A hemodialysis service is the newest addition to the UC Veterinary Medical Center (UCVMC)—San Diego, a joint venture of the Davis and San Diego campuses of the University of California.

Until now, the only place dogs and cats could receive life-saving hemodialysis treatment in California was at the Veterinary Medical Teaching Hospital (VMTH) on the UC Davis campus.

“The School of Veterinary Medicine handles up to 400 treatments each year in dogs and cats in Davis. The availability of this specialty in Southern California will save pets’ lives when time is of the essence,” says VMTH Director Bradford Smith.

UCVMC hemodialysis services are provided in a new facility at the Helen Woodward Animal Center in Rancho Santa Fe.

The official opening last May included a continuing professional education course on renal (kidney) diseases and hemodialysis, and an open house for area veterinarians.

At the core of the San Diego-based hemodialysis team are veterinarian Julie Fischer and registered veterinary technician Paula Thomas, who treat both temporary (acute) and chronic renal failure.

Including the newest addition, only four such facilities exist in the United States, and UC Davis has the only veterinary hemodialysis program in operation at two sites.

The professionals overseeing each of the four programs were all trained by Larry Cowgill, chief of the VMTH Small
Hemodialysis
Continued from page 1

Animal Internal Medicine Service, who pioneered the first hemodialysis program at UC Davis in 1990.

“While the procedure does not cure damaged kidneys, hemodialysis is life-sustaining while the acute kidney injury heals or as a replacement for permanently damaged kidneys,” says Dr. Cowgill. “Our goal is to help a pet survive until the animal’s own system can return to normal or it is strong enough to undergo treatment for the underlying problem.”

For more information about the program, contact Dr. Larry Cowgill, UC Davis Veterinary Medical Teaching Hospital, (530) 752-1393, or Dr. Julie Fischer, UC Veterinary Medical Center—San Diego, (858) 759-7235, or visit the VMTH Web site (www.vetmed.ucdavis.edu/vmth).

What is hemodialysis?
Strictly speaking, dialysis is the diffusion of water and dissolved molecules (solute)s across a semi-permeable membrane. In hemodialysis, a dialysis machine is used to pump blood from the patient through an artificial kidney, which removes accumulated waste products (urea, creatinine, phosphate and many others) that the patient’s own kidneys normally would filter and excrete from the body. Hemodialysis also helps to restore electrolyte and water balance, another task the kidneys normally would perform in addition to removing solute wastes.

When is it used in veterinary medicine?
Most human hemodialysis patients have chronic renal failure—they rely on treatments 2–3 times per week for their entire lives, unless they receive kidney transplants. Conversely, most veterinary hemodialysis patients have acute renal failure—the sudden failure of previously well-functioning kidneys that can result from a variety of causes. Hemodialysis does not treat or repair kidneys, but serves as a bridging measure for patients with acute renal failure—it re-establishes and maintains metabolic stability in order to give the damaged kidneys a chance to heal. Without the extra time hemodialysis provides, the large majority of acute renal failure patients would die before their kidneys could recover enough function to sustain life.

Most canine hemodialysis patients have damaged kidneys from antifreeze poisoning, kidney infections (like leptospirosis or pyelonephritis) or complications due to other systemic disease. Cats, like dogs, may suffer from antifreeze poisoning, kidney infection or kidney toxins—lilies, for instance, are potent kidney toxins in cats. Hemodialysis can stabilize cats with stones obstructing their ureters (the tubes connecting the kidneys to the bladder), to either give the stones a chance to pass on their own, or to make the cats stronger candidates for surgical stone removal.

Hemodialysis treatments two or three times per week can also maintain some pets with chronic renal failure, when medical management alone can no longer provide a good quality of life. Some of these pets, especially cats, may be candidates for kidney transplantation, and hemodialysis is sometimes needed before and/or after transplantation surgery for stabilization and support.
Professional Meeting Focuses on Future of Veterinary Medicine

A

agenda for Action: Veterinary Medicine's Role in Biodefense and Public Health, a meeting of more than 150 veterinary professionals, focused on several issues of importance to the future role of veterinary medicine.

The meeting, held November 1–3 in Washington, DC, “focused on zoonotic diseases, the role of veterinary medicine in public health, the role of the profession in bioterrorism, and the opportunity to step up to assist the country in this time of need,” says Dean Bennie Osburn.

“The meeting… focused on zoonotic diseases, the role of veterinary medicine in public health, the role of the profession in bioterrorism, and the opportunity to step up to assist the country in this time of need.”

Dean Osburn and Dean Emeritus Frederick Murphy were involved in organizing the meeting, which featured presenters from universities, diagnostic laboratories, the pharmaceutical research industry, the Food and Drug Administration, the National Wildlife Research Center, and the Office of Global Health at the Centers for Disease Control and Prevention.

The fourteen presenters spoke about the critical role of veterinarians in control and prevention of emerging diseases; bioddefense resources and strategy; recruitment, motivation and instruction in preventive medicine and population health; graduate training and continuing education; veterinary public health (agricultural issues and agroterrorism); human health issues (zoonoses, bioterrorism and emerging diseases); and innovations in disease detection.

Bruno Chomel, professor in population health and reproduction and former director of the school’s Master of Preventive Veterinary Medicine (MPVM) degree program, gave a talk on control and prevention of emerging zoonoses. Kent Lloyd, associate dean for research, Donal Walsh, professor of medicine and epidemiology, veterinary students Danielle Tack ('04) and Beth Whitwell ('05), and several UC Davis alumni also attended the conference.

Recommended actions include development of a national agenda for veterinary medicine; development of future leaders for public health and public veterinary medicine; increased research capacity in the area of diagnostics, vaccines, therapeutics and epidemiology; and continuing education to prepare the profession for emergency response related to biowarfare.

Dr. Osburn says, “The meeting emphasized that the current needs of the country represent the greatest opportunity for veterinary medicine in the next 4–5 decades to understand the genomics and genetics of organisms, improve our ability to diagnose diseases, and improve the ways vaccines are made.”

At least 12 different veterinary colleges already have faculty participating in Regional Centers of Excellence, which focus on improving public health in the face of emerging or introduced diseases, and a number of colleges, including UC Davis, are applying for regional biocontainment laboratories (see page 7).

“...the current needs of the country represent the greatest opportunity for veterinary medicine in the next 4–5 decades...”

Currently the UC Davis School of Veterinary Medicine is a leader in NIH-funded projects. More than $1.7 billion in new funding for research and facilities infrastructure will be available next year.

