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EQUINE STEM CELL THERAPY

Regenerative Medicine Laboratory Opens

Stem cell therapy is a reality for horses since the Regenerative Medicine Laboratory opened May 18. The new program provides processing, culture and storage of stem cells that have been collected from a horse's own bone marrow or fat. Faculty clinicians collect samples from patients, grow the cells in the laboratory and treat their patients just a few weeks later.

"The marvelous thing about stem cell therapy is that it holds the promise of a cure," says Sean Owens, director. "We can use pharmacological medicine to alleviate the pain associated with orthopedic injuries in horses, but only with biological medicine such as stem cell therapy can we actually repair the damage."

Why research?

Even as stem cells are harvested and treatments take place, the veterinary team is determined to learn exactly how and why stem cells help heal joint injuries.

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WILDLIFE, HUMAN HEALTH

"One Health" Program Cares for Wild Mountain Gorillas and Human Neighbors

A new "One Health" program aims to conserve the world's remaining 740 mountain gorillas by caring for not only the gorillas but also the people and the other animals that share their home in the forests of central Africa.

With \$750,000 in funding from the David and Lucile Packard Foundation, the Mountain Gorilla One Health Program is part of the school's Wildlife Health Center. The new program partners with the existing Mountain Gorilla Veterinary Project to continue improving gorilla health and survival by addressing human health, livestock health and agricultural issues.

"The concept of 'One Health'—that human, animal and environmental health are inextricably linked and should be considered holistically—is a core principle of the UC Davis Wildlife Health

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Michael Cranfield, director of the Mountain Gorilla Veterinary Project, and Kirsten Gilardi, assistant director of the Wildlife Health Center who leads the new "One Health" program, discuss its goals at a press conference April 23.



BUDGET IMPACTS

Funding Crunch Yields Layoffs, Lab Closure

State Cuts Will Lead to Further Layoffs

The School of Veterinary Medicine has lost more than 110 employees in 2008 and 2009, half through attrition and half through layoff actions. Widespread cuts have affected the teaching hospital, academic departments, dean's office, UC Veterinary Medical Center—San Diego, Veterinary Genetics Laboratory, California Animal Health and Food Safety Laboratory and other units. Another round of cuts is in progress as the state responds to the failure of the May ballot measures and increasing revenue deficits.

CAHFS Closes Fresno Laboratory

In one of its most difficult decisions, the California Animal Health and Food Safety Laboratory closed its 59-year-old Fresno branch July 19. The laboratory system, managed by the school since 1987, now operates laboratories at UC Davis, Turlock, Tulare and San Bernardino. The network receives approximately 80 percent of its funding from the California Department of Food and Agriculture. The remainder of its revenue comes from fee-for-service testing provided to veterinarians and agricultural producers. The closure affected more than 20 employees, resulting in reassignment of three faculty positions and layoff of the remaining scientific and administrative personnel.

Testing services at the Fresno branch included monitoring for poultry disease, brucellosis, tuberculosis and avian viruses. The laboratory system redistributes essential disease surveillance and control testing operations to other facilities to protect California's livestock and poultry health, and to protect public health and food safety. Everything possible is being done to minimize any delays in testing associated with this change.

COMMENCEMENT 2009

Graduates Celebrate Family, Friends, and the Bond with Animals

Dreams came true June 12 when UC Davis Provost and Executive Vice Chancellor Enrique Lavernia conferred Doctor of Veterinary Medicine degrees on 118 students. The school also gave certificates of completion to 18 Master of Preventive Veterinary Medicine (MPVM) degree candidates and 40 hospital residents.

During the 2009 commencement ceremony, Lavernia told the graduates that their class had enjoyed several milestone events, including the campus centennial, the school's 60th anniversary and the openings of Gladys Valley Hall and Veterinary Medicine III A. He said, "A new building is a rare event and exemplifies the academic soul. It is a sign of optimism and faith of the people who support and believe that we will be here for many generations."

"A new building... is a sign of optimism and faith of the people who support and believe that we will be here for many generations."

The School of Veterinary Medicine Medal went to Charlotte Rockwood, who will practice small animal medicine in Ventura, Calif., for demonstrating the highest level of academic achievement and clinical performance. Student speakers Abel Gonzales, zoological medicine track, and Calaveras Cunningham, small animal track, took turns at the microphone to give a rapid-fire review of the classmates' experience and their shared belief that "the bonds between people and their pets are equal to none." Cunningham thanked parents and friends for their support, and Gonzales concluded, in Spanish, with heartfelt thanks to his family.

