School Update – April 2015

SVM #1 RANKING

The UC Davis School of Veterinary Medicine has been recognized once again for its outstanding program by the U.S. News and World Report. The School, #1 in the newly released rankings, is home to a robust $74 million research program, 30 percent of which is funded by the National Institutes of Health.

A strong leader in veterinary medical education, UC Davis has the largest resident program of any veterinary school in the country. More than 170 graduate students pursue advanced science training at the School and DVM students learn from a curriculum built on sound educational theory designed and delivered by faculty who serve as leaders in their fields. Through an extensive teaching hospital in Davis and satellite clinics in Tulare and San Diego, the School provides services throughout the state to more than 48,000 animal patients annually in 34 specialties. The School's unique One Health approach recognizes the inextricable link between animals, people and the environment. Faculty members collaborate with colleagues across the School, in multiple schools/colleges on the UC Davis campus, and with national and international institutions to solve society's most pressing health issues.

The School's cadre of faculty, staff, students and alumni are advancing health through their research endeavors, clinical patient care, educational pursuits, outreach and public service locally and globally.

NEW FACULTY

Dr. Sara Thomasy recently joined the Department of Surgical and Radiological Sciences as an Associate Professor of Veterinary Ophthalmology. Dr. Thomasy received her DVM (2005) and PhD in Pharmacology and Toxicology (2006) from U.C. Davis. She continued her training in a rotating internship (small animal emergency, intensive care, internal medicine and surgery) at North Carolina State University (July 2006-July 2007). She returned to the School and completed her residency in Comparative Ophthalmology (2010). Dr. Thomasy is a Diplomate of the American College of Veterinary Ophthalmologists (2011). Dr. Thomasy served previously an Assistant Professional Researcher in the department.

Dr. Thomasy's research interests include corneal wound healing, glaucoma, ocular pharmacology, and antiviral therapy for the management of ocular viral diseases. Dr. Thomasy will be establishing an active research program in vision science at the California National Primate Research Center (CNPRC) and collaborating with core scientists in multiple areas of nonhuman primate research.

NEW LEADERS

Dr. Xinbin Chen has been appointed as Director of the Veterinary Scientist Training Program (VSTP). Dr. Chen received his DVM from Anhui Agricultural University, China, his PhD from Michigan State University, and is a Professor in the Department of Surgical and Radiological Sciences (Vet Med) and the Department of Internal Medicine (Medicine). He also serves as Director of the Comparative Cancer Center and Veterinary Oncology program in the School of Veterinary Medicine.

As Director, he will develop a vision and strategic plan for VSTP that is synergistic to the School's Strategic Plan. He will: continue interactions with various graduate groups to ensure that our students are included; promote the development of sustainable relationships between UCD faculty and other institutions such as the CDC and NIH to provide opportunities for doctoral research; coordinate recruitment efforts and student progress with the Office of Research and Graduate Education; develop a communication and marketing plan to promote the program; and seek funding from additional extramural sources in conjunction with the Office of Research and Graduate Studies.

