



Updates and Impacts January 2017

NEW FACULTY



Dr. Ingrid Balsa joined the Department of Surgical and Radiological Sciences as an Assistant Professor of Clinical Small Animal Soft Tissue Surgery this fall. She received her DVM (2012) from the University of Minnesota. She then completed a Small Animal Rotating Internship (2013) at North Carolina State University and a Residency program in Small Animal Surgery (2016) at UC Davis. Dr. Balsa will be responsible for instruction, case management and consultation in the Small Animal Soft Tissue Surgery Service of the VMTH. Her research is focusing on minimally invasive surgery and interventional radiology.

Dr. Jenessa Gjeltema joined the Department of Medicine and Epidemiology as an Assistant Professor of Zoological Medicine this past fall. She received her DVM (2011) and completed a Zoological Medicine residency program (2015) at North Carolina State University. She will be responsible for instruction, case management and consultation for the Zoological Medicine Service of the VMTH. Her current research interests include noninfectious and environmental disease affecting endangered species and ecosystem health, and the evaluation of diagnostics and therapeutics applied to zoological species, and amphibian conservation medicine.



Dr. Isabelle Kilcoyne recently joined the Department of Surgical and Radiological Sciences as an Assistant Professor of Clinical Equine Surgical and Emergency Critical Care. She received her MVB (2008) from the University of Dublin in Ireland. She then completed an Internship in Large Animal Surgery (2009) and served as a Fellow in Equine Field Services (2009-11) at the University of Dublin before coming to UC Davis for her residency program in Equine Surgery (2011-14). Dr. Kilcoyne served as an Associate Staff Veterinarian in Equine Emergency Surgery and Equine Field Service at the VMTH (2014-16), and was board certified by the American College of Veterinary Surgeons (2015). She will be responsible for

instruction, case management and consultation in the Equine Emergency Surgery and Critical Care Service of the VMTH. Her clinical and research interests revolve around equine emergency surgery and medicine.

Dr. Luke Wittenburg recently joined the Department of Surgical and Radiological Sciences as an Assistant Professor of Developmental Cancer Therapeutics. He received his DVM from Colorado State University (CSU -- 2004) and completed an internship in small animal medicine and surgery with the Animal Specialty Group in Los Angeles (2005). He returned to CSU for his PhD in Cell and Molecular Biology (2010) followed by a Postdoctoral Fellowship in Pharmacology and a Residency in Veterinary Clinical Pharmacology (2010-12). Dr. Wittenburg served as a research scientist from 2012 to 2014, and accepted a CSU



faculty position as Assistant Professor of Clinical Pharmacology in January 2014. He attained Diplomate status in the American College of Clinical Pharmacology in 2013. His research focuses on the clinical pharmacology of chemotherapeutic agents. He has expertise in analytical chemistry, data modeling and has a strong interest in quantitative proteomics.

NEW LEADERS



Dr. Carrie Finno has been appointed as Interim Director for the Center for Equine Health (CEH) during the recruitment of the next CEH Director. Dr. Claudia Sonder, who stepped down as CEH Director in November, will continue to serve part-time as Director of Equine Outreach to facilitate donor relations for our equine programs and the future veterinary medical center.

Dr. Finno joined the faculty as an Assistant Professor of Veterinary Genetics in 2014. Her scholarship interests are in the pathophysiology and genetics of axonopathies, specifically neuroaxonal dystrophy in horses. As interim director she will provide leadership and administrative management of the CEH, including the Contagious Equine Metritis program, to meet the teaching, research and service needs of the school and the mission of CEH. Dr. Finno will act as a liaison between the school and the equine industry in California and nationally.