Proceedings of the meeting will be published in the Association of American Veterinary Medical Colleges’ Journal of Veterinary Medical Education by early summer. Donal Walsh is editor of the journal.

UC DAVIS LAB CONFIRMS CASE
WEST NILE ENCEPHALITIS VIRUS ARRIVES IN STATE

California’s first documented human case of West Nile encephalitis, in Los Angeles, was confirmed last fall—antibody tests were performed at the Davis Arbovirus Research Unit (DARU), which is directed by Dr. Thomas Scott. DARU is a component of the Center for Vectorborne Diseases.

Dr. Scott collaborated with the Department of Health Services’ viral laboratory, Los Angeles County’s public health laboratory and the federal Centers for Disease Control and Prevention’s vectorborne disease laboratory in Fort Collins, Colorado.

Other imported human cases were detected in California during 2002, and the West Nile encephalitis virus has been identified in Texas horses—it is likely to be in California horses soon. The Center for Equine Health Web site (www.vetmed.ucdavis.edu/ceh) has more information about the disease in horses.

ANIMAL HEALTH & FOOD SAFETY
CAHFS LAB DEVELOPS RESOURCE NETWORK

The California Animal Health & Food Safety Laboratory System was selected last July by the USDA as one of 12 veterinary diagnostic laboratories funded to develop the National Animal Health Laboratory Network.

Animal disease surveillance and diagnosis—to safeguard the health and well-being of our nation’s livestock and poultry, companion animals, wildlife, zoo and exotic species, and to protect the public from diseases common to animals and humans—will be most effective if publicly funded state animal health laboratories work as partners.

During Great Britain’s catastrophic foot and mouth disease outbreak, the number of cases quickly outstripped laboratory resources, which severely compromised the ability of veterinarians to work effectively in the field. Without a network of federal, state and local resources, the U.S. would face the same problem in the event of a similar outbreak.

The need for a national network, able to identify high-risk biological pathogens in food animals or the agricultural system, and respond to any type of animal health emergency, has never been more critical.

Veterinary Medicine News, UC Davis, Spring 2003
FOOD SAFETY

DEFINING THE CHALLENGE

Globalization of the food supply has contributed to the emergence of more than 30 new causes of foodborne diseases over the last 25 years. Foodborne illnesses affect 1.5 billion people annually and cause over 3 million deaths worldwide. In the United States, the estimated medical costs and related losses due to absenteeism are approximately $23 billion per year.

The changing management of livestock, poultry, aquatic species and crops has led to new, speculative concerns about the human health effects of antibiotics, hormones and chemicals used in intensive production systems, and fresh fruits and vegetables are at risk for being associated with foodborne illness.

Without a significant change in the current food safety system, more outbreaks and food product recalls are inevitable. Past experience suggests these outbreaks will continue to be more frequent, more complex and more costly.

Food safety and security are complex and dynamic issues—they require comprehensive, multi-faceted solutions that are field-tested and based on sound science.

Over time, more highly technical solutions will be needed to offset the increasing complexity of the food system and the sophistication of those who would aspire to do intentional harm to the food system and public health.

WIFSS puts in place the collaborative research infrastructure to promote food safety and science-based food safety policies.

Protecting Food Safety and Security: A Shared Commitment

California’s need to fortify the science of food safety has never been more urgent.

“Despite the strength of our food production and processing system, California faces numerous challenges,” says UC Davis professor and veterinary pathologist Jerry Gillespie. “Our food supply is increasingly subject to contamination from both biological and chemical sources; and now we have the new threat of intentional contamination of food through bioterrorism.”

Dr. Gillespie is director of a new institute—a partnership between the California Department of Food and Agriculture, the California Department of Health Services, the University of California, federal agencies and private industry, who have identified food safety and public health as a major initiative.

The Western Institute for Food Safety and Security (WIFSS), announced September 26, brings together a diverse group of university, state and federal scientists and officials, and participants from the state’s agricultural and food industries to discover and deliver solutions to the escalating food safety and security challenges of the Western region and of the nation.

The WIFSS, located at UC Davis, is intended to better protect California consumers against food-borne illnesses and to safeguard the state’s agricultural industry—California agriculture yields more than $26 billion in annual sales of more than 350 crop and livestock commodities.

Dr. Gillespie says the WIFSS will draw together leading food-safety scientists to advance understanding and solve critical food safety issues related to plant and animal food sources. The comprehensive WIFSS program will focus on issues such as bioterrorism, biosecurity, microbiological safety of foods, newly emerging disease-causing agents and microbial organisms that are resistant to many commonly used antibiotics, the safety of food moving across California’s borders, and consumer food safety education.

The institute’s mission is to develop the capability to identify food-borne hazards more rapidly and accurately, and to develop effective methods to prevent natural and intentional food contamination that might lead to food-borne illnesses and outbreaks.

The institute’s research will span the spectrum of food types and sources, including plants and animals, as well as food from both domestic and foreign sources. One area of emphasis will be development of rapid diagnostic tests for disease-causing microbes such as Salmonella, deadly strains of E. coli, Cryptosporidium, B. anthracis (anthrax) and foreign food-borne diseases.

WIFSS researchers also will develop methods for tracing the source of food contamination; devise safe alternative methods for disposing animal waste; work with consumers, industry and state agencies to strengthen biosecurity strategies; develop better postharvest pasteurization processes; identify weak food-safety links in the food-supply chain; study animal and human-health impacts of antibiotic use; and evaluate genetically modified products to determine their safety.

Funding for the new $5 million institute comes from Governor Gray Davis’ “Buy California” initiative, a $76 million program financed by a combination of state and federal funds.
More than 400 veterinary faculty, physicians, public health professionals and scientists exchanged scientific information and preparedness strategies December 5 and 6, 2002, at the International Symposium on Emerging Infectious Diseases and Bioterrorism: Regional Threats, Global Impact, held at UC Davis.

Speakers outlined the nature of numerous disease agents and issues surrounding their potential for being intentionally introduced through terrorist acts. Topics included smallpox, bovine spongiform encephalopathy (BSE, or mad cow disease), plague, arthropod-borne diseases (including West Nile encephalitis), pandemic influenza, and a host of pathogens—some as widely feared as *Ebola* and others still unfamiliar to most members of the public, such as *Rickettsia.*

The symposium emphasized a single theme—preparedness for medical response to an intentionally caused epidemic requires the same approach as preparedness for naturally occurring disease outbreaks.