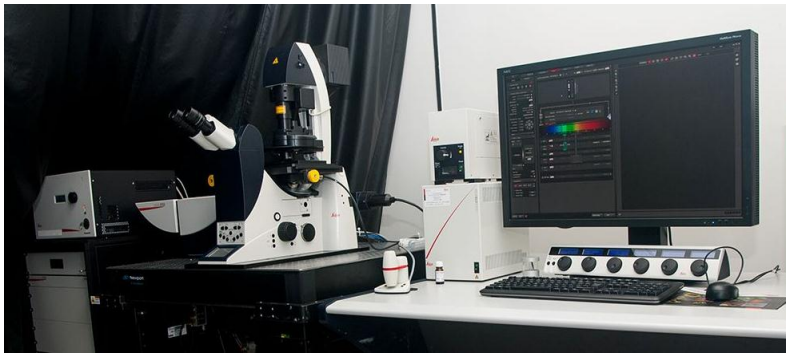
CURRENT FACULTY RECRUITMENTS

- Professor of Microbial Pathogenesis (PMI)
- Professor of Diagnostic Imaging (VSR)
- Professor of Clinical Small Animal Medicine (2 positions; VME)
- Professor of Clinical Zoological Companion Animal Med and Surgery (CAPE) (VME)
- Director/Professor, CNPRC
- Professor (50%)/Professor In-Residence of Respiratory Biology (50%) (APC)
- Professor of Infectious Diseases (CCM/PMI)
- Professor of Medical Oncology (Drug Discovery) (VSR/VMB)
- Professor of Neurology/Neurosurgery (VSR)
- Professor of Soft Tissue (VSR)
- Professor of Dermatology (VME)
- Professor of Clinical Diagnostic Microbiology (CAHFS-San Bernardino Lab)
- Professor of Clinical Diagnostic Pathology (CAHFS-Tulare Lab)
- Professor of Clinical Livestock Herd Health (PHR)
- Professor of Clinical Livestock Reproduction (PHR)
- Professor of Clinical Small Animal-Orthopedic Surgery (VSR)
- Professor of Clinical Medical Oncology OR Health Sciences Clinical Professor of Medical Oncology (Clinical Trial) (VSR)

INVESTMENT IN RESEARCH – HEALTH SCIENCES ADVANCED IMAGING FACILITY

The School has taken the lead on establishing the Health Sciences Advanced Imaging Facility as a core research resource for the entire campus. This major investment in the Stimulated Emission Depletion (STED) confocal microscopy facility is a major initiative to promote scientific advancement, a key part

of our strategic mission in research, and a demonstration of our collaborations with the School of Medicine, College of Biological Sciences and other campus partnerships. The STED instrument can image structures below the limit of diffraction in 3D. The high speed resonance scanner further allows the use of live samples and provides super resolution imaging never before achieved in biological samples. This equipment will directly help our researchers see the inside of cells at resolutions never before available, permitting new directions to understand life processes and mechanisms of disease. We are committed to supporting our research teams and their mission of advancing scientific discovery. Our support of shared resources of space and equipment is required for our investigators to push the boundaries of basic and translational science.



On March 16, 2015, the School of Veterinary Medicine and the School of Medicine at UC Davis co-hosted an open house event for the new microscopy facility. The week-long event included lectures on cutting edge research applications, live production demonstrations and hands-on workshops for research faculty, graduate students and technical staff. The facility includes both the Leica Sp8 Stimulated Emission Depletion 3x model and the Leica Sp8 Multi-Photon Confocal Microscope. The chance to prepare samples and acquire data on the new Leica STED and multiphoton microscopes was well attended and highly beneficial for participants.

STUDENT BLOG – "DVM Tales"

A newly created student blog entitled "DVM Tales" has been created and is featured on the front page of the School's web site at www.vetmed.ucdavis.edu. This new communication initiative features stories from our veterinary students, residents and graduate students in their own words about their experiences exploring the many facets of veterinary medicine. Blog posts may include descriptions of a summer research project, externship or clinical rotation, from the student's point of view. We plan to provide new posts each week and over time this will provide a collection of student experiences that demonstrates the breadth of experiences and learning opportunities in which our students are engaged.

Excerpts from*: Journey to Food Animal Medicine* – When Michelle Schack (Class of 2015) was seven years old, she was dissecting squirrels. At 17, she helped raise nine guide dogs. In college, as an undergraduate resident manager of an animal sciences barn, she lived with pigs for two years. Today, in her senior year of DVM training you'll find Michelle outdoors working on a dairy farm, diagnosing cattle pregnancies or treating sick cows as part of a rotation in dairy production medicine.

You might think Michelle grew up on a farm. Instead, she was raised in the traffic-filled suburbs of the San Francisco Bay Area where 4-H Clubs were hard to come by. From an early age, Michelle said she knew she wanted to be a veterinarian and sought out opportunities to work with animals. While she owned dogs, a tortoise, a bunny and a bird as pets, she also possessed an inquiring mind, a strong sciences and math skill set, and good communication skills. When she reached high school, she took anatomy and physiology to prepare for college.

"I decided to go to UC Davis because I wanted to become a veterinarian," Michelle said. As an animal science undergraduate major, she would gain the hands-on experience with animals she desired, and learn how they are raised and treated.

The turning point in choosing an academic path was when she had the opportunity to shadow a dairy veterinarian. While many of her colleagues were headed in the direction of caring for companion animals, like dogs and cats, she was interested in pursuing the less-popular field of food animal medicine within the agricultural sector.