Dr. Kate Hopper has been appointed as Director of Small Animal Clinical Services in the Veterinary Medical Teaching Hospital (VMTH) for a 5-year term. Dr. Hopper is a veterinary criticalist who recently served as the Interim Small Animal Clinic Director and co-Director of the residency training program for the Small Animal Emergency and Critical Care Services. Her research interests include clinical acid base and electrolyte disorders, cardiopulmonary resuscitation and mechanical ventilation. She is co-editor of the highly respected textbook Small Animal Critical Care Medicine. Dr. Hopper will be responsible for the educational, patient care and client/referring veterinarian service programs of the Small Animal Clinic, including attendant operational, fiscal and facilities issues.



Dr. Karl Jandrey has recently been appointed as Associate Dean for Student Programs for a 5-year term. He is a board certified criticalist in the Small Animal Emergency and Critical Care service and a member of the faculty since 1999. Dr. Jandrey will be responsible for provision and coordination of support services for professional students; management of the DVM admissions process; pre-veterinary outreach activities including diversity and career advising; and student ceremonies. He will lead efforts to enhance student experiences and promote awareness of career opportunities in academia, research, private practice, and in public health. Dr. Jandrey will promote our strategic efforts to broaden the diversity of our student community to represent the demographics of our society, and work to communicate the value and relevance of veterinary medicine to underrepresented minority communities.



2017 ALUMNI ACHIEVEMENT AWARD RECIPIENTS

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 will be presented during the School of Veterinary Medicine Commencement ceremony (May 27, 2017). This year's 2017 Alumni Achievement Award Recipients are:

Dallas Hyde – In recognition of his outstanding leadership and accomplishments in administration, research, postgraduate education and professional service in the School of Veterinary Medicine.

Jonna Mazet – In recognition of her superior research and teaching toward improving global health for people and animals, and conservation of threatened species.

Bill Rood – In recognition of his leadership and community impact as the co-founder of Rood and Riddle Equine Hospital.

Ted Stashak – In recognition of his sustained commitment and efforts to advance the education and knowledge of veterinarians, farriers, and horse owners to improve the health and wellbeing of horses.

John Stuelpnagel – In recognition of extraordinary contributions to society through his pioneering work, entrepreneurial spirit and vision for the application of genetic sequencing.

FACULTY RECRUITMENTS IN PROGRESS

- Health Sciences Clinical Professor in Community Practice – candidate identified
- Professor of Small Animal Emergency and Critical Care Medicine – candidate identified
- Professor of Clinical Small Animal Orthopedic Surgery – candidate identified
- Professor of Arboviral Epidemiologist - candidate identified
- Professor of Neurology/Neurosurgery
- Professor of Dermatology
- Professor of Small Animal Orthopedic Surgery
- Professor (50%/Professor In-Residence of Infectious Disease (50%)
- Professor (50%/Professor In-Residence (50%) of Respiratory Biology or Toxicology
- Professor of Clinical Cardiology
- Professor of Clinical Small Animal Emergency and Critical Care
- Professor of Clinical Microbiology-San Bernardino
- Professor of Clinical Avian Diagnostics-Turlock
- Professor of Clinical Pathology-Tulare
- Large Animal Clinic Director
- Specialist in Cooperative Extension-Beef Cattle Herd Health and Production
- Specialist in Cooperative Extension-Dairy Cattle Production Health Management
- Health Sciences Assistant Clinical Professor in Community Practice-Theriogenology

TRANSLATING RESEARCH FINDINGS TO CLINICAL APPLICATION – FUTURE VETERINARY MEDICAL CENTER

UC Davis equine clinicians and researchers currently learn a great deal from each other's disciplines, but rarely work hand-in-hand on horses presented for evaluation of lameness or other gait abnormalities. Researchers utilize test horses to study movement and often analyze data from hundreds of past patients to determine injury patterns. Clinicians attempt to objectively detect lameness issues, sometimes utilizing sophisticated video equipment, but more often using only the naked eye, supplemented by ancillary procedures such as local anesthetic



nerve or joint blocks and diagnostic imaging techniques. The future of equine research and care at UC Davis seeks to blend those two worlds into the most up-to-date performance center anywhere in veterinary medicine.