Keynote speaker Donald Henderson, who led the worldwide effort to eradicate smallpox in the 1970s, illustrated why, like AIDS, other contagious, fatal diseases could spread silently around the globe:

- The world has more population centers: in 1952, only London and New York had more than 7.5 million people; in 2000, 28 cities had 7.5 million, with six cities having populations of more than 15 million people.
- Many of these cities are located in subtropical regions where poverty, overcrowding and poor nutrition contribute to disease.
- Unprecedented numbers of travelers move regularly to all parts of the world, and from virtually uninhabited areas to huge population centers.
- Global food trade is a factor in the spread of infectious diseases.

While *Ebola* or plague evoke great fear, more insidious public health threats already exist. Society’s long-term reliance on antibiotic therapies also causes renewed concern about antibiotic-resistant strains of diseases such as tuberculosis.

Some diseases are frightening because no cure or vaccine exists; some strike fear because of horrible symptoms; and some can linger undetected, spreading to others before symptoms occur. The zoonotic infections—diseases that can be transmitted from animals to humans—warrant close scrutiny by veterinary and public health professionals. West Nile encephalitis virus, for example, is spread by birds that can fly anywhere, making surveillance difficult.

The long incubation period of BSE was cited as one reason for the difficulty in diagnosing it in animals or humans until the disease’s latest stages, compared to other infectious threats such as plague or smallpox. Researchers are exploring the role of the species barrier and indirect forms of transmission between species—but scientists are challenged to find a cure for BSE and other prion* diseases, because proposed treatments or preventive strategies take years to evaluate.

Influenza A, which killed 20-40 million people—many of them otherwise young, healthy individuals—in the pandemic of 1918, still mystifies researchers, who continue to study the genetic structure of influenza strains and their presence in animal populations that act as natural reservoirs of the disease.

Other diseases such as plague, West Nile encephalitis (present in 43 states at the end of 2000) and related viruses are arthropod-borne—spread by fleas, ticks or mosquitoes.

Bruno Chomel, professor of zoonoses at the school, pointed out that rickettsial diseases—such as Rocky Mountain spotted fever and tularemia—are potential candidates for bioterrorism.

According to Dr. Chomel, pathogens that might be used for bioterror would have a high rate of infection at low dosages, especially as an aerosol; stable infectivity; be communicable person-to-person; encounter little or no immunity among the target population; cause a serious or fatal disease; create fear among the public; and be difficult or impossible to treat.

Several rickettsial organisms meet many of these criteria, said Dr. Chomel, who also noted that to protect public health, more diagnostic tools are needed for early detection of rickettsial diseases, and that vaccine developers need to include multiple strains of *Rickettsia*.

National and regional surveillance programs and diagnostic methods play a vital role in prevention and control of infectious diseases. For example, federal and regional surveillance systems have been improved since 1999 to monitor West Nile encephalitis, which has traveled steadily westward since its discovery in New York.

Dr. Henderson said that $1 billion had been sent to states “to build state and local strength” in the public health infrastructure—state governments will have broad discretion on how they spend the money. They will measure their response plans against 17 benchmarks and report progress to the Department of Health and Human Services in June 2003.

Kevin Reilly (DVM, MPVM, 1988), deputy director for Prevention Services with the California Department of Health Services, communicated the state’s perspective on public health response to the threat of bioterrorism.

R. Steven Thrall (MPVM 2001), professor at the UC Davis School of Medicine, discussed emergency preparedness in California, where the existing response structure already includes fires, earthquakes, floods and civil unrest—a public health component is now being added.

Public health officials responsible for controlling disease outbreaks in animals and people cite as their priorities—for both response and research programs—the ability to rapidly detect new and emerging diseases.

* Rickettsia: bacteria transmitted by arthropod bites
* Prions: protein particles present in brain tissue
Nutrition Resource Has New VMTH Headquarters

The school’s Nutrition Service moved last September into a newly renovated, custom-designed facility at the Veterinary Medical Teaching Hospital (VMTH).

The Nutrition Support Center, funded in part by the Nestlé Purina PetCare Company, combines the retail sector with the veterinary medical sector. It is designed as an integrated space to store and manage food for VMTH patients, consult on client cases, and teach clinical nutrition. It also facilitates clinical solutions, nutrition research, product display and accessibility, inventory management, and student exposure to the wide variety of available products.

“We believe veterinarians have the power of nutrition to really make a difference in their patients. Through this center, veterinary students have the power of nutrition at their fingertips,” says Dr. Aine McCarthy, director of professional communications for Nestlé Purina PetCare. “UC Davis has the largest nutrition support service in the country, and we’re proud to be a partner in that.”

The new center integrates all the essential elements: a kitchen for mixing diets; space for storage racks and dispensers to keep food fresh, pest-free, and easily accessible; a clinical nutrition technician; and a computer system with custom PDA (personal digital assistant)-based software that utilizes scanning technology, bar code printing, and inventory software that can generate replenishment orders. It also houses an office for nutrition residents, an education center with computer terminals and a small library.

Dr. Andrea Fascetti, chief of the Nutrition Service, says, “The facility has increased our visibility in the VMTH—both formal and informal nutrition consultations have increased. There is now more input and assistance for nutritional therapy, which helps both the patients and teaching program.”

The logistics of the nutrition center have allowed the VMTH to stock a greater variety of food products. It’s important to have a range of diets and be able to use different approaches to disease processes, says Dr. Fascetti.

The Nutrition Service comprises both the Nutrition Clinic and Nutrition Support Service.

The Nutrition Clinic offers VMTH appointments with board-certified nutritionists and residents to solve problems such as obesity, recommend alternative diet approaches, and pro-

Above: Clinical nutrition technician Stefanie Oppenheim uses a PDA scanner to check inventory of commercial pet food stocks. A computer system with custom software integrates all aspects of managing food supplies for thousands of VMTH client animals, including tracking and restocking pet foods and ingredients for special diets.

Right: A ribbon cutting ceremony, led by Dean Bennie Osburn, Nutrition Service Chief Andrea Fascetti and Purina representative Aine McCarthy, heralded the opening of the Nutrition Support Center on the second floor of the VMTH.

In its clinical setting, the Nutrition Support Center is an ideal place to teach clinical nutrition and to consult on cases where nutrition may play a vital role in an animal’s recovery.

