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### EQUINE HEALTH

## Track in a Box: Collaborative Research Aims to Improve Racetrack Safety

Jacob Setterbo, PhD candidate in the Biomedical Engineering Graduate Group, and Susan Stover, director of the school's JD Wheat Veterinary Orthopedic Research Laboratory, are collaborating with UC Davis sports dynamics and soils science experts—Dr. Mont Hubbard, Mechanical and Aeronautical Engineering, and Dr. Shrinivasa Upadhyaha, Biological and Agricultural Engineering—to evaluate how different racetrack surfaces affect the hooves and fetlock joints of racehorses.

Using a “track in a box,” designed with input from racetrack personnel, veterinarians and engineers, the scientists will gather data for computer models to characterize how different track surfaces, from traditional dirt to newer synthetic racetracks, affect the equine lower limb.

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DVM students begin the rigorous and comprehensive curriculum studying the normal gross anatomy of the canine head in the school's multi-purpose teaching facility, which opened in 2007.

### MEET THE CLASS OF 2013

## STUDENTS BEGIN DVM CURRICULUM

Dean Bennie Osburn welcomed 134 new students—the school's 62nd class—as they checked in September 1, met one another and prepared for four years of veterinary study.

He described some of the programs and resources of the school—the teaching hospital, Tulare facility and San Diego specialty clinic, for example—that give students so many opportunities to learn basic clinical skills and see complex cases in preparation for practice. He encouraged the students to “embrace opportunities that will set you on the course of your career.”

He noted that the size of the programs, the number and variety of specialties and the productivity of faculty researchers share one goal: “Our efforts are directed at making you the best veterinarian that you can be.”

The school's five-day orientation program included the White Coat Ceremony, signifying a student's official entry into the veterinary profession.

*Continued on page 2*

## Students Begin DVM Curriculum

Continued from page 1

Much of the DVM program occurs in the William R. Pritchard Veterinary Medical Teaching Hospital, where faculty and highly trained staff treat more than 30,000 animals each year while teaching essential clinical skills that are expected of graduates. Veterinary students have two-week assignments in the different hospital services according to their areas of emphasis. The members of the class of 2013 will also be eligible to take advantage of a variety of firsthand experiences that include scientific research, dairy medicine in the field and international student exchanges.

Even as classes began September 8, the Office of Student Programs was gearing up for next year's applicants, who had until October 2 to submit their applications to veterinary school.



Dean Osburn greets each member of the class of 2013 during the school's White Coat Ceremony.

Photos: Don Preisler



Students work together in the gross anatomy laboratory to learn about the normal canine locomotor system.

## Entering Class Statistics

The class of 2013 includes 111 women and 23 men (the 1,135 applicants included 930 women and 205 men). The average age is 24, with a range of 20 to 45. Students report the following areas of interest: small animal (48), avian/exotic (5), equine (15), small animal/equine (9), research (7), zoo (6), wildlife (3), mixed (8), large animal (9), food animal (10), laboratory animal (9), academics/teaching (2) and dairy (3).

Thirty-nine students attended UC Davis, 26 are from other University of California campuses, 30 attended California State University and 15 attended other California schools.

Prior to admission, successful applicants completed an average of 3,100 hours of veterinary experience. Sixteen students will enter the professional program having already earned a master's (14) or doctoral degree (2).

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](http://www.vetmed.ucdavis.edu/StudentPrograms)).

### HUMAN HEALTH

## FRUCTOSE OR GLUCOSE?

School of Veterinary Medicine researchers recently investigated how different beverage sweeteners affect the metabolism and pose specific health risks to certain individuals.

The *Journal of Clinical Investigation* published the 10-week study, "Consuming fructose-sweetened, not glucose-sweetened, beverages increases visceral adiposity and lipids and decreases insulin sensitivity in overweight/obese humans." Kimber L. Stanhope and Jean Marc Schwarz (co-first authors), worked with principal investigator Peter Havel, Department of Molecular Biosciences, and others to complete the study.

The team found that beverages sweetened with fructose—but not glucose—can adversely affect sensitivity to insulin. Overconsumption of fructose-sweetened drinks can also affect how the body handles fats, creating medical conditions that increase susceptibility to heart attack and stroke.