Plans for a state-of-the-art arena as part of the future veterinary medical center hold the potential to take sport horse care at UC Davis to a new level. The small size of the veterinary hospital's current arena, as well as its surface and lack of fixed camera's to capture horses in motion, limit our ability to evaluate certain injuries or performance issues of top athletes, particularly those issues that are apparent only when the horse is ridden. Plans for a new arena call for room to see horses perform and to conduct under-saddle lameness evaluations. The arena will also be equipped with high-

speed motion capture cameras (currently utilized by researchers) to help detect subtle gait abnormalities. The school's Gait Analysis Laboratory—providing sophisticated kinematic analyses for objective measures of horse's gait and the efficacy of treatment of a musculoskeletal injury or disease—will be integrated into the arena and adjacent trotting lane. A force plate to help determine distribution of weight bearing throughout all four limbs will be embedded in the trotting lane. Adding to the efficiency of the new set-up will be a farrier station to more swiftly perform and evaluate shoeing interventions.

“Bringing these tools to the clinic effectively brings research results immediately to client-owned horses that do not necessarily demonstrate obvious injuries,” said David Wilson, director of Veterinary Medical Center Facilities Planning and interim director of the Large Animal Clinic.

FIRST EQUINE PET SCANNER PROVIDING RESULTS

The new positron emission tomography [PET] scan machine recently installed at the UC Davis veterinary hospital is the only facility of its kind using this equipment. This new modality is proving to be the most sensitive technique to detect stress remodeling lesions and help faculty to diagnose injuries on horses not observed on scintigraphy, CT or MRI. With further research the faculty believe PET could hold the potential to help prevent catastrophic injuries in racehorses.



“PET scan has never been done on horses because of the configuration of the machine. It was too big,” said Dr. Mathieu Spriet, a radiologist at UC Davis. “Our mobile machine allows us to get images we couldn't get before.”

The mobile [PET scan](#), originally designed for human heads, is now being applied to check horse legs. The horse is injected with a weak dose of a radioactive substance. That substance works its way into bones. The PET scanner measures where the radiation is and shows the weak or injured spots in the bones. The PET scan provides a

three dimensional view of the bone. The team is using the PET scan and the bone scanning CT machine together, allowing the veterinarians to give a more accurate diagnosis and support improved treatment plans.

VETERINARY MEDICINE STUDENT SERVICES AND ADMINISTRATION CENTER



The construction of the Veterinary Medicine Student Services and Administration Center is near completion. The building will house the following units: Academic Programs, Student Programs, Global Programs, Research and Graduate Education, Development, Academic and Staff Personnel, Communications, Fiscal Services and Administration, Information Technology, and the Executive Office. We expect the groups to move in by the end of February and an opening celebration event is being planned for March 29th. The Health

Sciences food service “Scrubs” will relocate in the new building complex which includes an outdoor patio and event space. The opening of this facility marks the relocation of all student services and central administration units from the central campus to the Health Sciences District, near the veterinary hospital.

NEW DRUG FOR HEART DISEASE SHOWS PROMISE FOR CATS AND HUMANS

A new drug shows promise for treating heart disease in cats and humans, according to a school research team lead by veterinary cardiologist Joshua Stern (left). The novel drug, MYK-461, proved effective in a study of five cats with a naturally occurring form of inherited hypertrophic cardiomyopathy (HCM), a currently incurable disease that also affects humans. A paper describing the work was published December 14, 2016 in the journal [PLOS ONE](#).

HCM is the most common form of feline heart disease and results in thickening of the walls of the heart ventricles and altering of heart function. It frequently leads to fatal consequences. Cats with this disease may suffer blood clot formation, congestive heart failure and sudden death. In humans, HCM is a frequent cause of sudden cardiac death that can even afflict seemingly healthy young athletes.

