HEARTBEAT

UC DAVIS VETERINARY HOSPITAL

VOL. 7, 2019

Special Edition

UCDAVIS
VETERINARY MEDICINE
Veterinary Medical Teaching Hospital

A Global Importance to Our Work

If you've ever driven through campus, you've seen many livestock grazing the fields. The "UC Davis cows" are an important part of our heritage and history. While those animals are a component of the undergraduate Animal Science program, I'm proud to say that their veterinary care is provided by our hospital's livestock services. The hundreds of cattle, swine, goats, and sheep on campus provide an important teaching resource for the School of Veterinary Medicine.

Beyond training our veterinary students and residents, our livestock faculty support the agricultural industry by providing both preventative and clinical care in addition to disease surveillance that could threaten the livestock industries that are crucial to California's economy. As the world's population is projected to reach 10 billion by 2050, it is clear that veterinarians will continue to play a vital role in the production of healthy animal-sourced proteins needed to meet the growing food demands.

Our hospital's Livestock Medicine & Surgery Service and Livestock Herd Health & Reproduction Service—along with our Dairy Production Medicine Service at the Veterinary Medicine Teaching & Resource Center in Tulare—play an important role in those efforts. Working with other livestock specialists in our California Animal Health & Food Safety Laboratory and researchers throughout the school, our livestock clinicians are at the forefront of discovering, and more importantly, preventing diseases that could devastate the country's food supply.

I'm pleased to bring you this latest issue of *Heartbeat* focused on their efforts.

Warmest regards,

Dr. Jane Sykes
Chief Veterinary Medical Officer

"Our livestock faculty support the agricultural industry by providing both preventative and clinical care in addition to disease surveillance that could threaten the livestock industries that are crucial to California's economy."

– Dr. Jane Sykes,
Chief Veterinary
Medical Officer

On the Front Cover

While livestock make up a small percentage of our caseload, their care is more important than most people might realize. Think of how much agriculture impacts everyone's life. Therefore, it's important that California's livestock are healthy. That's why I'm excited to see this issue of *Heartbeat* focusing on our livestock services.

Pictured on the front cover is a cow from our campus' Beef Barn. She helps students learn how to care for cattle. Our Livestock Herd Health & Reproduction Service visits them routinely to make sure the campus herd is healthy. To read more about our livestock services, please see page 4.

Pint

Cow's Near Fatal Ingestion Prompts Surgery

Tag 1839, a 2-year-old Jersey dairy cow, was brought to the UC Davis veterinary hospital for suspected pneumonia. She had been treated appropriately by her primary veterinarian, but did not respond as expected, so she was referred to the Livestock Medicine & Surgery Service for further diagnostics and treatment. A blood test showed evidence of severe chronic inflammation, and an ultrasound showed that she had fluid, inflammation, and an abscess in her chest cavity. Radiographs of her chest showed that she had a foreign body—a piece of wire—extending from the first compartment of her stomach toward her heart.

It is not an uncommon to find wire or other metal objects in dairy cows, who ingest them as they indiscriminately scoop feed with their tongues. Wire can enter their food from equipment used for mixing and chopping the feed, or from wire used to bind hay bales. Cows have also been known to eat metal objects such as nails or screws left from construction projects on the farm.

When a cow ingests wire, it can stay within the stomach, or it may move forward as the stomach contracts. This may cause a piercing of the stomach wall, into the abdomen, or into the chest cavity. If the wire continues to travel forward, it will eventually travel to the heart.

Because the stomach is full of bacteria, the wire causes an abscess to form around it and in its wake. To prevent this from happening, most cows are given magnets which are positioned in their stomach and attract any metallic objects that are ingested to prevent them from moving forward.

Usually, these magnets stay in the stomach for the life of the cow, but occasionally they can move down the intestinal tract and be expelled in the feces.

If a wire penetrates the chest cavity, it can be fatal for the cow, as they usually succumb to infection or heart failure if the wire pierces the heart or its covering. Surgical removal of the wire is the only option for truly fixing the problem, however chest surgery carries its own significant risks and costs.