This spring she completed an optional rotation program through the School's Dairy Production Medicine Program, located at the Veterinary Medicine Teaching and Research Center (VMTRC) in Tulare, California. The VMTRC trains about 40 senior veterinary students like Michelle each year, as well as post-graduate residents from around the world. Students spend two to eight weeks in a structured training program focusing on dairy cattle reproduction, milk quality and udder health, calf health, nutrition, and preventive medicine. They are given a comprehensive look at the dairy industry and the role of a veterinarian in maintaining herd health.

Describing a typical day at the VMTRC, Michelle rises early to join a 6:00 a.m. on-field herd check on a client farm. This can include practice with palpations to diagnose pregnancy and pre- and post-birth health checks, such as administering vaccinations or drawing blood from young calves to check on immunization status. In the afternoon, the students may attend presentations by industry-leading UCD research faculty. They will also learn to digitally record and analyze the cattle's health statistics in the areas of breeding, births, disease and treatment, and milk production. In pathology labs, she might conduct a calf necropsy and try to identify the cause of death. "I love being outside, seeing the cattle herd population as a whole, and learning about the management factors that go into keeping cows healthy." she said.

As Michelle approaches graduation, she hopes to find the perfect opportunity to put her life-long education, work and passion into practice.

NEWBORN HORSES GIVE CLUES TO AUTISM.

Maladjusted Foal Syndrome, or "dummy foals," refers to foals who appear on first glance to be sound, sturdy and healthy, but seem detached, stumbling towards people and don't seem to recognize their mother or have any interest in nursing. These symptoms are characteristic of a syndrome that has puzzled horse owners and veterinarians for a century. But recently UC Davis researchers John Madigan, Monica Aleman and Isaac Pessah have discovered a surprising clue to the syndrome and intriguing similarities to childhood autism in humans. One thing both "dummy foals" and autistic children have in common is that they are "detached."

Somewhere between the time a foal enters the birth canal and the moment it emerges from the womb, a biochemical "on switch" must be flicked that enables the foal to recognize the mare, nurse, and become mobile. Madigan and Aleman suspect that the physical pressure of the birthing process may be that important signal.

“We believe that the pressure of the birth canal during the second stage of labor, which is supposed to last 20 to 40 minutes, is an important signal that tells the foal to quit producing the sedative neurosteroids and ‘wake up’ ” Madigan said.

The theory is supported by the fact that the maladjusted foal syndrome appears more frequently in horses that were delivered via cesarean section or experienced unusually rapid births. It’s hypothesized that those foals do not experience significant physical pressure to trigger the change in neurosteroids.

The veterinary researchers have found that they can reduce maladjustment symptoms in foals by using a simple rope harness to gently squeeze the foal and mimic the pressure normally experienced in the birth canal. With gentle harness pressure, the neurosteroid levels drop and the foals return to their normal state.

To recreate that pressure, the researchers developed a method for wrapping a foal’s upper torso with several loops of a soft rope, creating a temporary harness. When pressure is applied with the rope, creating a gentle squeeze, the foal lies down and appears to be asleep. After 20 minutes — about the same time a foal would spend in the birth canal — the rope is loosened and the squeeze pressure released. In initial cases, the foals have responded well to the procedure and recovered, some rising to their feet within minutes, bounding over to join the mare and begin nursing.

The researchers suspect that the pressure triggers biochemical changes in the central nervous system that are critical for transitioning the foal from a sleeplike state in the womb to wakefulness at birth. Madigan, Pessah, and other researchers in veterinary and human medicine recently formed a joint research group and secured funding to investigate whether abnormal levels of neurosteroids, a group of chemicals that modulate perception, may play a role in both disorders. They hope their efforts will help prevent and treat the disorder in foals and advance the search for the causes of autism, which affects more than 3 million individuals in the United States.

VETERINARY CENTER FOR CLINICAL TRIALS

The Veterinary Center for Clinical Trials (VCCT) located within the veterinary clinical district works closely with faculty across the School and the campus to accelerate identification and development of diagnostics and therapeutics for the benefit of veterinary and human patients. Clinical investigators have more than 100 active trials aimed at advancing medical care for their veterinary patients in a variety of disciplines, including (but not limited to) oncology, neurology/neurosurgery, ophthalmology, and cardiology.