Students chose imaging specialist Rachel Pollard to speak on behalf of the faculty. Pollard, who directs the residency program at the William R. Pritchard Veterinary

Medical Teaching Hospital and the Don Low Fellowship Program for veterinarians, described the class as a diverse group of high-achieving individuals. She reminded them to "cherish this special moment" together at commencement and endeavor to maintain the precious friendships of veterinary school.

She gave one piece of advice: "Go skiing," saying that veterinarians need to enjoy their lives as well as their livelihoods.

Left: Faculty Marshal Jonna Mazet "hoods" Bergin Tam. Below: Provost Enrique Lavernia congratulates Karen Kaplan. Right: Two graduates will cherish the friendships they've forged at the School of Veterinary Medicine.



Photos: Don Preisler



DEANS RECEIVE HIGH HONORS FOR LEADERSHIP

Frederick A. Murphy, who led the school as dean from 1991 to 1996 has received the 2009 Penn Vet World Leadership Award from the University of Pennsylvania. The award is given annually to a veterinarian who has dramatically changed the practice and image of the profession and substantially influenced the lives and careers of others.

"As an internationally acclaimed authority in comparative virology, Dr. Murphy is a pioneering researcher, respected advisor in health policy and outstanding spokesperson for the veterinary profession, which has led to his unparalleled contributions to veterinary medicine," says Joan Hendricks, Penn's Gilbert S. Kahn Dean of Veterinary Medicine.

Murphy's greatest impact on the future of the profession is his expertise in the field of infectious disease. Murphy has played a leadership role in the study of viral pathogenesis and has articulated clearly the role of animal pathogens in new and emerging diseases.

"I really cannot believe that this great honor has come to me," says Murphy. "I would like everyone to know how proud I am of the veterinary medical profession and the veterinarians I have known around the country and around the world."

Murphy is currently the James W. McLaughlin Professor in Residence, Department of Pathology at the University of Texas Medical Branch at Galveston, Texas.



Dean Emeritus
Frederick Murphy

The Association of American Veterinary Medical Colleges has presented Dean Bennie I. Osburn with the Melcher Leadership in Public Policy Award. This honor, named after former Montana senator John Melcher, DVM, recognizes outstanding contributions to public policy initiatives that advance veterinary medical education.

"Dr. Osburn, who has been so influential in the growth of AAVMC's advocacy initiatives...has been a tireless champion of the veterinary profession and academic veterinary medical education," says Executive Director Marguerite Pappaioanou. The award was bestowed March 16.

Osburn, the school's dean since 1996, served as president of the Association of American Veterinary Medical Colleges from 2003 to 2005. He launched a national initiative to strengthen the infrastructure of U.S. veterinary schools and meet an urgent national need for public practice veterinarians. Dean Osburn also steered the association's effort with the U.S. Department of Agriculture's Animal and Plant Health Inspection Service and the U.S. military to begin rebuilding veterinary colleges in Afghanistan and Iraq. Other contributions to the profession and veterinary education include the initiation and implementation of the association's public health task force, which has increased the number of joint or post-graduate public health programs from four to 22 in the 28 U.S. colleges of veterinary medicine.

He is currently serving on the National Academies Panel on Assessing the Current and Future Workforce Needs in Veterinary Medicine and the Legislative Advisory Committee of the American Veterinary Medical Association.



Dean Bennie Osburn

SCHOOL HONORS ALUMNI

The school bestowed its highest honor, the Alumni Achievement Award, on four distinguished alumni during commencement, 2009:

David Jessup (MPVM, 1984) senior wildlife veterinarian for the California Department of Fish and Game's Office of Spill Prevention and Response, for his contributions to the development and growth of wildlife and conservation medicine.

Linda Lowenstine (DVM, 1973; PhD, comparative pathology, 1983), professor in the Department of Pathology, Immunology and Microbiology at the UC Davis School of Veterinary Medicine, for her contributions to the advancement of comparative pathology in nondomestic animal species.

