



VETERINARY MEDICINE

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Improving Dairy Calf Health

A team of veterinarians from the school in collaboration with other scientists have undertaken a project dedicated to improving the prevention, diagnosis and treatment of bovine respiratory disease in dairy calves. The group was awarded \$600,000 by the UC Division of Agricultural and Natural Resources in fall 2012 to conduct the project, "Risk assessment, welfare analysis, and Extension education for dairy calf respiratory disease management in California."

Bovine respiratory disease, including pneumonia, is the leading natural cause of death in U.S. beef and dairy calves. It causes losses of more than one million animals and \$700 million every year.

Principal Investigator Sharif Aly, a faculty member based at the Veterinary Medicine Teaching and Research Center in Tulare, stated, "Control and prevention of pneumonia are difficult because the disease has multiple

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Celebrating Discovery

Chancellor Linda P.B. Katehi joined Assemblywoman Mariko Yamada, Senator Lois Wolk, Dean Michael Lairmore, Faculty Chair Andrea Fascetti and distinguished guests to "Celebrate Discovery" at the opening of the university's newest research and education facility March 15.

The day's schedule included tours of the four-story, \$58.5 million Veterinary Medicine 3B. The research facility promotes discoveries in basic science and translational medicine while providing replacement space for faculty relocating from the antiquated Haring Hall.

In lieu of a traditional ribbon-cutting ceremony, the school acknowledged those who helped make construction possible by unveiling a pillar imprinted with the names of donors who supported the project.

Moving to the school's newest research hub are 55 faculty members, associated staff and graduate students from the departments of Anatomy, Physiology, and Cell Biology; Molecular Biosciences; and Population Health and Reproduction. The programs of Veterinary Medicine Extension, Western Institute for Food Safety and Security, Wildlife Health Center, and One Health Institute are also housed there.



(From left) Professor Andrea Fascetti, Assemblywoman Mariko Yamada, Senator Lois Wolk and Chancellor Katehi join Dean Lairmore in expressing their appreciation for donors (listed on column) who helped bring the Vet Med 3B project to completion.

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Raccoon Brain Tumors Linked to Novel Virus

When the first cases of ill raccoons came in to Wildcare, an urban wildlife rehabilitation center in Marin County, the medical staff suspected distemper—the animals exhibited nervous system disorders, seizures and apparent tameness. Some symptoms didn't match up though, and 52 cases were sent to the California Animal Health and Food Safety Laboratory System (CAHFS) at the School of Veterinary Medicine for necropsy.

The laboratory reports caught everyone by surprise. Ten of the raccoons (nine from Northern California) were found to have brain tumors in their olfactory tract and frontal lobes that had never previously been documented in raccoons. CAHFS researchers Leslie Woods and Federico Giannitti wanted to know more and asked Patricia Pesavento, professor of pathology, and her students to investigate a potential viral cause for the cancer.

The research and diagnostic team found a previously unidentified virus, dubbed raccoon polyomavirus. Their findings were published in the *Journal of Emerging Infectious Diseases* in December 2012 and could lead to discoveries of how viruses can cause cancer in animals and humans.

There are multiple human polyomaviruses, and while they can cause cancer in experimental conditions, less is known about their ability to cause or contribute to cancer under natural conditions because the disease process can take years and even decades to develop. Raccoons, with their shorter life span of two to three years, can provide a model for studying how these viruses are spread, how they cause cancer, and whether



they can jump from one species to another.

Pesavento said more research is needed to determine whether a problem with the host's immune system or an environmental toxin is also at play in contributing to the brain tumor formation in raccoons.

"This is just the beginning of a story," said Pesavento. She noted that high rates of cancer among wildlife are found in animals that live in close proximity to humans. "Wildlife live in our fields, our trash cans, our sewer lines and that's where we dump things. Raccoons are important sentinel animals and are exquisitely exposed to our waste. We may be contributing to their susceptibility in ways we haven't discovered."