The VCCT serves as a point of contact for investigators and sponsors interested in conducting a clinical trial. Professional staff coordinate and facilitate all aspects of a veterinary clinical trial, organize and maintain a database of institutional expertise and resources, and promote alliances with other campus units and outside collaborators.

Examples of current clinical trials include:

- Inherited Myopia in the Labrador Retriever
- Neonatal Maladjustment Syndrome
- Chronic Gingivostomatitis: Assessing the Immune Profile
- Bloat (Gastric Dilation and Volvulus) in Dogs
- Lung Cancer in Dogs

For more information on all of the trials currently in progress, please visit the VCCT web site at: http://www.vetmed.ucdavis.edu/clinicaltrials/index.cfm

EXTREMELY RARE HEART SURGERY SAVES CAT

A one-year-old female Burmese cat was diagnosed with a rare congenital heart defect that does not allow blood to flow properly through the heart chambers. This improper flow can cause too much blood to collect in one chamber, creating pressure and enlarging it. Vanilla Bean's veterinarian referred her to the VMTH's Cardiology Service, where Dr. Josh Stern was familiar with the condition, and the rare life-saving procedure to correct it.

Once Vanilla Bean arrived at UC Davis, Dr. Stern and his team of residents, technicians and veterinary students evaluated her by performing an echocardiogram to assess the severity of her heart disease and see if she was a good candidate for surgery. Her condition, known as a cor triatriatum sinister, is found in children as well as cats. In his two previous surgeries to correct the condition, Dr. Stern collaborated with human cardiologists from Duke University, near where he was practicing at North Carolina State University. To help assist him now that he's at UC Davis, Dr. Stern sought out two cardiologists from the UC Davis Medical Center.

Together, the team of doctors began the delicate procedure of correcting the defect, which involved opening the chest cavity to expose the heart and utilize a hybrid cutting balloon dilatation. The balloon cuts the restricting membrane between the chambers to allow blood to flow through it regularly. The surgery was a success, and Vanilla Bean slowly recovered. She is no longer in congestive heart failure, and is off all medications.

NEW COMPANION ANIMAL THERIOGENOLOGY PROGRAM THRIVING

Over the past few years, the teaching hospital has added several faculty and resident clinicians to establish a dedicated Small Animal Theriogenology Service. The hospital is now able to offer a broad range of services including ovulation timing, pregnancy monitoring, planned C-sections, and semen freezing. Breeders are now able to have their pets evaluated for routine breeding management of male and female companion animals, infertility and other breeding problems, as well as emergencies.

This expansion of reproductive services was made possible, in part, by the implementation of a residency training program in companion animal theriogenology, thanks to the efforts of faculty mentors Dr. Bruce Christensen, Dr. Autumn Davidson, and Dr. Ghislaine (Gigi) Dujovne to secure funding from the American Kennel Club and the Theriogenology Foundation. In August 2014, the VMTH welcomed

the first UC Davis resident in companion animal theriogenology, Dr. Andrea Hesser into this intensive two-year residency program, which is one of only three companion animal-focused theriogenology training programs in the nation.

This expanded service also allows our DVM students to gain more first-hand experience with reproductive issues in companion animals, while providing the highest level of breeding management services to our clients. The growing demand for these services is demonstrated by the attendance at the inaugural Canine Breeder Excellence Seminar, hosted by UC Davis in 2014. This seminar was attended by more than 250 local canine breeders and an additional 250 joined in via webinar. Recently the 2nd Annual Canine Breeder Excellence Seminar proved just as successful.

CFAH BRINGS TOGETHER RESEARCHERS, INDUSTRY STAKEHOLDERS

In February, the Center for Food Animal Health gathered more than 20 industry stakeholders and faculty with an interest in livestock, poultry, dairy and small ruminants for a day-long advisory meeting in Davis. Participants represented a wide range of livestock industry and commodity groups, including the California Cattlemen's Association, Dairy Cares, the California Wool Growers Association, Western United Dairymen, the California Department of Food and Agriculture, and the US Department of Agriculture, among others.