Left: Resident veterinarian Sean Delaney and fourth-year veterinary student Lisa Szeto mix a custom diet for a VMTH patient who needs a high-calorie, low-volume diet that must be administered through a feeding tube.
vide feeding strategies for animals with particular illnesses.

The Nutrition Support Service has assisted UC Davis staff and students since 1989 in appropriate feeding of VMTH patients while offering a telephone consultation service for referring veterinarians from California, other states and sometimes other countries, as well as for pet owners.

The service consults on home-cooked diet formulations, assists referring veterinarians with problems ranging from obesity management to veterinary therapeutic diet selection and dietary supplement evaluation.

“A great many of our consultation calls deal with evaluating and nutritionally balancing home-cooked diets. Custom home-cooked diets can be invaluable in the management of multiple disease processes where one commercial diet cannot meet all the animal’s needs,” says Dr. Fascetti.

The majority of consultations pertain to dogs and cats, but the service also does nutritional consultations for horses. Equine consultations cover a range of topics, from foal and mare nutrition to dietary supplements.

Not only do Dr. Fascetti and small animal clinical nutrition resident Dr. Sean Delaney see patients, formulate diets and consult on patient and referral cases, but they also teach fourth-year students in the elective clinical nutrition rotation.

The Nutrition Service offers both a traditional residency program and a second program in which graduate students work toward PhD degrees and board certification in nutrition.

Dr. Meri Stratton-Phelps and Dr. Nick Cave are PhD candidates who are also preparing to meet competency requirements for board certification by the American College of Veterinary Nutrition. Dr. Robert Backus, senior research fellow, and Dr. Delaney are also preparing for board certification.

The Nutrition Support Service can be reached at (530) 752-1393, or for more information, visit the VMTH Web site (www.vmth.ucdavis.edu).

BIOCONTAINMENT FACILITY NEEDED

UC DAVIS PROPOSES THE WESTERN NATIONAL CENTER FOR BIODEFENSE AND EMERGING DISEASES

In order to meet a national need, UC Davis faculty and administrators propose construction of a high-containment laboratory on the UC Davis campus—no such facility exists in the western United States.

The “Biosafety Level 4” facility, if funded by the National Institutes of Health, would become part of an initiative to create a Western National Center for Biodefense and Emerging Diseases (WNCBED). “The facility will support research on vaccines, therapeutics and diagnostics for use against infectious diseases,” says Provost and Executive Vice Chancellor Virginia Hinshaw, a virologist in the School of Veterinary Medicine.

UC Davis—with its expertise and resources that include the medical school, veterinary school, national primate research center, college of agriculture and environmental sciences and veterinary diagnostic laboratory—is well suited to meet regional and national needs for enhanced efforts and research in addressing public health threats, Dr. Hinshaw says. “We have to do our part to protect public health.”

The proposed center and biocontainment lab would allow West Coast researchers to study and diagnose not only infectious diseases that currently threaten California—such as hantavirus, Lyme disease, and West Nile encephalitis (West Nile encephalitis virus has spread across the country and has recently been confirmed in California) plagues and influenzas. It would allow scientists to safely handle organisms requiring Biosafety Level 2, 3 and 4, and to carry out necropsy of animal tissues suspected of being infected with disease agents such as rabies, botulism or anthrax, which occurs naturally in the soils of California.

Level 4 is the designation by the Centers for Disease Control and Prevention for the highest level of containment standards. Level 4 facilities and procedures are designed to protect scientists from highly contagious infectious disease agents, those that cause untreatable illnesses, or potentially lethal unidentified agents, and to protect the public by preventing release of such agents into the environment.

“The primary goal of the center is to study naturally occurring diseases that require high-containment BSL-3 and BSL-4 facilities,” says Bennie Osburn. “While the threat of bioterrorist activities is a factor in the development of this center, these naturally occurring diseases are already with us—if we are to protect ourselves, we must understand them better, be able to rapidly diagnose them, and develop containment strategies, treatments and vaccines.”

Locating the WNCBED on the UC Davis campus will enable researchers from several disciplines to collaborate, and will allow the exchange ideas and information. Dr. Osburn says, “It will take a cadre of individuals working together to make significant accomplishments.” It is also very important that the facility be located at the university, where we are educating the next generation of researchers and teachers, he says.

The proposal for the Western National Center for Biodefense and Emerging Diseases was submitted to the NIH in February 2003.

“Our commitment is to improving the health of animals and humans.”
—Bennie Osburn
As inflammation of the gum continues, bad breath becomes noticeable, and bone gingivitis, an inflammatory response of the soft tissue. Plaque eventually hardens into tooth surfaces. If not brushed away, the bacteria begin to irritate the gum causing Periodontal disease begins with plaque—salivary proteins and bacteria build up on tooth surfaces. It is under the care of fourth-year veterinary student Melissa Brophy.

There are more severe consequences of an unhealthy mouth than teeth. These destruction caused by periodontal disease can withdraw the bone until it is easily fractured, particularly in small dog breeds, and bacteria present may cause malaise, fever, anorexia present in the mouth of an animal with periodontal disease can spread through the body and infect vital organs such as the heart, lungs, kidneys and brain. There are even more serious consequences of an unhealthy mouth than tooth decay.

February is National Pet Dental Health Month, sponsored by the American Veterinary Medical Association, the American Veterinary Dental Society and Hills Pet Nutrition, Inc., to promote pet dental health and increase awareness of the importance of pet dental care health.

Tooth brushing is the easiest way to remove and prevent the buildup of plaque. Most animals, particularly young ones, can learn to accept gentle tooth brushing. Brushing must be done every day to effectively remove plaque, which not only prevents, but also reverses inflammation in the gingiva (the gums surrounding the teeth). Most pet owners brush their pets’ teeth every day and scheduling regular examinations with your vet is important. Professional intervention is recommended for tooth decay, tooth root abscess, and periodontal disease.

Tooth fractures, a very common problem in dogs, frequently go unnoticed. They can be caused by trauma such as fights, falls, or being hit by a car or being hit by a hard object, such as dry bones and very hard chewing chews. Fractures expose the pulp, which is located in teeth and roots. The recommended therapy for fracture is root canal treatment—following root extraction and严格的 post-surgical care the root canal is performed using specific endodontic files, the canal filled with root canal material and the tooth restored.

FRACTURES AND OTHER RISKS

Tooth fractures are very common problems in dogs. Importantly, they are not always easy to diagnose. Pain can be caused by trauma such as fights, falls, or being hit by a car. Fractures expose the pulp, which is located in teeth and roots. The recommended therapy for fracture is root canal treatment—following root extraction and严格的 post-surgical care the root canal is performed using specific endodontic files, the canal filled with root canal material and the tooth restored.