Dr. Meera Heller, chief of the Livestock Medicine & Surgery Service, informed Tag 1839's owner of these risks. Since Tag 1839 was a successful show cow, and genetically valuable, it was decided to pursue surgery. When the grave prognosis and the risks of surgery were discussed, the owner maintained a remarkably optimistic attitude, which greatly helped the clinicians on the case be optimistic as well.

"I so appreciated his optimism and his confidence in our team," said Dr. Heller. "It was one of the most uplifting conversations I've ever had with a client. Without hesitation, he encouraged us to move forward with the surgery."

Tag 1839 underwent a surgery called a fifth rib resection, during which half of her fifth rib is removed to allow access to the chest cavity. Dr. Betsy Vaughan, chief of the Large Animal Ultrasound Service, helped Dr. Heller and third-year resident Dr. Paolo Tempini to locate the wire in the chest, with minimal tissue disruption and damage. Tag 1839's surgery was performed with her standing, which allowed better access and a natural position of the tissues. Keeping her in a standing position also stopped the wire from migrating any further. Tag 1839 was heavily sedated with her body supported during surgery. Her cooperative nature in the surgery room contributed to a successful outcome, as the team removed the wire without incident.

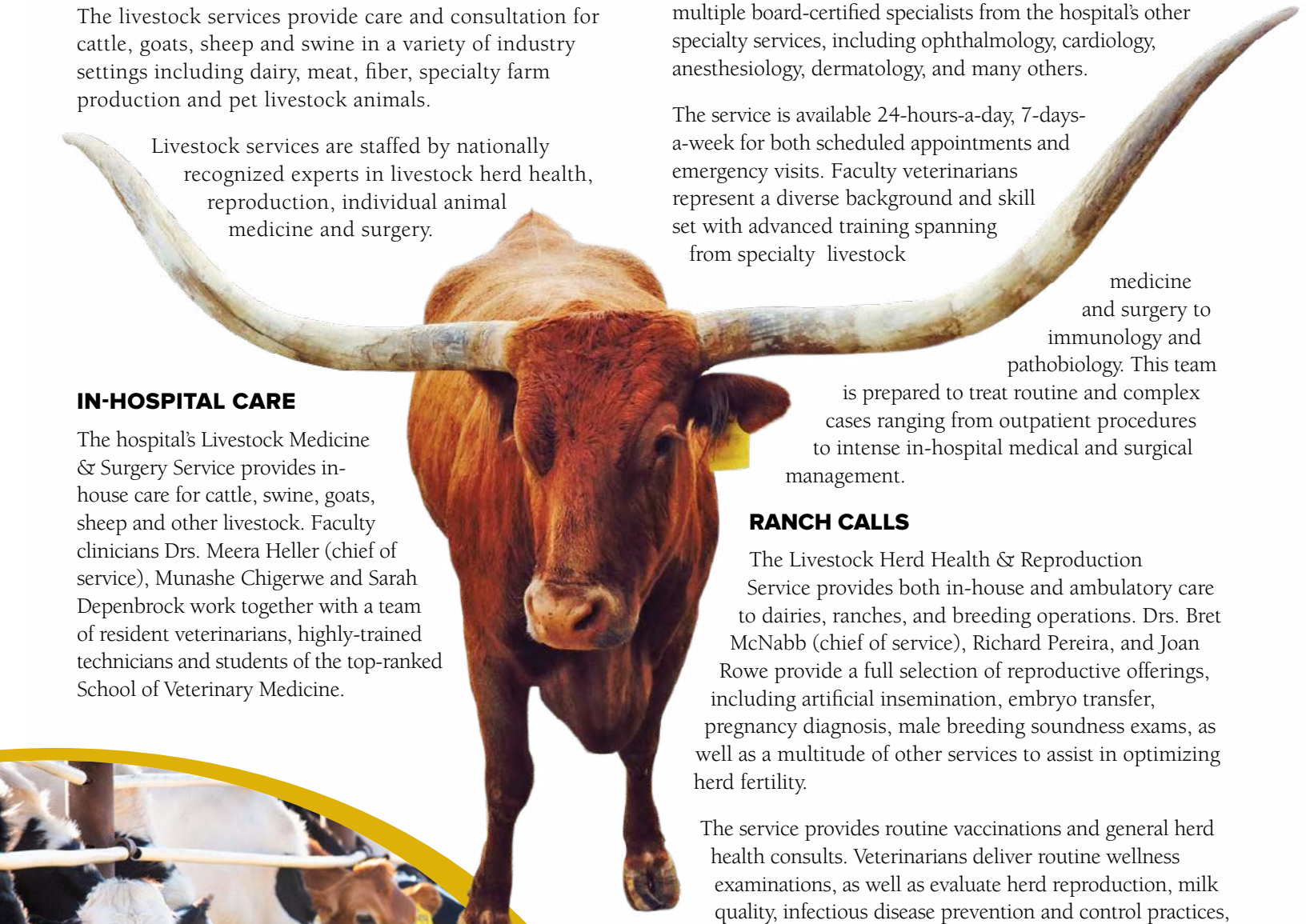
Dr. Heller and other UC Davis livestock clinicians routinely serve as on-site veterinarians for the show animals at the California State Fair. One of those animals was Tag 1839, who recovered from her surgery and took home top prize as the Supreme Grand Champion dairy cow.