HCM affects approximately one in 500 people and was recently reported to affect a startling one in seven cats. More than 1,500 genetic mutations have been associated with the disease in humans, creating challenges for researchers. However, veterinary scientists are making strides in identifying the best treatment options for the disease since the cat condition and human condition are so similar.

In the study, supported by NIH funding, treatment with MYK-461 eliminated left ventricular obstruction in five cats with HCM. The novel drug is the first in its class and uniquely addresses the functional changes that are seen in human and feline HCM.

“This is an exciting discovery for both animals and humans and an excellent representation of the One Health concept in action,” said Associate Professor Joshua Stern, chief of the Cardiology Service at the UC Davis



veterinary hospital. “The positive result in these five cats shows that MYK-461 is viable for use in cats as a possible option to halt or slow the progression of HCM.”

With this proof of concept that the drug is viable for use in cats, UC Davis hopes to conduct a clinical trial in the near future, which could determine if MYK-461 has the potential to become the accepted protocol for care of cats with HCM.

PARALYZED CAT DEFIES ODDS AND WALKS AGAIN THANKS TO UC DAVIS NEUROSURGEONS



Gray, a 9-month-old male cat, was found as a stray in Hawaii. Shortly after settling in with his new family, Gray’s posture became abnormal and his hind limbs splayed outward, severely affecting his ability to walk. He was painful to the touch, and over the next few days, became increasingly immobile. Radiographs taken by a local veterinarian indicated a vertebral disc space narrowing in Gray’s lower back. Within a few days, he was no longer able to walk at all.

On examination at UC Davis, neurologists found that Gray no longer had any feeling in his hind limbs. The lack of pain sensation is the last function to be lost in the spinal cord, and the neurologists were worried that even if they could treat Gray’s underlying problem, he may never be able to walk again. Based on further radiographs and an MRI study of his spine, Gray was diagnosed with an infection of his spinal cord and surrounding vertebrae. Compression of the spinal cord in the area of his infection rendered him unable to move or feel pain in his hind limbs.

The best option was immediate surgery--a hemilaminectomy--removal of part of the vertebrae in order to remove any infected material and decompress the spinal cord. Much of the infected area was removed during the surgery, and since Gray didn’t display any spinal instability during the procedure, placement of pins and cement to stabilize his back was avoided.

For a week following surgery, Gray was hospitalized for monitoring and treatment. Pain and inflammation were managed with medication, and the bacterial spinal infection was treated with antibiotics. While his appetite was good and he seemed comfortable, he was still paralyzed in his hind legs and had no feeling in them. At his 3-week recheck examination, Gray remained paraplegic with no sensation in his pelvic limbs or tail. It grew increasingly unlikely that he would ever walk again. Two days later he moved his hind legs and at the 5-week exam Gray was walking again--albeit a bit wobbly--and he was comfortable and continued to improve.

DR. TERRY LEHENBAUER APPOINTED TO NEWLY CREATED AVMA COMMITTEE ON ANTIMICROBIALS



Dr. Terry Lehenbauer was officially appointed by the American Veterinary Medical Association’s (AVMA) Board of Directors as the primary representative of the American Association of Bovine Practitioners (AABP) on the newly formed AVMA Committee on Antimicrobials.

The committee will advise the AVMA Board of Directors on activities and issues to promote, protect, and advance the veterinary profession on the topic of antimicrobials. The committee will develop and recommend an overarching strategy for the veterinary profession to effectively share comprehensive recommendations and implementation strategies with

legislators, regulators, the marketplace, human medical entities and other stakeholders in a One Health approach to the issue of antimicrobial resistance. Lehenbauer will serve a three year term.