The study was funded through the Bernice Barbour Foundation, the UC Davis Center for Companion Animal Health, and Meadowview Foundation.

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causes. Also, the many risk factors interact in complex ways, forming a web that is a challenge to untangle."

Adding to the difficulty is the fact that no standardized method exists to diagnose cases in the field in a timely way. Current field diagnosis and treatment decisions are based on mostly subjective clinical criteria that do not adequately predict the underlying pathology. The result is a high proportion of false negative and false positive diagnoses that lead to more severe disease, misuse of antibiotic medications, loss of production and negative impacts on animal welfare.

Aly and his co-investigators are collaborating with other veterinarians, University of California Cooperative Extension dairy farm advisors and specialists, the College of Agricultural and Environmental Sciences, and the California Department of Food and Agriculture to identify, analyze and validate a set of significant risk factors such as housing, nutrition and management. Understanding how these elements interact will help veterinarians develop herd-specific control and prevention programs.

> "We hope to provide important gains in preventing, managing, and reducing the severity of one of the most important endemic diseases in dairy cattle," said Aly. "Reducing the costs of respiratory disease will help California dairy farmers maintain an affordable, safe, and secure milk supply for consumers in California, the U.S. and throughout the world."

Strategic Planning Update

Ongoing strategic planning efforts related to promoting cutting-edge clinical programs involve four teams focused on the following themes:

Clinical Service: Faculty and staff are committed to providing animal owners with outstanding patient care for their animals on a daily basis. Initial discussions have raised issues related to market needs and societal priorities. The strategy team is considering ways to reorient clinical activities to better meet our clients' needs and inform our future facility planning and design efforts.

Translational Research: The

Veterinary Center for Clinical Trials

has taken a major step forward with the hiring of a new clinical trials coordinator, Christine Kapelewski, and the development of a website which provides information to referring veterinarians, corporate partners and clients on current studies. To facilitate industry partnerships, the team has identified the development of master agreements that will outline the authorities, operations, funding arrangements and terms associated with these clinical trials to expedite university/company review and approval processes. Additionally, the teaching hospital is interested in obtaining Good Laboratory Practices (GLP) certification beginning with the clinical chemistry and hematology laboratories.

The Seven Strategic Goals

- Educate world leaders in academic veterinary medicine
- Perform high-impact transdisciplinary research
- Develop cutting-edge clinical programs
- Promote animal and human well-being
- Maintain school infrastructure and sustainable resources
- Retain excellent faculty and staff
- Promote academic, government, industry collaboration

Clinical Teaching: The school's clinical teaching program includes both general veterinary training for DVM students and specialized advanced training for residents. The teaching goals for the resident programs are to ensure that all residents obtain excellence in clinical competency in their specialty area, effective communication skills and board certification. To address upcoming shortages in clinical academic veterinary medicine and advance the creation of new clinical knowledge, the faculty are particularly interested in training residents for academic positions. By mentoring residents in research methodologies as part of their resident programs, the faculty hope to stimulate an interest in the investigative nature of research and encourage more individuals to

consider academic career paths.

Philanthropic Support: The school has initiated planning for a new clinical facility to replace and enhance the now 43-year old teaching hospital. To realize this vision, the school's development team will work closely with grateful clients, alumni, referring veterinarians and company partners to engage their enthusiasm and support.

Detailed quarterly reports for each of the 19 strategy team activities are available on the Strategic Planning web site at: www.vetmed.ucdavis.edu/strategic_planning/index.cfm.

VGL (

If You Have DNA, We Have Answers

The **Veterinary Genetics Laboratory (VGL)** is internationally recognized as a pioneer in DNA-based animal testing. The VGL offers genetic tests to veterinarians, breeders and pet owners that confirm parentage and reveal the presence of inherited diseases and desired genetic traits. Tests are available for horses, livestock, cats, dogs, alpacas and numerous other species. Check in frequently as new tests are developed every year.