Caring for Livestock

Livestock play a vital role in society.
Therefore, the livestock services at the UC Davis veterinary hospital are important, not only to the local livestock community but also in addressing national and international food safety and security issues. Whether assuring a safe and plentiful food supply or enhancing the health of companion livestock, our Livestock Herd Health & Reproduction and Livestock Medicine & Surgery Services provide valuable resources to livestock owners and ranchers throughout California and beyond.

The livestock services provide care and consultation for cattle, goats, sheep and swine in a variety of industry settings including dairy, meat, fiber, specialty farm production and pet livestock animals.

Livestock services are staffed by nationally recognized experts in livestock herd health, reproduction, individual animal medicine and surgery.



IN-HOSPITAL CARE

The hospital's Livestock Medicine & Surgery Service provides in-house care for cattle, swine, goats, sheep and other livestock. Faculty clinicians Drs. Meera Heller (chief of service), Munashe Chigerwe and Sarah Depenbrock work together with a team of resident veterinarians, highly-trained technicians and students of the top-ranked School of Veterinary Medicine.

This team approach helps determine the best course of action for each patient and allows for training of the next generation of veterinarians and livestock specialists.

Collaborating with the hospital's specialty and support services, the Livestock Medicine & Surgery Service is prepared to assist with a variety of livestock health crises. Advanced diagnostic laboratories allow for a wide array of diagnostic testing. Imaging services include radiography, ultrasound, endoscopy, computed tomography (CT) and magnetic resonance imaging (MRI). The team also works closely with multiple board-certified specialists from the hospital's other specialty services, including ophthalmology, cardiology, anesthesiology, dermatology, and many others.

The service is available 24-hours-a-day, 7-days-a-week for both scheduled appointments and emergency visits. Faculty veterinarians represent a diverse background and skill set with advanced training spanning from specialty livestock medicine and surgery to immunology and pathobiology. This team is prepared to treat routine and complex cases ranging from outpatient procedures to intense in-hospital medical and surgical management.

RANCH CALLS

The Livestock Herd Health & Reproduction Service provides both in-house and ambulatory care to dairies, ranches, and breeding operations. Drs. Bret McNabb (chief of service), Richard Pereira, and Joan Rowe provide a full selection of reproductive offerings, including artificial insemination, embryo transfer, pregnancy diagnosis, male breeding soundness exams, as well as a multitude of other services to assist in optimizing herd fertility.

The service provides routine vaccinations and general herd health consults. Veterinarians deliver routine wellness examinations, as well as evaluate herd reproduction, milk quality, infectious disease prevention and control practices, calf/lamb/kid health and management, nutrition, and treat a host of other health-related issues to ensure optimal herd production. Additionally, herd services can include analysis and evaluation of herd records for monitoring of herd reproduction performance and development of reproduction, as well as herd health protocols tailored to individual herd needs.

in Sickness and in Health




The Livestock Herd Health & Reproduction Service can also serve in the area of extension training to producers, veterinarians and students to improve animal health and well-being. Annually, the board-certified clinicians host dystocia management and calving schools and artificial insemination courses.