Lehenbauer, director of the school's Veterinary Medicine Teaching and Research Center in Tulare, is widely recognized for his expertise in dairy cattle herd health and production medicine with an emphasis on infectious disease epidemiology, risk management and animal health economics, especially related to bovine respiratory disease, mastitis, and antimicrobial use. In 2015, he appeared before the California Senate Committee on Agriculture to address the issue of antibiotic use in livestock and poultry, antibiotic resistance and the impact on public health. The spread of antibiotic-resistant infections is a growing problem for both veterinary and human medicine. The U.S. Centers for Disease Control and Prevention have estimated that antibiotic-resistant infections cause 23,000 deaths and 2 million illnesses nationwide each year. There is also growing concern about the contribution to resistance by the use of antimicrobials in animals, including food-producing animals. California is one of the world's primary agricultural producers in dairy and livestock.

ONE HEALTH: VETERINARY AND HUMAN RESEARCHERS SHARE KNOWLEDGE AT JOINT CRANIOMAXILLOFACIAL DISORDERS AND SOLUTIONS CONFERENCE

Sometimes in the world of science there is a bit of serendipity that accompanies all the research, that's how the recent conference, "Craniomaxillofacial Disorders and Solutions in Man and Animals" came about.

Drs. Boaz Arzi and Frank Verstraete, veterinary surgeons known at UC Davis for their [pioneering work in canine mandibular reconstruction](#), were presenting at a veterinary dental conference in Monterey, CA in October of 2015. In the audience, Dr. Ichiro Nishimura was spellbound. As a human dentist with a research program in tissue regeneration and biotechnology and as the director of the UCLA School of Dentistry Weintraub Center for Reconstructive Biotechnology, Nishimura wanted to know more about translating the novel techniques presented by the veterinary surgeons to human applications. Verstraete and Arzi began communicating with Nishimura and his colleague, Dr. Alireza Moshaverinia, brainstorming on how they could assemble medical experts from the human and veterinary dentistry and craniomaxillofacial clinical and research fields in one place to learn from each other.



"We wanted to live up to the paper we put out in [Science Translational Medicine](#) and bring everyone together," Arzi said.

Over the course of the next year, the UC Davis and UCLA faculty collaborated to create a unique opportunity for clinicians and scientists to understand and discuss craniomaxillofacial disorders occurring in humans and animals and the challenges that they pose on the patient and the clinician. They invited 30 speakers to offer 15 minute presentations; residents and Ph.D. students were also invited to talk for seven minutes.

Arzi said they were overwhelmed with the response of people wanting to attend and had to close the website after 60 people registered. Attendees over the two-day event held at UCLA's Luskin Conference Center ranged

from basic scientists, bioengineers and radiologists, to oncologists, dentists, and oral and maxillofacial surgeons. About 75 percent were from human medicine; 25 percent came from veterinary medicine. Topics included:

- 3-D Printing
- Oral Immune Disorders and Solutions
- Tissue Engineering and Stem Cells for Craniofacial and TMJ Defects
- Oral and Maxillofacial Cancer, Cysts and Clefts
- Jaw Reconstruction and BMP Strategies
- Nanotechnology and Drug Delivery Systems
- New Imaging and Diagnostic Technology and Design
- Panel Discussion on Clinical and Translational Science

“It was an eye-opening experience on both sides to see where this field is and where it may be going,” Arzi said. “This conference opened people’s minds to translational aspects of veterinary medicine. There are a lot of similarities in spontaneous disease and what we can learn from them.”

STUDENT PURSUES VETERINARY RESEARCH AND HELPS MAKE ZIKA DISCOVERY



Third year student Hannah Laurence (center) took a big step this past year in her journey to become a veterinary research scientist. Not only did she complete a year-long program as a Howard Hughes Medical Institute (HHMI) fellow (one of 68 in the nation), but the biomedical research study she participated in recently appeared in the journal [Science](#), published by the American Association for the Advancement of Science.

Laurence worked in the laboratory of Professor Jeff Kieft in the Department of Biochemistry and Molecular Genetics at the University of Colorado School of Medicine, where the research team discovered the molecular process used by the Zika virus to “hijack” cells and potentially how the virus makes molecules that are directly linked to disease. The discovery shows that a part of the Zika virus’s RNA genome folds up into a complex 3D structure that leads to the production of smaller RNA fragments, which in related viruses are directly associated with disease.