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Image-Guided Therapies: Improving Outcomes and Recoveries

Several conditions can occur that cause obstruction of urine, air or blood flow. Historically, the options for these conditions have been limited and when treatment was attempted, the result was often short-lived. Recently, new options focused on the use of stents, have emerged, and these options are demonstrating significant promise in the treatment of these conditions in our veterinary patients.

A stent is a device that can be placed in a tube across an area of stricture causing it to stay open; a stricture is a region of abnormal narrowing due to severe inflammation or cancer. Stent placement can be performed in a

minimally invasive manner with the use of advanced technology including fluoroscopy (radiographs or "x-rays" that are evaluated in real-time) and scoping (camera allowing visualization of the affected region).

Stent placement is one of the many options offered through the use of the rapidly growing specialty of Interventional Radiology (IR) which allows for diagnostics and therapies to be performed in a minimally-invasive manner. During IR procedures, veterinarians use specialized equipment such as guidewires, catheters, balloons and stents to treat a myriad of diseases. The diseases that can be treated with the use of IR are constantly expanding, and—spearheaded by surgeons Bill Culp and Michele Steffey—the William R. Pritchard Veterinary Medical Teaching Hospital (VMTH) is leading the way in these therapies.

Some current veterinary applications of stenting include:

- Malignant obstructions (opening tubes that are blocked due to cancer)
- Benign obstructions in the ureters (tubes passing urine from the kidney to the bladder)
- The trachea (air passageway from the nose/mouth to the lungs)
- The nasopharynx (air passages through nasal cavity)

Other uses of IR in veterinary patients include the treatment of diseases through a blood vessel such as the local delivery of cancer therapies and the treatment of vascular abnormalities that occur in young patients. "One of the major advantages of IR is the ability to treat diseases that previously had no treatment options, or that required extremely invasive surgeries," stated Culp. "Many of these procedures can dramatically improve the quality of life for our patients, while also avoiding long recovery periods."

"Very few veterinary practices perform IR procedures, as advanced training and equipment is required," Culp added. The



A stent placed in this patient's urethra allows urine to better flow from the bladder.

VMTH is one of the top institutions in the world in the field of veterinary IR, and the program is continually growing and evolving. "Currently, the VMTH has the largest IR program on the West Coast, offering the most extensive variety of veterinary IR diagnostics and treatments. Several of these innovative IR procedures were developed here at UC Davis."

The IR program has been grown through a strong collaboration across several services. Additionally, several clinical trials are allowing the team to further develop and scientifically evaluate these cutting-edge procedures.

Michelle Hawkins,

associate professor of companion avian and exotic animal medicine, was appointed director of the California Raptor Center in January. Hawkins joined the faculty in 2003 and will be responsible for advancing a strategic vision for the center



that continues to promote the health of raptors, serves the school's involved community, and aligns to the school's Strategic Plan. An important component will be developing a plan to secure extramural funding, both philanthropic and scientifically-targeted, to support the center, its rehabilitation program, and associated research to promote raptor health at the individual and population levels.

VMTH Hosts House Officer Day

Twenty-eight research projects were presented at the 34th Annual House Officer Seminar Day on March 22. Every year, the house officers (residents, fellows and interns) at the VMTH are encouraged to present their research findings to their peers and faculty.



Some of this year's research topics included: feline lymphoma treatments, equine anesthesia and recovery, feline behavior, variations on hemodialysis platforms, a retrospective study of wild and captive exotic birds, pain management during branding and castration of beef calves, and equine stem cell research.

Having the ability to do research is a major asset to doing a residency at the VMTH. As the hospital with the largest and most diverse residency program in the country, the VMTH is able to offer research opportunities not available elsewhere.

Karl Jandrey, assistant professor of clinical small animal emergency and intensive care, is the new director of Veterinary Medical Continuing Education as of February. Jandrey, who joined the school in 1999, will work to develop and coordinate continuing education programs



for veterinarians, registered veterinary technicians, students and pet owners. These programs are designed to meet the needs of veterinarians in California, and throughout the Western United States, and to showcase our faculty and school.