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**Kudos**

**Gary Carlson**, professor in medicine and epidemiology, received the 2002 Carl J. Norden Distinguished Teacher Award, sponsored by Pfizer Animal Health, for his expertise and contributions to academic instruction and clinical teaching of equine medicine.

**Alan Conley**, associate professor in population health and reproduction, was selected as a 2002 Chancellor's Fellow for accomplishments and potential scientific contributions as an early-career faculty member. Dr. Conley's research in comparative reproduction focuses on the synthesis of androgens and estrogens in mammalian and other vertebrate species.

**Murray Fowler**, professor emeritus in medicine and epidemiology, received the American Veterinary Medical Association (AVMA) Animal Welfare Award last October for his lifelong devotion to zoo and exotic animals.


**Craig Greene** (DVM '73), faculty member in small animal medicine and medical microbiology at the University of Georgia, received the Student AVMA Teaching Excellence Award in 2002.

**Steve Haskins**, professor in surgical and radiological sciences, received the Veterinary Emerency and Critical Care Society's Ira M. Zaslow Distinguished Service Award, recognizing his role in making emergency care a veterinary specialty.

**Irv Ingram** (DVM '72), owner of All Creatures Animal Hospital in Scottsdale, received the Arizona Veterinary Medical Association's 2002 Veterinarian of the Year Award.

**Peter Kennedy**, professor emeritus in pathology, microbiology and immunology, received the Harold Casey Distinguished Service Award from the Charles Louis Davis Foundation in 2002 for sustained excellence in teaching veterinary pathology.

**H. Kuntsi-Vaattovaara** received the 2002 Pharmacia Veterinary Dental Award for the year's best research publication, “The success rate of root canal treatment in dogs,” published in the AVMA journal. The paper is based on Dr. Kuntsi’s residency research project.

**Gerald Ling** (DVM '65), professor in medicine and epidemiology, received the 2002 Faculty Teaching Award in recognition of his contributions to small animal medicine and his proficiency in teaching. He has contributed to revitalizing the professional curriculum, and has developed novel and engaging teaching tools including computerized case studies in urinary tract disease.

**Mandi Lopez** (DVM ’93), assistant scientist in the University of Wisconsin-Madison School of Veterinary Medicine's Comparative Orthopaedic Research Laboratory, has been accepted as a Fellow of the Morris Animal Foundation in recognition of her contributions to animal health.

**James Moore** (DVM '74) gave the American Association of Equine Practitioners' Frank J. Milne State-of-the-Art Lecture in 2001 (photo), and was named Distinguished Research Professor by the University of Georgia in 2002 for outstanding research and creative scholarly accomplishments in equine medicine.

Thirteen current and former students in Department of Pathology, Microbiology and Immunology programs became diplomates of the American College of Veterinary Pathologists in 2002: in anatomic pathology, Drs. **Dalen Agnew**, **Ali Brewer**, **Melanie Greeley**, **Kevin Keel**, **Nancy Kock**, **Lisa LaFranco-Scheuch**, **Meg Ramos**, **Karen Terio**, **Stefan Tunev**, and **Jon Werner**; in clinical pathology, Drs. **Frederick (Tripp)**.
Kudos

Continued from page 9

Almy, Christine Hotz and Fonzie Quance-Fitch.

Suzana Cuoto, third-year resident and PhD candidate in the Comparative Pathology Graduate Group, is the inaugu‐
gural recipient of the Peter C. Kennedy Endowed Fellowship in Veterinary Anatomic Pathology. Dr. Cuoto was board-certified in 2001.

Charles Plopper, professor in anatomy, physiology and cell biology, received the Career Achievement Award from the Society of Toxicology, Inhalation Specialty Section, last March in recognition of his contributions to the field of inhalation toxicology.

Eugene P. Steffey, professor in surgical and radiological sciences, received the 2002 Pfizer Animal Health Award for Research Excellence for his significant research contributions in pulmonary physiology.

Carolyn Stull, Center for Equine Health researcher and specialist in Veterinary Medicine Extension, received the 2001 Hank Award from Rio Vista Products for her work on rehabilitating starved horses, nutrition for exercising horses, and minimizing stress factors associated with transporting horses.

R. Steven Tharratt (MPVM 2001), professor of pulmonary and critical care medicine, received the Distinguished Public Service Award from the UC Davis Academic Senate last May.

Hugh Norris was recognized for his many professional, community and civic contributions and his dedicated service to organized veterinary medicine.

Jerry Gillespie was recognized for his scientific contributions to equine pulmonary physiology and preharvest food safety, and his leadership in developing national food safety policy.

Dr. Norris earned his DVM degree from UC Davis in 1957. The following year he established the first veterinary medical Boy Scout Explorer post in the world at the San Diego Zoo. He has been a frequent speaker on veterinary medicine at service clubs, organizations and school assemblies, a speaker on disaster preparedness at professional conferences, and as a career counselor in veterinary medicine at San Diego high schools. Dr. Norris has chaired both the Disaster Preparedness and Long-Range Planning Committees for the San Diego County Veterinary Medical Association, and has served as District I governor for the California Veterinary Medical Association Board of Governors. A resident of La Mesa, California, Dr. Norris works closely with his local veterinary community, the County of San Diego and the American Red Cross as an avid proponent of disaster preparedness.

Dr. Gillespie (DVM, Oklahoma State University, 1961) earned a PhD degree in comparative pathology from UC Davis in 1965. Between 1966 and 1985, he served as associate professor of clinical sciences, professor of physiological sciences and associate dean of student services at the UC Davis School of Veterinary Medicine, and as professor of human physiology at the UC Davis School of Medicine. Dr. Gillespie was a charter diplomate of the American College of Veterinary Anesthesiologists. From 1985 until 1994, he was head of the Department of Clinical Sciences and of the Veterinary Medical Teaching Hospital at Kansas State University College of Veterinary Medicine, and until 2000, was director of the college’s Food Animal Health and Management Center. Before returning to Davis to become director of the newly established Western Institute for Food Safety and Security, Dr. Gillespie was executive director of the Joint Institute for Food Safety Research in the United States Departments of Agriculture and Health and Human Services. Dr. Gillespie has actively promoted veterinary science and research—his research interests include anesthesiology, equine performance-related diseases and the ecology of foodborne organisms.
Faculty News

**Cindy Farman** (DVM ’88, Residency ’93, PhD ’99, UC Davis) joined the California Animal Health & Food Safety Laboratory System (CAHFS) last July as a clinical diagnostic pathologist with an affiliated appointment in the Department of Pathology, Microbiology and Immunology. Dr. Farman provides diagnostic pathology and related diagnostic services for livestock, equine, and poultry veterinarians, their clients and government agencies, and she also has teaching responsibilities. Her research focuses on the development of new and improved approaches to immunohistochemistry and in-situ hybridization. Before coming to Davis Dr. Farman was a veterinary pathologist at Sierra Biomedical, a Charles River Company in Sparks, Nevada.