ENHANCING STUDENT TRAINING

Basic technical skills and knowledge of livestock are impressed upon veterinary students in their first three years, preparing them to utilize these skills in fourth-year clinical rotations. Many of these skills—basic understanding of diseases, pathophysiology, efficient physical examinations, basic surgical skills—are transferable to any species. For those geared toward livestock paths, the skills are expanded in the clinics.

Rotations through the Livestock Medicine & Surgery Service allow students to participate in clinician supervised case work-ups, treatments and surgical interventions. Both large animal focused and small animal focused students rotate through this service. Many small animal track students want to rotate through livestock medicine to gain additional hands-on livestock medicine experience, giving them a better understanding of this important branch of veterinary medicine. This rotation also offers the students additional experience with support services as they interact with livestock, including advanced imaging, anesthesia, and consultations from specialty services such as cardiology and ophthalmology.

In the Livestock Herd Health & Reproduction Service, it's an opportunity for future livestock clinicians to hone their skills in some of the newest techniques being offered. Students become skilled in artificial insemination, embryo transfers and other advanced reproductive technologies, as well as gaining better understandings of basic herd health concepts like preventive medicine, vaccinations, disease outbreak investigations and interventions during a crisis, improving their critical thinking skills.

The school strives to give every student a well-rounded veterinary education. Even students who do not plan to become livestock veterinarians gain a valuable education in the importance of animal health in agriculture and the veterinarian's role as an ambassador for the science of livestock health. Livestock medicine plays a vital role in that process, always increasing and enhancing learning opportunities for both large and small animal-focused students. By providing high quality patient care, UC Davis not only serves its clients, but also trains the next generation of veterinarians and veterinary specialists, prepared to care for livestock, and to help address the global food security issues of the future.

BUILDING A FUTURE TO FEED 10 BILLION PEOPLE

With a projected world population of 10 billion by the year 2050, livestock veterinarians serve an increasingly important role in food production.

By 2050, food production needs are expected to increase by 50 percent. While global food security requires a complex series of approaches, it is clear that the production of healthy animal-sourced proteins will play a significant role in the solution.

"We are planning the Livestock and Field Services Center to meet these emerging needs of our regional clients and stakeholders," said Dean Michael Lairmore, speaking of the school's future Veterinary Medical Center (VMC) currently in the beginning stages of Phase I construction. "This new facility will play a vital role in training our students to be ready for the challenge of animal agriculture in all of its forms around the world."

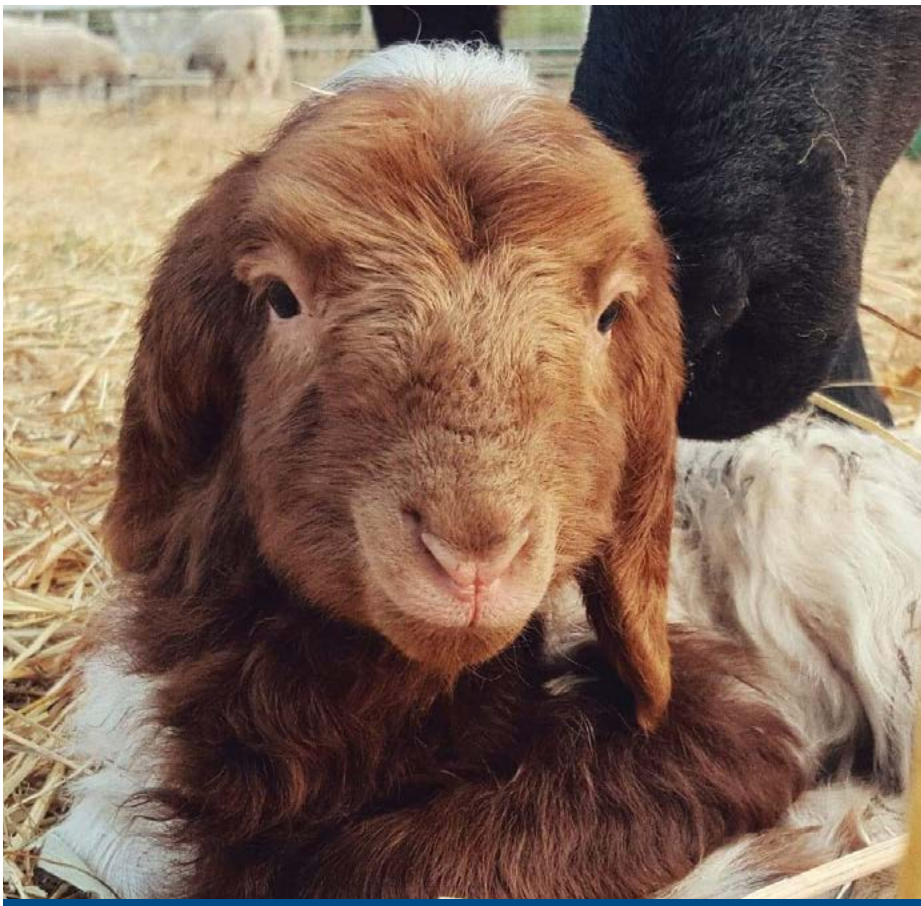
The Livestock and Field Service Center will be one of the first patient care areas to be completed in the new VMC. The center has been designed in consultation with Temple Grandin, Ph.D., well known for her groundbreaking work in engineering humane animal facilities and is a fellow in the Society of Biological and Agricultural Engineers. Emphasizing modern concepts in animal welfare, Dr. Grandin partnered with UC Davis to create the best possible environment for livestock handling, care and clinical teaching.