Douglas Mader (MS, 1982; DVM, 1986; residency, primate/zoo animal medicine, 1988), owner and director of Marathon Veterinary Hospital, a group referral practice in Marathon Key, Florida, for his contributions to the welfare of animals as a teacher, researcher, author and practitioner.

M.D. (Mo) Salman (MPVM, 1980; PhD, comparative pathology and quantitative epidemiology, 1983), professor of epidemiology at the Animal Population Health Institute, Colorado State University, for his global contributions to animal population health and veterinary epidemiology.



From left: David Jessup, M.D. (Mo) Salman, Linda Lowenstine and Douglas Mader

Owner or Guardian—Does Terminology Choice Affect Human-Animal Bond?

In 2007, student Timothy Helms, class of 2010, and Melissa Bain, chief of the Animal Behavior Service, evaluated whether dog owners who are legally considered “owner/guardians” are more attached to their pets than those legally considered “owners.” Animal rights activists have pressed for municipalities to change the wording to “guardian” in an attempt to improve the care of animals, while others argue that the effort, if successful, will limit the rights of owners.

Helms surveyed 274 dog owners in clinics from two locations: Berkeley, where dog owners have been designated as guardians, and Hayward, where no such distinction has been declared. Residents legally considered guardians actually showed lower attachment scores than their counterparts in the non-guardian city.

“Our hypothesis was that there would be no differences between owners and owner/guardians in regard to attachment level and problem behaviors,” Helms says. His project took place in the school’s Students Training for Advanced Research (STAR) program, and the study was published in *Journal of the American Veterinary Medical Association* in April.

“We were not surprised to find out that owner/guardians were not more attached, but were a bit surprised that they were significantly less attached to their dogs,” says Helms. “We also thought that most people in Berkeley would not even know what

the law referred to them as—and we were correct. Only one person had a true grasp of the owner/guardian issue.”

“The STAR program is a wonderful way to help students to think like scientists,” Bain says. “Tim, through the program, has contributed to the knowledge that our profession builds upon.”

Helms measured his success in part by the study’s ability to provoke further discussion, saying, “We feel that this study should raise a lot of questions.”

Meanwhile, even with the potentially huge legal impacts of changes in the terminology, Helms adds, “Most owners are attached to their dogs regardless of how their city refers to them.”

Regenerative Medicine

Continued from page 1

“I was starting to see positive response in clinical cases,” recalls equine surgeon Larry Galuppo. “We don’t want to use cellular therapy without understanding how it works. This is why we have developed a comprehensive five-year research program to support clinical therapy.”

The research program is coordinated by the Center for Equine Health. Scientists from the School of Veterinary Medicine and the School of Medicine are developing methods for collecting, processing, storing and administering stem cells to repair bone, tendon and ligament injuries in horses. The investigation may also provide preclinical data for human stem cell therapies. Early findings indicate that stem cell treatments may reduce the recurrence of certain tendon and ligament injuries and lessen the progression of arthritis associated with traumatic joint diseases in horses.

Dick and Carolyn Randall, reining-horse enthusiasts from Cupertino, donated core funding for the \$2.5 million study.

In the clinic

Stem cell collection kits are available to private veterinarians who can harvest stem cells from their equine patients and send the cells to the laboratory for processing or storage until the cells are returned to them for patient treatments. Some horses will be referred to the teaching hospital for treatments.

“Traditional surgical treatments will still occur,” says Galuppo, who injected some 12 million cells into the stifle joint of an equine patient on the day the lab opened. “This therapy is not a miracle drug or cure-all, but it gives us hope where there may be none.”

Robin Bell, UC Davis veterinarian and equine surgeon, demonstrates how stem cells were harvested from an equine patient handled by Stephanie Roskin, veterinary technician.



Julie Burges, animal health technician and lab supervisor, works with an automated system that separates red blood cells and plasma, while concentrating stem cells from equine bone marrow samples in the laboratory.



FDA FUNDING EXPANDS SPECIALTY CROPS RESEARCH

The Western Institute for Food Safety and Security (WIFSS) has received \$1,132,500 as part of a five-year Food and Drug Administration grant to establish the Western Center for Food Safety. The joint agreement, developed with partners from WIFSS, the greater UC Davis community and the FDA, supports research, outreach and education programs that improve the safety of FDA-regulated foods.