Faculty presented research updates in the areas of avian/poultry, cattle nutrition, food animal diseases, beef and dairy cattle, small ruminant health and epizootic bovine abortion (EBA) vaccine development. CFAH leadership addressed participants' needs and concerns and gave an update on the center's priority issues, including livestock disease, animal welfare and well-being, public and environmental health, antimicrobial drugs, on-farm safety issues, and small-scale and sustainable production systems.

The CFAH helps to create, apply and disseminate new knowledge that will enhance the current and future health and well-being of food-producing animals, promote the safety of foods of animal origin, and provide a healthy environment for food animals and humans. Established in 1972 and formerly known as the Livestock Disease Research Laboratory, the CFAH serves as the veterinary medical component of the Agricultural Experiment Station of the University of California's Division of Agriculture and Natural Resources (ANR).

KEEPING UP WITH NEW AND CHANGING ANIMAL DISEASES

Behind the scenes of the California Animal Health and Food Safety (CAHFS) Laboratory System, scientists are helping to protect animal health, public health and the food supply by rapidly detecting and responding to catastrophic and emerging livestock and poultry diseases. Through a screening process using sensitive detection technology called PCR – or polymerase chain reaction - CAHFS Virologist Dr. Beate Crossley and her team are able to quickly and reliably identify a potentially dangerous virus.

Rapid identification helps limit an infectious animal disease that could have devastating effects on both animals and humans.

In January 2015, Dr. Crossley and her team diagnosed a highly pathogenic H5N8 avian influenza strain detected in a turkey from Stanislaus County, California. The samples submitted were identified as high risk for avian influenza by diagnosticians working in the Turlock Branch Laboratory, one of four CAHFS laboratory facilities situated in California's animal producing regions. In February, a second flock was also identified from samples submitted to the CAHFS Tulare Branch Laboratory.

Avian influenza is an example of a virus that can move over great distances in migratory waterfowl. Rather than mutating from a local virus, the origin of this highly pathogenic strain travelled from Southeast Asia to California in wild waterfowl. Because a highly pathogenic strain spreads quickly among birds and is difficult to contain, it poses a high risk to backyard poultry flocks and commercial operations, with devastating animal health and economic consequences.

Early and rapid detection by CAHFS - designated as one of the core labs in cooperation with USDA and the National Animal Health Laboratory Network (NAHLN)) - is critical to limiting the spread of rapidly moving disease. As the only designated diagnostic lab to protect the state from foreign and emerging animal diseases, CAHFS routinely tests more than 20,000 samples each year specifically to detect avian influenza as early as possible.

In the past, the team at CAHFS has been successful in quickly devising effective methods for responding to several high-profile animal health emergencies. In 2001, a new test provided rapid detection of Exotic Newcastle Disease in backyard chickens, which led to a multimillion-dollar joint USDA/CDFA disease eradication effort. CAHFS performed more than 110,000 tests for the disease in ten months, shortened the time to reopen international markets, and reduced the overall cost of the outbreak. In 2008, they detected a very virulent form of infectious bursal disease virus in a commercial layer flock not previously documented in the United States.

As new diseases emerge, innovations in genetic diagnostic testing can help CAHFS differentiate between the wide spectrum of viruses and assist with efforts to effectively respond to outbreaks.

TRIBUTE TO WHITNEY J. ENGLER – CLASS OF 2015

Our community lost a beloved friend, dedicated student and devoted animal lover with the death of Whitney Engler, a 4th year veterinary student, in late March. She is remembered for her passion for animal behavior and finding the good in every animal, her compassionate work with underserved populations at the Mercer Veterinary Clinic, her time spent fostering animals, and most of all, her incredible bond with Rosie—her Australian Shepherd service dog. Whitney could connect with all animals and surrounded herself with her three cats, two parrots and a collection of finches.

In the midst of tragedy and sorrow, Whitney's family, friends and mentors shared their memories at a Commemorative Service held at the School. Classmates shared stories of her selfless and caring demeanor, be it at dinner after a long clinic day, cleaning for someone, or offering to help train a furry companion.

