidifying the THC-infused butter. At least two dogs in the U.S. have died in the past year after eating cannabutter, according to the helpline. In addition, some THC-rich cannabis edibles are also made with chocolate, raisins or xylitol, all ingredients that compound the toxicity in dogs.

CANCER THERAPIES FOR DOGS MAY SPEED THE DEVELOPMENT OF NEW TREATMENTS FOR HUMANS

Melanoma, lymphoma, gliomas — all of these types of cancer affect both dogs and people. For that reason, dogs make excellent models for better understanding not only how cancer forms in humans, but also in developing more efficient treatments. For example, Dr. Michael Kent, a radiation oncologist with the [UC Davis School of Veterinary Medicine](#), collaborated



with Dr. Arta Monjazeb, a radiation oncologist at the [UC Davis Comprehensive Cancer Center](#), to examine the use of a novel therapy in treating advanced metastatic disease in dogs. Metastatic tumors are those that have already spread to other parts of the body beyond the main tumor site, which make them the most challenging to treat. By combining conventional radiation and immune therapies for the first time in a canine clinical trial, they were able to

improve effectiveness of the treatment, and extend the lives of some dogs while maintaining quality of life. Their study results recently appeared in the journal [Clinical Cancer Research](#).

BREAKING THE CHAIN OF FOOD-BORNE ILLNESSES THROUGH EDUCATION

The CDC reports there are 3,000 deaths in the U.S. each year due to food-borne illness--often misdiagnosed as flu. For those cases that do get reported, it's estimated that 48 million illnesses occur each year in the U.S. The World Health Organization reports that 1 in 10 people worldwide get sick each year from eating contaminated food and as a result 420,000 die. Children account for one-third of those deaths.

The [Western Institute for Food Safety and Security](#) (WIFSS) is educating and training the workforce that will improve global food safety and defense in all sectors of the food system continuum, from environment to consumer.



One of these initiatives promotes international food safety. Through the One Health for Food Safety conferences sponsored by WIFSS, students and faculty from Nanjing Agricultural University (NAU), Jiangsu Agri-Animal Husbandry Vocational College (JSAHVC), and other vocational colleges throughout China, learn that food safety requires teamwork to identify the channels, such as water, soil and animal handling, in which pathogens and toxins are transmitted to the environment, animals and humans.



The One Health for Food Safety Conference, held at UC Davis this past summer, was an intense 4-week session with lectures and tours of eight laboratories in the school and the College of Agricultural and Environmental Sciences, and two community college campuses. The conference raised awareness, encouraged team building, and brought about change through calls to action. Understanding the One Health concept is valuable when tackling serious food-borne illness problems affecting the world's population.

Director of Outreach and Training at WIFSS, Dr. Bennie Osburn, feels strongly that, "these students and faculty will make a difference for all of humanity, and are committed to delivering the concept of One Health to address food safety in Asia."

PAVING THE WAY FOR PATHOGENS

Coastal waters near heavy human development are more likely to receive land-based "pathogen pollution," which can include viruses, bacteria and parasites. A recent study showed higher levels of rainfall and development increased the risk of disease-causing organisms flowing to the ocean.



The study, [published recently in *Nature Scientific Reports*](#), adds to years of work by a consortium of researchers led by the [UC Davis School of Veterinary Medicine's Karen C. Drayer Wildlife Health Center](#) and the California Department of Fish and Wildlife. The scientists were called upon to help decipher the mystery in the late 1990s when a parasite hosted by cats, *Toxoplasma gondii*, [caused deaths in sea otters](#) along the coast of California.

Wild and domestic cats are the only known hosts of *T. gondii*. The parasite can shed its infective egg-like structures, called oocysts, in their feces. In soil, freshwater and seawater, these hardy oocysts can survive for over a year in some cases, infecting animals and people.

The latest study advances earlier work by tracking the parasite to see how human-driven land-use change and rainfall might be impacting pathogen movement from land to sea.

“This isn’t just about *Toxoplasma*,” said lead author Elizabeth VanWormer, a postdoctoral researcher at UC Davis at the time of the study. “Humans, pets, stray animals, livestock and wildlife can all shed pathogens that can be carried from land to sea in runoff after rainstorms. The way we develop our urban and rural coastlines — adding people, domestic animals, and hard surfaces like concrete and asphalt — can increase the flow of these pathogens into estuaries and oceans.”