“Stepping out of the veterinary curriculum for a year was challenging but ultimately an extraordinary experience,” Laurence said. “I have an incredible amount of support from our faculty here at UC Davis, and I am grateful to those who have helped me in pursuing my dream of becoming a veterinary research scientist.”

As an undergrad in microbiology, Laurence was fascinated by infectious diseases and pathology seemed to be a way to link her interests in pathogenesis and clinical medicine. Through the school’s Students Training in Advanced Research (STAR) program she was able to explore research opportunities in the summer between her first and second years of veterinary school.

Dr. Isaac Pessah, associate dean for Research and Graduate Education, suggested she look into the prestigious Medical Research Fellows Program through the HHMI. One of the attractive aspects about the program to Laurence was that she could choose a mentor anywhere in the country. After extensive searching, Laurence connected with Kieft in Colorado to work in his lab for a year, focusing on flaviviruses such as West Nile and dengue. Laurence worked with the lab team on the molecular process used by the Zika virus to “hijack” cells in

an effort to elucidate the structure and function of Zika virus. Because viruses cannot reproduce on their own, they must infect cells and take over the cell's biological machinery to make more copies of themselves. To do this, viruses use many molecular strategies. Zika is an example of a virus that does not store its genome in DNA, rather it uses a related molecule called the viral genomic RNA. Viruses related to Zika, such as West Nile and dengue, are known to produce a set of smaller RNAs that are directly linked to disease, as well as long genomic RNA. Before this study, this process had not been explored with the Zika virus.

"We were able to prove that Zika does behave similarly to other flaviviruses by hijacking cells in a similar way," she said. "Our hope is that by understanding how Zika virus works, we can find ways to combat it through a vaccine or therapeutics. This is a very preliminary, yet critical step in a long process. To fight the virus, we need to understand how it works."

UPCOMING CONTINUING EDUCATION OFFERINGS:

- January 27-29 [MATS: Clinical Cardiology](#), San Diego, CA
- January 28 [Heumphreus Memorial Lecture](#), UC Davis
- February 11-12 [Low Stress Animal Handling Workshop](#), UC Davis
- March 4-5 [Wildlife & Exotic Animal Symposium](#), UC Davis

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

RECENT FACULTY PUBLICATIONS

[Descriptive survey and Salmonella surveillance of pastured poultry layer farms in California.](#)

Dailey N, Niemeier D, Elkhoraibi C, Senties-Cué CG, Pitesky M.
Poult Sci. 2016 Oct 14. pii: pew360. [Epub ahead of print]

[Presumptive keratoglobus in a great horned owl \(*Bubo virginianus*\).](#)

Lau RK, Moresco A, Woods SJ, Reilly CM, Hawkins MG, Murphy CJ, Hollingsworth SR, Hacker D, Freeman KS.
Vet Ophthalmol. 2016 Jul 31. doi: 10.1111/vop.12413. [Epub ahead of print]

[Implementation and validation of an economic module in the Be-FAST model to predict costs generated by livestock disease epidemics: Application to classical swine fever epidemics in Spain.](#)

Fernández-Carrión E, Ivorra B, Martínez-López B, Ramos AM, Sánchez-Vizcaíno JM.
Prev Vet Med. 2016 Apr 1;126:66-73. doi: 10.1016/j.prevetmed.2016.01.015.

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Prev Vet Med. 2016 Apr 1;126:66-73. doi: 10.1016/j.prevetmed.2016.01.015.

[Conjoined Fetal Twins in a Harbor Seal \(*Phoca vitulina*\).](#)

Olson JK, Gaydos JK, McKlveen T, Poppenga R, Wicinas K, Anderson E, Raverty S.
J Wildl Dis. 2016 Jan;52(1):173-6. doi: 10.7589/2015-02-045.