Rob Atwill, interim director of WIFSS, says that the funding will expand the institute's existing food safety programs, especially in the area of microbial food safety of specialty crops grown throughout California and the western United States. The grant will also build new links that will encourage development of solutions to food safety challenges in partnership with FDA centers and offices, other governmental agencies, private industry and academia.

"Key projects focus on vertebrate sources and transport processes of pathogens such as *E. coli* O157:H7 and *Salmonella*, food safety of tree nuts, development and validation of on-farm management practices for improving microbial food safety, and enhancing the safety of irrigation and drinking water supplies used in coastal and central California," says Atwill.

LEAFY GREENS STUDIES ARE LAUNCHED

The Center for Produce Safety at UC Davis and the California Leafy Greens Research Program awarded grants in March to seven leading scientists to provide the produce industry with research data to mitigate the food safety risks associated with leafy greens production.

Funded equally by the two organizations, the awards represent the Center for Produce Safety's first collaboration under the "Partners in Research" program. Partners' grants are codeveloped

and cofunded with industry partners to address the research priorities of specific commodities, commodity groups and/or growing regions.

The seven research projects will be conducted by investigators who include Bruce Hoar, DVM, PhD, assistant professor at the School of Veterinary Medicine who studies infectious disease epidemiology in livestock; Linda Harris, PhD, associate director of WIFSS, in which the school is a partner; and other UC Davis faculty members. Their study topics include the epidemiology and persistence of *E. coli* O157:H7, minimizing pathogen transference during lettuce harvesting, food safety risks associated with sheep grazing in vegetable stubble fields, and fly reservoirs of *E. coli* and their role in contamination of leafy greens.

WIFSS is a UC Davis program collaborating with the California Department of Food and Agriculture, the California Department of Public Health, the U.S. Food and Drug Administration and the U.S. Department of Agriculture.

HUMAN AND ANIMAL HEALTH

Low Levels of PCBs Alter Brain Cells

Veterinary researchers have discovered compelling evidence of how low levels of polychlorinated biphenyls (PCBs) alter the way brain cells develop.

"With these studies we have now shown—from the whole animal level to the molecular level—how PCBs alter the development and excitability of brain cells. And that could explain why PCBs are associated with higher rates of neurodevelopmental and behavioral disorders," says Isaac N. Pessah, co-author of three studies published in spring 2009.

Pessah, a professor of molecular biosciences, directs the Center for Children's Environmental Health, which investigates the root causes of autism. The three studies make a compelling case for the mechanism behind PCBs' harmful effects on human neurological development.

The team found that low-level, in utero and neonatal exposure to PCBs altered the development of brain cells in rats. Pamela Lein, lead author of the animal study and associate professor of molecular biosciences, says, "It has been difficult to establish a cause-and-effect relationship from the human epidemiological literature without a known mechanism. Now that we have a plausible biological mechanism that could account for neurodevelopmental deficits, we can use the information for diagnosis and for developing potential treatments for PCB exposure."

In the second study, researchers showed which PCBs affected brain-cell circuits in the hippocampus, a region of the brain known to be impaired in several complex neurodevelopmental disorders including autism.

The third study describes in detail the molecular target of the PCBs, the

calcium channels known as ryanodine receptors, and shows that PCBs lock these calcium channels in the open position. This likely contributes to the overexcitations on neural circuits observed in the two other studies.

PCB production was banned in the 1970s. The compounds do not break down in the environment—they accumulate in animals' bodies. Exposure occurs when chemicals dumped into the environment years ago are released into the air or leach into groundwater and contaminate fish that people eat.

"Not only will this help us deal with current exposures," Pessah says, "but we can also identify similar compounds that have come online since PCBs were banned, and make better decisions about which ones we restrict and which new ones we allow to come to market." For more details: <http://www.vetmed.ucdavis.edu/whatsnew/article.cfm?id=2011>



About Mountain Gorillas

Except for four orphaned youngsters being prepared for release, there are no mountain gorillas (*Gorilla beringei beringei*) living in captivity. (Gorillas commonly seen in zoos are Western lowland gorillas, *Gorilla gorilla gorilla*.) About 740 mountain gorillas remain in the wild, living in the Virunga Mountains where the borders of Uganda, Rwanda and the Democratic Republic of Congo intersect. Because of the popularity of tourism treks to see the gorillas, and constant monitoring of 75 percent of the population by rangers and researchers, each gorilla receives on average 2,000 to 3,000 human visitors each year.