Vet Med in Top Ten for Autism Research

The advocacy organization Autism Speaks announced that several scientific studies by the School of Veterinary Medicine faculty are included in the "Top 10 Autism Research Advances of 2012." The work was performed through the school's Center for Children's Environmental Health (CCEH) led by Professor Isaac Pessah in collaboration with the UC Davis School of Medicine. The center's scientists study the effects of the environment on children's health, with a particular focus on autism.

Understanding the causes of autism requires a multidisciplinary approach from fields including molecular biology, medicine, nutrition, psychology, animal behavior and genetics. Researchers from a veterinary background, conducting basic laboratory research, are an important component of this teamwork and made major contributions to the following areas:

- Exploring potential pathways by which pesticide exposure during pregnancy might contribute to autism
- Identifying particular chemicals as possible environmental risk factors in neurodevelopmental disorders
- Investigating links between environmental factors and genetic variants as they relate to the risk of autism spectrum disorders
- Linking prenatal exposure to traffic-related air pollution with autism
- Exploring the relationship between persistent organic pollutant levels and genetic patterns in individuals with and without neurodevelopmental disorders.

The CCEH was also recognized in 2010 for Professor Cecilia Giulivi's discovery that autistic children exhibit dysfunction in mitochondrial DNA. For more information about the CCEH: www.vetmed.ucdavis.edu/cceh.

Veterinarian Gives Back

As a young child, Miranda Alexander, DVM 1982, knew that she wanted to become a veterinarian and help animals and the people who care for them.

Alexander first remembers her fascination with animals at the age of two and has had many happy animal-related memories throughout her lifetime.

To fulfill her dream, Alexander decided to pursue a career as a veterinarian. "I was lucky to be accepted to study at the School of Veterinary Medicine. It was known for its reputation and fantastic body of knowledge," she said. "During my sophomore year on my birthday, my younger classmates teased me about turning 30 years old. In good-natured fun, they gave me a tube of Bengay and a bottle of Geritol! I remember laughing and feeling that I was exactly where I was supposed to be and felt privileged to be there."

After graduating, Alexander did a one-year internship and then began practicing veterinary medicine in 1983. Since then she has built long-term relationships with her patients and clients in the San Diego area. She and her colleagues take great pride in personalizing pet care and treating pets as valued family members.



Miranda Alexander, DVM 1982, also helps the community through her volunteer work at Veterans Stand Down, an annual event providing necessary services to our veterans. Recognizing how important companion animals are to returning veterans, she performs veterinary examinations, vaccinations and other services for their pets to help keep them healthy.

"One of the most rewarding aspects of my career is supporting the human-animal bond," Alexander described. "Our pets represent a direct connection with nature. and they provide non-judgmental love. They lower our blood pressure and offer us a general feeling of well-being. I have three dogs and two cats myself,



Miranda Alexander, at the age of eight, carrying a baby chimpanzee at her birthday party held at a Los Angeles area petting zoo.

and I find happiness just hanging out with them."

The experiences of her career have been very meaningful to Alexander. Grateful for the education she received, Alexander has provided for a gift to the school through her estate plan as a way to say thank you.

"My career as a veterinarian has been rewarding and has helped me to be a happy and content person. This happiness flows into the rest of my life. It has really helped me find my place in this world," Alexander said. "In looking to the future, I want to make sure that others have the same wonderful opportunity I have been given."

Alexander's devotion to animals extends beyond her practice. She co-founded the St. Vincent de Paul Vaccine Program, where she has generously volunteered her time for the past 23 years. "When a small advertisement appeared in a local veterinary newsletter calling for a volunteer veterinarian to help start a new vaccine program for pets of the homeless, I jumped at the chance," Alexander recalled. "I wanted to help. Pets of the homeless provide companionship, love and they even render watchdog protection at night."