**Virginia Hinshaw** (PhD, Auburn University, ’72) was appointed as UC Davis’ Executive Vice Chancellor and Provost and as a member of the School of Veterinary Medicine’s Department of Pathology, Microbiology and Immunology in 2001. Her research interests are in pathogenesis, immune recognition and the ecology of influenza viruses. Before coming to Davis she served as University of Wisconsin—Madison’s Graduate School dean and vice-chancellor for research.

**Gregory Lanzaro** (PhD, University of Florida, ’86) joined the school faculty last May as director of the UC Mosquito Research Program, a statewide special program of the Division of Agriculture and Natural Resources. Dr. Lanzaro, a world leader in the area of vector biology, uses new technologies for genome analysis to study population genetics and epidemiology of vector species. He will contribute to entomology and veterinary medicine research and extension programs in vector biology and control. Before coming to Davis, he was on the faculty of the University of Texas Medical Branch, Galveston, Texas, in the Department of Pathology.

**Robert Hansen**, professor in molecular biosciences, who served for 18 years as associate dean for student programs, was appointed director of International Programs for the school last October.

**Rance LeFebvre**, professor in pathology, microbiology and cell biology, led an intensive four-week course in biomedical sciences last summer for the California State Summer School in Mathematics and Science (COSMOS). Dr. LeFebvre’s biomedics course, the most popular in the program, allowed some of the top high school students in California to experience many facets of human and veterinary medicine—including a course in infectious diseases of humans and animals, laboratory experience in anatomy and microbiology, field trips and talks by experts in human and veterinary medicine.

**Kent Lloyd**, associate professor in anatomy, physiology and cell biology and associate director of the Mouse Biology Program at the Center for Comparative Medicine, was appointed the school’s associate dean for research and graduate education last September. Dr. Lloyd will continue his involvement in the development of the Mouse Biology Program.

**Bruce Madewell**, professor in surgical and radiological sciences, was appointed last September as chair of the Davis Division of the Academic Senate. Dr. Madewell has previously served as vice chair of the Davis Division, as a member of the Graduate Council, and as chair of the faculty in the School of Veterinary Medicine.

**Norman Costello** (DVM ’70) died February 9, 2003 after suffering a stroke.

**George Deauville** (DVM ’62) died November 1, 2002, at his home. He was 64. Dr. Deauville served as captain in the United States Army Veterinary Corps at Fort Deitrich, Maryland, and practiced veterinary medicine in Salinas, California for more than 30 years.

**Norman Fohrman** (DVM ’56) of Laguna Hills died in 2002.

**Brooks Ford** (DVM ’74) died in February 2002.

**James H. Fuller** (DVM ’69) died in July 2002. Dr. Fuller was a veterinarian, zoologist, neurophysiologist and associate professor of oral biology at the University of Illinois, Chicago, College of Dentistry. His research interest was motor control of eye, head and neck in mammals. He was passionate about the humane treatment of study animals and impressed upon his graduate students the importance of animal welfare to research success.

**Stewart Harvey Madin**, professor emeritus of public health, and epidemiology and preventative medicine at UC Davis, and professor of public health, experimental pathology and medical microbiology at UC Berkeley, died September 18, 2002, at home in Orinda, California, of complications from cancer. He was 84. Dr. Madin was a fellow of the American Academy of Microbiology and the California Academy of Sciences, and a diplomate of the American College of Veterinary Microbiologists. His research interests were diseases of domestic animals, veterinary pathology, tissue culture and virology. Following retirement, he served as research associate and staff veterinarian at the Steinhart Aquarium in San Francisco.

**Frank Ogasawara**, professor emeritus in avian science and founder of the California Raptor Center at UC Davis, died June 8, 2002, of complications after surgery. He was 88.

**Clyde Stormont**, professor emeritus in population health and reproduction, died September 10, 2002.
Memorial Enhances VMTH Ophthalmology Service

The family of Robert M. Cello has established a memorial to one of the school's most respected and accomplished faculty members.

During his career, Dr. Cello made numerous contributions to the field of veterinary ophthalmology in both research and education. He is widely recognized as “the father of veterinary ophthalmology.” Following Dr. Cello’s death in May 2001, his family contacted the school and offered to fund a clinic renovation for the Ophthalmology Service at the Veterinary Medical Teaching Hospital (VMTH).

The Ophthalmology Service’s clinical space in the VetMed II wing was refurbished last summer. A third exam room and a treatment room were created by redesigning existing space.

On September 9 the Cello family joined Dean Bennie Osburn and members of the Ophthalmology Service for an informal dedication of the new Robert M. Cello Veterinary Ophthalmology Suite.

Dr. Cello, whose distinguished academic career spanned more than four decades, made many contributions both to the school and to the veterinary profession. He and Dean Emeritus William Pritchard led a group of faculty members in planning the first modern, full-service veterinary medical teaching hospital—the VMTH they established at UC Davis in 1970 set a new standard for veterinary education and service to alumni, practicing veterinarians, industry and the people of California.

While serving as director of the VMTH, Dr. Cello led the nation’s veterinary schools in embracing the concept of clinical residencies, and he established the nation’s first clinical residency in veterinary ophthalmology.

In addition to ophthalmology, the VMTH—which offers the largest and most diverse residency program in the country—now provides advanced training and preparation for board certification in 27 disciplines.

Lecture and Research Fund Is Dedicated to Robert Cello

The R. M. Cello Distinguished Lecture Series and Resident’s Research Fund was inaugurated in April 1998.

More than 95 individuals and organizations, including Dr. Cello’s family, friends, faculty colleagues, and former students and residents, contributed $123,000 to establish perpetual support for both a lecture series and independent resident research.