Whitney grew up in San Diego, graduated from the University of Michigan with a degree in brain behavior and cognitive science, and was a member of the DVM Class of 2015 at UC Davis. While at UC Davis, Whitney received many awards and scholarships, including those from the Westminster Kennel Foundation, American Humane Association, and most recently, the Floyd Tuition Support Scholarship. She participated in the Students Training in Advanced Research (STAR) program, competed in AKC and ASCA agility, rally, obedience and conformation venues with Rosie, served as secretary and president elect for the Behavioral Medicine Club, and as fundraising coordinator for the Mercer Veterinary Clinic for the Pets of the Homeless.

Whitney planned to become a board-certified veterinary behaviorist and wanted to incorporate behavior and reproductive services within a predominately small animal clinical practice.

"While we will never understand the senseless tragedy that took Whitney's life, she is engrained in the collective soul of those that knew her best," Dean Lairmore said. He encouraged Whitney's fellow students to honor her through good works in our society as veterinarians, by living their lives to the fullest, and appreciating those that love and support them.

A Memorial Scholarship Fund in Honor of Whitney J. Engler has been established at the UC Davis School of Veterinary Medicine - on-line at: http://bit.ly/1NAjLWJ

SCHOOL OF VETERINARY MEDICINE COMMENCEMENT

The School's Commencement Ceremony will be held Thursday, May 21st from 4:00 – 6:00 p.m. at the Robert and Margrit Mondavi Center for the Performing Arts on the U.C. Davis campus. Veterinary students in the Class of 2015, Residents and Master of Preventive Veterinary Medicine students will be recognized for completing the education and training associated with their academic degree programs.

The ceremony will also feature an address from Commencement Speaker Barbara J. Natterson-Horowitz, M.D.

Barbara Natterson-Horowitz, is a Professor of Medicine in the Division of Cardiology at the David Geffen School of Medicine at UCLA. In addition to patient care, she is actively involved with medical education and research. Dr. Natterson-Horowitz holds a professorship in the UCLA Department of Ecology and Evolutionary Biology and is Co-Director of the Evolutionary Medicine Program at UCLA.

She serves as a cardiovascular consultant to the Los Angeles Zoo as a member of its Medical Advisory Board and is Chair of the Zoobiquity Conference, a national educational program that facilitates interdisciplinary discussions between physicians, veterinarians and others in the health professions.

In 2012, Dr. Natterson-Horowitz co-authored the New York Times bestselling book, *Zoobiquity: The Astonishing Connection Between Human and Animal Health. Zoobiquity* was named *Discover Magazine'*s Best Book of 2012, *The China Times* Best Foreign Translation of 2013, and a Finalist in the American Association for the Advancement of Science Excellence in Science Books 2012. Her work has been featured in the *New York Times*, *The Guardian*, *Wall Street Journal*, *Nature*, *Scientific American*, and *New Scientist*, among others.

Dr. Natterson-Horowitz completed her undergraduate studies at Harvard College and received a Master's degree from Harvard University. She received her medical degree from the University of California, San Francisco.

ALUMNI ACHIEVEMENT AWARD RECIPIENTS 2015

Each year the School honors members of its alumni with an Alumni Achievement Award. This award is the highest honor bestowed by the School. Honorees may be graduates of the School's DVM, MPVM, and graduate academic (MS, PhD) programs, or individuals who have completed internship or residency programs. The award is presented during the School's Commencement ceremony. This year the following distinguished alumni have been selected to receive this award.

Corrie Brown, from the University of Georgia, was nominated for her ceaseless dedication to excellence in teaching, veterinary science and control of infectious disease for the health of all.

Tim Carpenter, a UCD Emeritus Professor, was nominated in recognition of his contributions for four decades to veterinary medical research, teaching and mentoring of students and colleagues.

Jack Harkema, from Michigan State University, was nominated in recognition of exceptional leadership, commitment to teaching and outstanding scientific accomplishments in veterinary pathology.

Donald Janssen, of Sand Diego Zoo Global, was nominated in recognition of his dedication to wildlife health and conservation across the world.

UPCOMING CONTINUING EDUCATION OFFERINGS

April 29, 2015	Dentistry in Military and Law Enforcement Dogs Symposium, UC Davis
May 30-31, 2015	Small Animal Pain Conference, UC Davis
July 25-26, 2015	8th Annual Back to School Seminar, UC Davis

Registration information and the full CE calendar is available at: http://www.vetmed.ucdavis.edu/ce