Mountain gorillas are susceptible to the “childhood” diseases of people, as well as most other infections. But they are a wild population and thus not vaccinated. If there were an outbreak of measles or influenza in the local community of people living near a gorilla park, it could spread to the gorillas.

In addition to diseases, mountain gorilla populations remain extremely vulnerable to habitat loss and poaching. They live in fragments of habitat surrounded by the densest human populations in Africa. Their forests are sometimes in war zones and are cut down for production of charcoal. They also fall victim to snares set by poachers for gorillas or other “bush-meat” animals, such as small antelope and monkeys.

One Health

Continued from page 1

Center,” says wildlife veterinarian Kirsten Gilardi, who leads the Mountain Gorilla One Health Program. “We are proud to become partners with the Mountain Gorilla Veterinary Project, one of the few true, on-the-ground examples of One Health in action anywhere in the world.”

The Mountain Gorilla Veterinary Project’s longtime director, veterinarian Michael Cranfield, joins the UC Davis staff while continuing to oversee the work of the project’s seven veterinarians and 12 technicians and staff members in Rwanda, Uganda and the Democratic Republic of the Congo.

“The collaboration with UC Davis will help improve the health and welfare of the humans and animals living around the gorillas,” Cranfield says. “This in turn acts as a buffer to help prevent disease—the gorillas’ leading cause of death—from entering the park and affecting gorilla families.”

“The collaboration with UC Davis will help improve the health and welfare of the humans and animals living around the gorillas.”

UC Davis will investigate disease threats facing mountain gorillas, help expand medical care for humans working in and around the gorilla parks, and improve the health and well-being of livestock to benefit the families who depend on them for nutrition and income.

The Mountain Gorilla Veterinary Project was established in 1986 by the Morris Animal Foundation at the request of primatologist Dian Fossey, who saw that the population was dwindling rapidly, in part due to sickness and injuries caused by poachers.

Combined with anti-poaching patrols and habitat-protection efforts of the Rwandan, Ugandan and Congolese governments and other organizations, the Mountain Gorilla Veterinary Project’s medical program has helped increase the number of mountain gorillas by 17 percent in the past 10 years, making the mountain gorilla the only wild great ape whose numbers are rising, not falling.

“Over the years, several faculty members here at UC Davis have been integral to the conservation of mountain gorillas, so it feels very fitting that UC Davis form this partnership with the Mountain Gorilla Veterinary Project to continue helping with the conservation of this very special animal,” says Bennie Osburn, dean of the School of Veterinary Medicine.

“The concept of ‘One Health’ is a core principle of the UC Davis Wildlife Health Center.”

“The complexity of the issues surrounding mountain gorilla health and conservation spurred the Mountain Gorilla Veterinary Project to seek new ties with an academic institution that could provide expertise in human medicine, veterinary medicine and agriculture,” Gilardi says. “UC Davis was the perfect fit.”

The Mountain Gorilla One Health Program will create expanded research opportunities for UC Davis veterinary, medical and graduate students in Davis and in the gorillas’ habitat within Rwanda, Uganda and the Democratic Republic of the Congo. The program will also allow veterinary staff and biologists from these countries to obtain advanced clinical and scientific training.

“Mountain gorillas are majestic and powerful creatures, susceptible to the same problems threatening the health of local communities and the globe,” says Wildlife Health Center director Jonna Mazet. “We are honored to contribute the university’s resources to this unique partnership aimed at saving the gorillas, their home and ourselves.”

THANK YOU NOTES

LEGACIES ADVANCE THE VETERINARY PROFESSION

AWARDS ACKNOWLEDGE SCHOLARSHIP, LEADERSHIP AND SCIENTIFIC EXCELLENCE

The second annual Department of Pathology, Microbiology and Immunology Awards Ceremony held April 24 recognized graduate and veterinary student and faculty achievements.

Graduate student **Denise Imai** was awarded the Cordy Prize, which recognizes students who have demonstrated excellence in and dedication to veterinary pathology and the study of animal diseases. Donald Cordy was a founding member of the UC Davis Veterinary Pathology Department and charter member of the American College of Veterinary Pathologists. **Anthony Derouen** received the veterinary student award.