The Cello lecture series recognizes outstanding contributions to clinical veterinary medicine—it is presented annually in conjunction with the school’s Fall Symposium on Recent Advances in Clinical Veterinary Medicine. Topics of the 2002 lecture series, presented by Dr. Lynelle Johnson, included feline rhinitis and tracheobronchial disease.

Thank You Notes

Highlights of current school development efforts... in appreciation of our many friends, who by their support and personal involvement, enhance the school’s mission of education, discovery and health care.

Companion Animal Health Day: An Open House for Pet Owners

Pet owners from all across Northern California were invited to presentations on pet health care and a behind-the-scenes tour of the Veterinary Medical Teaching Hospital on October 26, when the school’s Center for Companion Animal Health sponsored the fifth annual Companion Animal Health Day.

Faculty members and resident veterinarians shared information on the newest advances in companion animal health care in several disciplines. Talks for 2002 included Introducing a New Pet into Your Home, Arthroscopy, Kidney Transplantation in Cats, New Approaches to Cancer Therapy, and Geriatric Pet Care and Coping with Pet Loss.


Many thanks to the volunteers who, with unlimited enthusiasm and energy, help to create and carry out Companion Animal Health Day: Barbara Bassinger of Sacramento, Perk Bell of Concord, Kathie Dreher of Concord, Claudia Dechow of Concord, Pam Green of Davis, Courtney Judd of Sacramento, Peggy Lane of Novato, Marit Marino of Concord, Nanci Medellin of Sacramento, Jan Musicant of Granite Bay, Yayoi Kushida of Granite Bay, and Don and Marty Porter of Grants Pass, Oregon.
WILDLIFE HEALTH CENTER

Marine Ecosystem Health Program—Seeking Solutions for Pacific Northwest Waters

Surrounded by nearly 6 million people, the Pacific Northwest ecosystem is facing an unprecedented health crisis.

In the last two decades native populations of northern abalone and Olympia oysters have experienced dramatic declines, and populations of salmon, herring, cod, and rockfish have completely disappeared from some areas. Flocks of common murres and tufted puffins, which once numbered in the thousands, now number in the hundreds or fewer, and harbor porpoises are rarely seen. The resident population of orca in the Puget Sound/Northwest Straits region has been classified as one of the most contaminated (by PCBs, dioxins, and petrochemicals) cetaceans in the world.

Human activity in and around the inland waters has resulted in habitat degradation and loss, diversion of freshwater coming into the estuary, over-harvesting of fish, and toxic contamination from industrial plants and urban run-off—marshes and mud flats have been paved, rocky shorelines replaced by bulkheads, flowing rivers interrupted by dams, and native fish harvested to the brink of extinction.

In 1999, a generous gift from the Peter D. and Kathleen E. Dickinson Foundation created the Marine Ecosystem Health Program (MEHP) in the schools Wildlife Health Center. The mission of the MEHP is to ensure the health of marine wildlife and their ecosystem through science and education. Emphasis is currently given to problems facing the inland waters (Puget Sound/Northwest Straits/Georgia Basin) region of Washington State and British Columbia, Canada.

Core elements of the program include: 1) an annual competitive grants program, which awards funds to scientists investigating important issues facing the marine ecosystem; 2) a staff scientist who imparts scientific information generated by MEHP researchers and others to the stakeholder community in order to guide and inform management and conservation decisions, and 3) a stakeholder advisory board, which meets frequently to ensure that the program remains linked and relevant to the region.

The program already has provided research funding totaling more than $800,000 through its competitive grants program—researchers are engaged in diverse studies, including projects focused on habitat quality for migratory birds, marine mammals as environmental sentinels, and the design and function of marine protected areas to benefit marine resources.

The MEHP held its first biennial scientific symposium last September. Participants included more than 120 individuals—fishery biologists, marine scientists, conservationists and educators—from 40 different agencies, organizations and institutions. It is an essential part of the MEHP mission that scientific information on the health of marine wildlife and the coastal marine ecosystems on which they depend be made available to natural resource agencies, non-profit organizations and policymakers who are actively engaged in protecting, restoring and managing coastal waters.

Funding for the MEHP comes from grants and private gifts from individuals and foundations, and from members of the SeaDoc Society. Continued financial support is needed to sustain MEHP programs and the scientific research that is critical to effective management and conservation of marine wildlife.


Unique Gift Benefits

Marine Ecosystem Health

Frequently the school receives gifts-in-kind to help fund research or clinical programs. Laboratory equipment (such as balances), books and furnishings are greatly appreciated and quickly put into service.

But the gift of a collection of fine jewelry, timepieces and gemstones—from a friend of the school who wanted to support marine ecosystem health research in Washington’s Puget Sound—represented a real challenge. How could the school utilize such a gift?

The answer existed in cyberspace—for the first time the school enlisted e-Bay to create the perfect solution!

The jewelry was consigned through Butterfield & Butterfield for an e-Bay auction that resulted in more than $21,000 to benefit the Marine Ecosystem Health Program of the school’s Wildlife Health Center.
Class of 1952 Marks 50 Years with a Gift to the School

The school has begun a tradition—welcoming alumni to celebrate their 50-year anniversary reunion as the school’s newest graduate veterinarians commence their professional careers.

The class of 1952, the first graduates of the UC Davis School of Veterinary Medicine, marked their 50th anniversary last June with a variety of activities including a gala dinner at the Buehler Alumni Center, and presented the school with a reunion gift of $46,850 to support graduate fellowships.

As part of the celebration, the classmates participated in the school’s 50th commencement ceremony, where they received a standing ovation.

Classmates in the school’s first graduating class (1952), celebrate their 50th anniversary reunion on campus.

John Shirley and Herbert Piper of the class of 1952 ceremonially represent all 42 members of their class, 28 of whom are still living, with a bouquet of roses during the 2002 commencement ceremony.

Estate Gift Benefits the Center for Equine Health

Lorna Talbot, an accomplished rider and lifelong horse enthusiast, was also a loyal friend and supporter of the UC Davis School of Veterinary Medicine. Ms. Talbot passed away in February 2002, after an extended illness.

Recognizing that equine research is the key to improved equine health and performance, Ms. Talbot generously supported a wide variety of equine studies through the Center for Equine Health. She enjoyed touring the school’s equine facilities and took an active interest in its research and clinical programs.

Ms. Talbot also provided two very generous gifts to the school and the Center for Equine Health through her estate plans, one through her revocable living trust and another via a charitable remainder unitrust. The combined value of the contributions exceeds $2 million, allowing the school to establish two funds in her memory—the Lorna Talbot Fund for Equine Biomedical Research and the Lorna Talbot Fund for Equine Clinical Programs—that will help to assure the continued excellence of school’s equine-focused services, instruction and research.