From 1910 to 2010, California’s human population, the majority of which resides in coastal counties, expanded from 2.4 million to more than 37 million, with close to 50 million people expected by 2050. The growing human population reshaped large areas of the California coast, converting natural habitat to residential, industrial and agricultural uses.

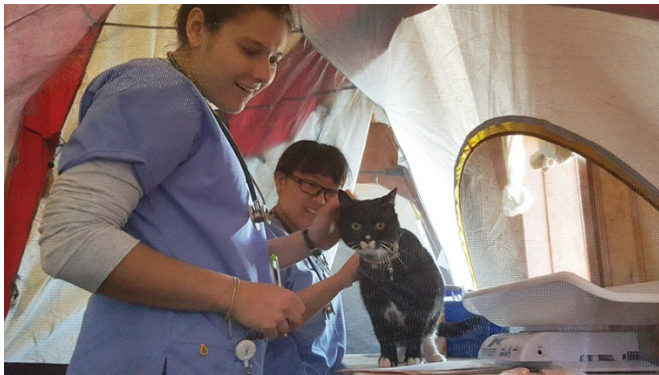
Natural environments like forests, grasslands and wetlands can help filter out pathogens like *T. gondii* before they reach the sea. However, a paved or tilled landscape promotes the flow of contaminated runoff into waterways, storm drains and, ultimately, the ocean.

Using census and land-use records, the authors estimated that development between 1990 and 2010 increased oocyst delivery from coastal watersheds to the ocean by 44 percent. Climate change may also exacerbate the journey of pathogens to the ocean.

Decades of collaborative research by the California Department of Fish and Wildlife, United States Geological Survey, Monterey Bay Aquarium, the Marine Mammal Center, UC Santa Cruz, and UC Davis, with commitment from the National Science Foundation Ecology and Evolution of Infectious Diseases program, provided the interdisciplinary tools and knowledge necessary to assess the impacts of coastal development and climate variability on coastal pathogen pollution. Co-authors on the study included Karen Shapiro, Wesley Wallender, Patricia Conrad, John Largier and Jonna Mazet, all from UC Davis; Tim

Carpenter of Massey University in New Zealand; Purnendu Singh of VNR Vignana Jyothi Institute of Engineering and Technology in India; and Marco Maneta of the University of Montana.

STUDENT-RUN PROJECT HOPES TO SERVE AS MODEL FOR CARE IN UNDERSERVED COMMUNITIES



Knights Landing, a small community of about 1,000 people in rural Yolo County, has no veterinarian— except on the third Sunday of the month. That's when veterinarians and veterinary students from UC Davis set up a clinic at the local community center to serve Knights Landing and Robbins, an even smaller town about five miles up the highway.

“We really love our clients,” said Amber Robert, a third-year vet med student who is

one of three directors of the student-run [Knights Landing Clinic](#). “They love their animals, and they're so thankful.”

The program is a win-win-win for all. Pet owners don't have to lose a day of work to get to the nearest veterinarian services 15 to 20 miles away. The vet med students get experience doing what they love to do. And the animals are healthier for it.

Now in its fourth year, the clinic is a project of [Students for One Health](#), an organization that champions the concept that the health of people, animals and the environment is interdependent and can best be addressed together. In fact, students from the UC Davis School of Medicine run a health clinic just across the street on the first and third Sundays of the month.

Clinic days, which run from about 8 a.m. to 3 p.m., start with joint rounds of students staffing both clinics. This gives them an opportunity to learn about a health care topic that impacts people and their pets. For example, the students have discussed the signs of and treatments for heat stroke and heat exhaustion. “It fosters open communication between the veterinarian and medical fields, and it's an opportunity to practice One Health medicine,” said Robert.

The team of about 45 — including supervising veterinarians from UC Davis and undergraduate volunteers — provides an impressive range of services. They include physical exams, vaccinations, preventative treatments for parasites, heartworm testing, preliminary bloodwork and urinalysis. They also offer referrals for free spaying and neutering later at the UC Davis Veterinary Medical Teaching Hospital on campus. The clinic is funded by grants that the students seek out.

RECENT NEWS

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<http://www.comstocksmag.com/longreads/hard-cell>

Virus Hunting: Dr. Jonna Mazet Heads Global Effort to Avert the Next Ebola or Zika Outbreak

<http://www.sacbee.com/news/local/health-and-medicine/article92997847.html>

Common California Culex Mosquito Could Amplify Zika Spread

<http://www.sacbee.com/news/local/health-and-medicine/healthy-choices/article92034182.html>