Once a month, she gives immunizations free of charge to dogs and cats of the homeless and the economically disadvantaged. Not only are her services free, she also compensates her staff to assist her and brings all the necessary medications and supplies. In 2005, Father Joe Carroll honored Alexander with the Bishop Maher Award for her tireless work in helping the community.

THANK YOU NOTES

Devotion to Animals Inspires Generous Gift

A bequest from the estate of Jean Joyce Rodgers established a scholarship to honor exceptional students pursuing careers in small animal medicine. The gift of nearly \$1.8 million created an endowment that will provide enduring support for the Jean Joyce Rodgers Scholarship.

"Through her generosity and visionary thinking, Ms. Rodgers will ensure the care of animals by helping bright, deserving students become top-notch veterinarians for many years to come."

> – Michael Lairmore, dean of the School of Veterinary Medicine

Rodgers was a devoted animal lover from Southern California who cherished her pets and appreciated the joy they brought her. Sadly she passed away in February 2011, but her legacy of helping others continues. Her gift was inspired by her passion for caring for animals and desire to help further the School of Veterinary Medicine and its excellence in leading veterinary medicine. "The Jean Joyce Rodgers Scholarship is a fitting tribute to an extraordinary philanthropist," said Dean Michael Lairmore. "Through her generosity and visionary thinking, Ms. Rodgers will ensure the care of animals by helping bright, deserving students become topnotch veterinarians for many years to come."

The school has one of the largest scholarship programs among those



The Jean Joyce Rodgers Scholarship will honor exceptional veterinary students like Ruoshan (Jessie) Sun.

of veterinary schools. The program has been and continues to be a top priority of the school because of the critical role it plays in supporting the best and brightest students. Philanthropic gifts are essential in lessening the financial burden that students carry as they embark on their professional veterinary careers.

For information about supporting scholarships, please contact the Development Office at (530) 752-7024.

Discovery Continued from page 1

The open house event featured eight scientific displays that reflected discoveries of some of the school's highly regarded teams:

- Oiled Wildlife Care Network
- Autism and neurobiology
- Respiratory disease and air pollution
- Nutrition
- Aquatic Health Program
- 100,000 Pathogen Genome Project for food safety
- Western Institute for Food Safety and Security
- One Health Diagnostic and Technology Development Laboratory

Faculty also met with guests to describe ongoing investigations into seizures, metabolic diseases, reproduction and other pressing societal health issues. The One Health Institute capped the festivities with a presentation by Patricia Conrad and Woutrina Miller on "One Health Stories of Discovery."

Veterinary Medicine 3B forms an integral part of the school's \$63.7 million research enterprise, the largest in the nation among veterinary colleges. Constructed with a combination of state, campus and private funds, the facility contains 76,000 square feet of laboratories and offices. The design incorporates flexible, efficient use of space, natural light, and energy-saving features that the school expects to garner at least the "Gold" certification from LEED, an internationally recognized green building program.

With this key structure now complete, the school's leadership turns to plans for a new hospital to expand outstanding patient care and deliver the most advanced clinical teaching programs in veterinary education.



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Camelid Symposium Enjoys Eight Years of Success

In January, the school—in conjunction with Calpaca and the Camelid Medicine Club—hosted the 8th Annual Camelid Symposium. The event continued its well-received tradition of educating camelid enthusiasts through three tracks of seminars for basic owners, advanced owners and veterinarians. UC Davis faculty members Julie Dechant (pictured) and Bruce Christensen respectively presented "What's Up, Doc? New Developments in Camelids" and "Breeding Management." The event drew more than 200 participants.



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May 11-12, 2013 Student Veterinary Emergency & Critical Care Symposium, Davis

June 29-30, 2013

6th Annual Back to School Veterinary Technician and Assistant CE Seminar, Davis

September 20-21, 2013

Veterinary Ophthalmology Symposium, Tenaya Lodge, Yosemite Valley

October 13, 2013 5th Annual UC Davis Veterinary Practitioners Seminar, Davis

For information on these and other 2013 events, please visit www.vetmed.ucdavis.edu/ce.

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