For more information about charitable remainder trusts—life income gifts that allow you to make a substantial capital gift to the School of Veterinary Medicine while retaining income for your lifetime—contact the Office of Development, (530) 752-7024.

Alumni Serve as VMIF Campaign Co-chairs

Drs. Michael Floyd (’61), Niels Pedersen (’67) and 10 other dedicated alumni and friends of the school have launched a $2.5 million campaign to raise funds for the Veterinary Medicine Instructional Facility (VMIF), scheduled for completion in 2004.

During the next 18 months, committee members will ask professional colleagues and other members of the veterinary community to help expand and upgrade the school’s first new classroom building in many years.

State and university funds will cover the $24.5 million building costs, but private funds are needed to provide offices for student clubs and the Pet Loss Support Hotline, a student lounge with a refreshment area and patio, and a conference room.

Gifts will also support design improvements to make the building a multipurpose facility, increase its display and exhibit capabilities, and adapt public spaces as a welcoming center of veterinary education on the UC Davis campus. The VMIF will then be suitable for class reunions, emeritus faculty activities, annual lecture series and continuing professional education programs.

“The VMIF will be the new ‘instructional heart’ of the school,” says Dr. Pedersen. “This is where our students will spend the majority of their educational lives, so we are designing it such that it will not only be a great learning environment, but will also be adaptable.”

Significant gifts will be recognized within the halls of the VMIF, and gifts of $10,000 or more will grant donors the option of naming a classroom or teaching space.

Helping the school to fund completion of the VMIF is an excellent way to “give something back” to the school and the veterinary profession.
Law Enforcement Dog Teams Assemble for K-9 Memorial Dedication

One of the deepest bonds formed between humans and animals is the relationship between law enforcement officers and the dogs with whom they serve.

The California Police Dog Memorial, Faithful Partner, which recognizes that bond of service and affection, is dedicated to police dogs who have died in the line of duty.

The memorial statue was unveiled October 6, when dozens of law enforcement dogs and their handlers, representing departments from all over California, attended a solemn dedication ceremony that included a bugler, bagpipes and color guard.

Chief Calvin Handy of the UC Davis Police officiated—attendees included California Attorney General Bill Lockyer, Dean Bennie Osburn, sculptor Susan Bahary and the anonymous donor who contributed more than $200,000 to establish the California Police Dog Memorial at the School of Veterinary Medicine.

Faithful Partner is located between the northern entrance of the Veterinary Medical Teaching Hospital (VMTH) and Schalm Hall. Its focal point is a life-size bronze statue of a German shepherd created by Ms. Bahary of Sausalito. A special plaque memorializes each of the 23 California police dogs who have died in police service since 1960.

Ms. Bahary is dedicating a portion of the proceeds from a miniature of her bronze statue, available to collectors, to the VMTH Emergency Medicine and Critical Care Service. The VMTH has helped to save the lives of at least two critically injured police K-9s.

In 1993, Modesto police dog Duke was stabbed twice in the left side and lung after cornering a suspect. He was treated in Modesto and referred to the VMTH by his veterinarian two days later, after infection set in. His human partner, Officer Gene Balentine, spent seven days by his side in the VMTH intensive care unit oxygen cage, until Duke rallied and began to recover.

More recently, Fresno police dog Saxon, hailed as a hero for saving the life of his partner, Officer Russell Cornelison, was shot August 22 in the chest, left front leg, right rear leg and ear, while apprehending a suspect. He is the first Fresno police dog to be shot in the line of duty since establishment of the city’s K-9 unit in 1993.

Dr. Eddie Gunner, a UC Davis graduate of the School of Veterinary Medicine whose veterinary practice cares for the Fresno K-9s, referred Saxon to the UC Davis VMTH intensive care unit, where his lung trauma, fractures and soft tissue injuries could be monitored, and he could receive oxygen therapy and surgery.

Saxon was released September 5 and was scheduled for further x-rays to make sure his bones were healing properly. He has assumed a new role with the Fresno Police Department in public relations.
INTERNATIONAL PROGRAMS

VET STUDENTS AID EL SALVADORAN FARMERS

Two veterinary students opted for an unusual holiday break this year—they spent ten days as volunteers in El Salvador teaching members of a women’s farming cooperative how to manage the health of cattle. The animals are being raised as part of an agricultural development program.

The two, Gustavo Soberano (’03) and Sarah Schroer (’03), along with fellow student volunteers Fauna Smith (’05) and Masae Suda (’04), are developing a concept they call Veterinary Assistance and International Development, or Vet AID. “This is our initial project,” says Mr. Soberano.

“The SHARE Foundation of San Francisco contacted us to see if we would donate veterinary first aid kits,” he says. The foundation sponsors the Marta Gonzales Women’s Cattle Cooperative located in Jiquilisco, in the eastern province of Usulután. In addition to the requested supplies, the students decided on a more long-lasting contribution—their time.

The students have experience with foreign languages and international settings—Ms. Schroer served in the Peace Corps; Mr. Soberano, a native of Mexico, has lived in El Salvador and worked with other agricultural cooperatives; Ms. Suda’s special interest is Africa, where she once lived; and Ms. Smith has experience with food animals.

In August 2002, Smith traveled to El Salvador to meet with members of the cooperative. The 200 women, mostly war widows and single mothers, purchase calves with loans, which are repaid when the calves are raised and sold. They are most interested in learning how to recognize disease in their animals and perform some simple procedures.

In December, Soberano and Schroer taught members of the cooperative how to recognize signs of poor health in cattle, safely restrain their animals, give injections, and castrate bulls using a Burdizzo clamp. With veterinary care up to 90 minutes away, these kinds of skills are essential to the ongoing success of the calf-rearing program.

After the seminar, says Soberano, “We gave them ‘homework’—the women went in groups of three to observe animals in the local market, and came back able to give reasons pro and con whether to purchase them.” Schroer and Soberano also examined some sick animals and collected serum samples for analysis to find out which diseases are most prevalent in the region.

Schroer says the group is planning additional seminars on recognizing common diseases, basic obstetrics, and treatment of common conditions. “We are raising funds for construction of a community cattle chute and collecting donated products for the establishment of a community livestock pharmacy.” Several more students have expressed interest in the next visit to El Salvador, scheduled for June.

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