UC Davis Helps Rancher
Introduce New Breed of Sheep to California

A small-scale sheep farm in California is the first in the Western United States to have the Awassi breed in its herd. Thanks to help from livestock veterinarians with the UC Davis veterinary hospital, Duckworth Family Farms had eight of the sheep—four males and four females—born via embryo transfer. The farm plans to use the sheep for dairy and fiber production, as well as semen and offspring sales.

Awassi sheep are indigenous to southwest Asia and were introduced to other parts of the world nearly 30 years ago. In 1991, they were introduced to New Zealand via embryo transfer and subsequently to Australia. They first appeared in the U.S. in the Midwest in 2012 via embryo transfer as well, due to the U.S.'s ban on imported livestock since the Mad Cow outbreak in the 1990s. Awassi are now the third type of dairy sheep in the U.S., after the German East Friesian breed and the French Lacaune breed. They can be utilized for three purposes—meat, wool and (primarily) dairy.

Being native to the deserts of Asia, the Awassi sheep can tolerate extreme conditions. They are able to walk long distances which make them ideal for large grazing areas. When dry seasons do not allow for many nutrient-rich grazing opportunities, the Awassi can survive by utilizing stored fat in their large tails. These traits make them an ideal sheep species for the arid climate of California.



"The Awassi are a heartier breed. They can survive well as a pasture-based sheep that doesn't need to be in a feedlot-style system." – owner Snazzy Duckworth

"The Awassi are a heartier breed," said owner Snazzy Duckworth. "They can survive well as a pasture-based sheep that doesn't need to be in a feedlot-style system."

Duckworth Family Farms only has about 50 head of sheep in its herd—mostly East Friesians and a handful of Shetlands and Corriedales. Duckworth describes the Awassi as much easier to maintain than East Friesians. She also likes the unique orange and brown coloring of their wool when they are young.

"We're already sold out of the fleece products we'll create from their wool," Duckworth said.

Duckworth worked with the Livestock Herd Health & Reproduction Service at UC Davis to have the embryos implanted in recipient females. The embryos were collected from Awassi ewes in Australia, frozen in liquid nitrogen, and imported into the U.S. The UC Davis livestock veterinarians then performed laparoscopic-assisted embryo transfers—a minimally invasive method—to implant 16 embryos into Duckworth's herd. With eight births resulting, the 50 percent success rate is about average for frozen livestock embryo transfers.

Once the males are mature, Duckworth plans to work with UC Davis again to collect semen from the rams, making them the only sheep breeder in the U.S. with Awassi semen for sale. The farm also plans to sell offspring once the Awassi herd grows in size. To achieve this, they will utilize UC Davis to perform another round of embryo transfers in the near future.