The Donald Dungworth Memorial travel fund was awarded to graduate student **Heather Workman**. Dungworth was a faculty member for 31 years and served as department chair from 1969 to 1993. Established in 2005 by his wife, Teri, and children, and sponsored by trainees he mentored, the Dungworth fund promotes academic careers in pathology and graduate education to advance pathology research. It is given to an individual whose thesis work advances comparative pathology. **Teri Dungworth** accepted the Distinguished American College of Veterinary Pathologists Membership Award in honor of her late husband.

Graduate student **Jennifer Luff** received the Peter C. Kennedy Endowed Fellowship in Anatomical Pathology. Kennedy joined the faculty in 1954 and was an inspirational educator of veterinary pathologists for 52 years. Given to an individual whose investigations of natural disease reflect his legacy, Kennedy's award provides training support for graduate students in anatomic pathology to ensure future generations of veterinary pathologists.

The C.L. Davis award was presented to graduate student **Jennifer Johns**. The award recognizes a resident or graduate student who has displayed superior scholarship, excellent leadership, research ability and diagnostic skills.

The Dr. Jerry and Mrs. Teresa Kaneko Faculty Development Award in Clinical Pathology was presented to **Sean Owens**, assistant professor of clinical pathology and director of the school's new Regenerative Medicine Laboratory.

Keynote speaker **James C. DeMartini** spoke about the "Adventures of a Disease Detective." DeMartini, class of '66 and professor of pathology at the Colorado State University College of Veterinary Medicine and Biological Sciences, is internationally recognized for his distinguished contributions to ruminant infectious disease research, veterinary pathology and veterinary medical education.

COMPANION ANIMALS

School Showcases Clinical Care and Studies to Improve Animal Health

More than 130 donors to the Center for Companion Animal Health and the Veterinary Medical Teaching Hospital learned about clinical studies and patient care efforts under way at the school, during the Spring Showcase May 27.

Faculty from diverse areas such as critical care, community practice, internal medicine and medical oncology gave overviews of their ongoing work to improve animal health. Many four-footed patients were on hand with their owners, who shared stories of the animals' recovery.

Dr. W. David Wilson, director of the Veterinary Medical Teaching Hospital, and volunteer **Kathy Dreher** hold Burmese kittens belonging to Save Our Cats and Kittens from Feline Infectious Peritonitis (SOCK FIP) member **Nancy Reeves**.



Photos: Don Preisler



The Fishers attended Spring Showcase with their dog, Maggie, who was hit by a car and survived severe injuries after being treated by Dr. Karl Jandrey (holding Maggie, center).

Practitioner, Faculty Select Students



Mike Ina played an important role in selecting the class of 2013—students who begin the professional curriculum in September.

Ina (DVM, UC Davis, 1974) was the practitioner member of this year's Admissions Committee. He owns Arguello Pet Hospital in San Francisco, a six-veterinarian practice that focuses on small animals and pocket pets. The Admissions Committee includes five UC Davis faculty members who serve for two years, and a practitioner, who brings a unique perspective to the admissions process.

"When I interview applicants, I try to access their practical and operational approach to medicine," says Ina. "I ask questions about topics such as difficult working relationships, difficult client situations, ethical dilemmas or operational problems that may arise in a small animal clinic."

The Admissions Committee members collaborate to ensure a rigorous, fair process to select the students most likely to succeed in veterinary school, taking into account academic and nonacademic factors including grade point averages, Graduate Record Examination scores, letters of evaluation, personal statements and veterinary experience.

The committee narrowed down 1,135 applicants to 235 interviewees, and 133 were selected for admission. "It's difficult when there are so many excellent candidates," says Ina. "I've enjoyed the process much more than I ever thought I would. It's quite an honor to be in the profession, and this is a way I can contribute to the next generation of veterinarians."

For more information about the professional curriculum, academic preparation, selection criteria, the application process and admission statistics, see the Guide for Prospective Students, available online (www.vetmed.ucdavis.edu/StudentPrograms).

CE CALENDAR

CENTER FOR CONTINUING PROFESSIONAL EDUCATION

2009

25th Annual George H. Muller Veterinary Dermatology Seminar in Hawaii
November 4–11, 2009, Kauai, Hawaii

11th Annual Veterinary Endocrinology & Internal Medicine Seminar
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2010

Biennial Adventure Series,
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