Giving Back and Looking to the Future

Dr. John Zimmerman '60, DVM '62, cannot thank the UC Davis School of Veterinary Medicine enough for its impact on his life. After graduation, he worked in dairy production medicine and equine medicine for two years in Los Angeles before establishing the Sonoma Marin Veterinary Service in Petaluma, California, where he has been practicing for 57 years.

"Veterinary medicine has been a great career for me because it is a good fit," said Zimmerman. "I like cattle and ended up coming back to my hometown. It's given me a wonderful life."

Grateful, Zimmerman has been a loyal supporter of the school since the 1980s and looks to the future as he most recently pledged a gift to support the Livestock and Field Services Center, a major component envisioned as part of the UC Davis Veterinary Medical Center. In recognition, a naming opportunity honors his remarkable career through the John E. Zimmerman, DVM, Sonoma Marin Veterinary Service open workstation—where faculty, residents, staff and students will work together, helping train tomorrow's veterinarians while providing excellent care.

Growing up on a small dairy farm, he has fond memories of helping his family work the farm, learning a strong work ethic and caring for cattle. Zimmerman also joined the Petaluma Future Farmers of America and judged animals at UC Davis. He knew back then that he wanted to work with cattle and attend veterinary school here.

Looking back, he feels his career has taken him beyond his expectations when he was a veterinary student. In addition to his clinical practice, he served on the California Veterinary Medical Association Agriculture Committee for 25 years and on the California Department of Food and Agriculture Cattle Disease Task Force for 12 years.

Looking forward, Zimmerman feels it's important to invest in the veterinarians of tomorrow. He and his team are dedicated to providing exceptional veterinary care to equine and livestock in the Sonoma and Marin counties. When it comes to hiring veterinarians, he looks first to UC Davis graduates who have proven to be well trained and top notch.

"I'm proud to be a graduate of the UC Davis School of Veterinary Medicine and most grateful for the tremendous impact it has had on my career and life," Zimmerman added. "When it's time to give back, you give back to those who had a big impact on your life."

If you would like to recognize someone special through a naming opportunity at the UC Davis Veterinary Medical Center, please contact us at 530-752-7024 or visit www.vetmed.ucdavis.edu/giving/vmc for more information.

UC DAVIS
VETERINARY MEDICINE

Nonprofit Org.
U.S. Postage
PAID
Permit No. 3
Davis, CA

(654W)
UC Davis Veterinary Hospital
c/o Office of the Dean—Advancement
School of Veterinary Medicine
University of California
One Shields Avenue
Davis, CA 95616-8734

Ranked #1 by U.S. News and World Report

Heartbeat is published by the School of Veterinary Medicine at the University of California, Davis: Dr. Michael D. Lairmore, dean; Hyemi Sevening, assistant dean of advancement; Dr. Jane Sykes, chief veterinary medical officer; Tom Hinds, director of strategic planning and communications; Rob Warren, editor; Don Preisler, Carolyn Sawai, contributors. The University of California does not discriminate in any of its policies, procedures or practices. The university is an affirmative action/equal opportunity employer.

Livestock and Field Services Center – Leading the Way in Livestock Care

One of the patient care services of the UC Davis Veterinary Medical Center planned to come online is the Livestock and Field Service Center (a cut-away view of an artist's rendering pictured above)—designed in consultation with Temple Grandin, Ph.D., well known for her groundbreaking work in engineering humane animal facilities. The new facility will create a state-of-the-art environment for livestock handling, care and clinical teaching. To learn more, visit www.vetmed.ucdavis.edu/giving/vmc or call us at 530-752-7024.

Stay Connected

To subscribe to *Heartbeat*, email your name and address to **rjwarren@ucdavis.edu**

Please consider supporting UC Davis Veterinary Medicine **give.ucdavis.edu/go/vmth**

vetmed.ucdavis.edu/vmth

Vet Med App

Stay quickly connected to UC Davis Vet Med with our new mobile app. Download it at the Apple and Android app stores by searching "UC Davis Veterinary Medicine."