Participants in both the "fructose" and "glucose" groups gained about the same amount of weight. However, those who drank beverages sweetened with fructose showed an increase in fat inside the abdomen, considered more dangerous than subcutaneous fat. Further, only these individuals became less sensitive to insu-

lin. They also showed signs of increased lipids in their blood, and other metabolic changes occurred in the liver.

While the long-term role of excess fructose in cardiovascular disease and diabetes is still unknown, the journal's editors stated, "Stanhope and colleagues provide major scientific progress by demonstrating marked differences in the metabolic effects of these two major sugars."

Thanks to the *Journal of Clinical Investigation* for summaries adapted for this report ([www.jci.org/articles/view/37385/version/4](http://www.jci.org/articles/view/37385/version/4)).

## BUDGET FALLOUT

### School Prepares for \$4 Million Hit

As UC Davis wrapped up its centennial year and looked to the future with the arrival of new chancellor Linda Katehi, the administration announced 10 to 26 mandatory furlough days for faculty and staff in 2009–10, including seven campus closure/work-furlough days, to help with the budget crisis.

The School of Veterinary Medicine expects to face a \$3 million funding gap for 2009–10, which is likely to force the loss of more staff positions and programs, temporary pay cuts and work furloughs, and administrative restructuring, according to Dean Bennie Osburn.

The reduction in state funds for the school, combined with a declining market for veterinary services that has affected the veterinary teaching hospital, has resulted in a drop of \$2.6 million for the coming year. As the state's financial situation has worsened, this decrease will probably settle out at \$4 million, Osburn projects.

"We met our target reductions in the spring," Osburn told staff members at

a meeting in August. "When the state announced further cuts, we began planning for a new target."

Consolidation of personnel, reduction in animal colonies, reduced funds for computer replacement and other actions have lowered some expenses. The school has reprioritized faculty recruitments, placing 12 positions on hold and only moving forward with five critical positions. Administrators have closed the Pet Loss Support Hotline, eliminated the Veterinary Graduate Academic Program, and merged graduate group administration. Student tuition and fees have also been increased. Alumni-practitioner outreach has been incorporated into other programs.

Osburn has charged a faculty-staff committee to identify how the school's more than 30 other units can consolidate related administrative duties. He noted plans to generate additional income to help fiscally stabilize the school through equine stem-cell treat-

## William R. Pritchard VMTH

"Despite the furloughs and budget cuts, the Veterinary Medical Teaching Hospital will be open for business as usual, thanks to the extraordinary efforts of the staff and faculty," says Associate Dean and VMTH Director David Wilson. "Our first priority is to provide for the health and welfare of our animal patients by delivering timely, high-quality service and support to animal owners and referring veterinarians. At the same time, we are committed to minimizing disruption of our didactic and clinical teaching programs."

ment services and a proposed Center for Pet Care, a joint venture in nutrition surveillance with Mars, Inc.

The UC administration has yet to determine how the 10-campus system will absorb future cuts in state funding. Those decisions will, in turn, affect the school's short-term financial tactics and long-term planning.

—Adapted from *Dateline UC Davis*

## SMALL ANIMAL AND EQUINE HEALTH

### Practitioners Seminar Features Faculty, Services of the Veterinary Medical Teaching Hospital

The first annual UC Davis Veterinary Practitioners Seminar took place September 13. About 200 visiting veterinarians found a broad array of contemporary topics dealing with small animals and equine medicine.

The hospital-centered continuing education seminar combined professional development with new opportunities for advancing veterinary care.

Hospital Director David Wilson commented, "The speakers, all faculty

members in the William R. Pritchard Veterinary Medical Teaching Hospital, did an outstanding job of providing the practitioners with new information they can apply daily in their practices. We were also able to showcase the hospital's high-quality services available to referring vets and their clients."

Small animal clinicians outlined cancer care, new cardiac and other surgical options, indications for referrals for specialized imaging, an update on urinary tract disease and more.

On the equine side, attendees received new information about behavior, stem cell therapies, diagnosing lameness, colic treatment outcomes and distinguishing facts from myths about vaccines.

Calling the speakers "enthusiastic" and "organized," several participants evaluated the event as an excellent



The first Veterinary Practitioners Seminar, a continuing education program hosted by the teaching hospital, was held in Gladys Valley Hall, the school's instructional facility.

guide to making appropriate referrals to the teaching hospital.

Along with the formal program, practitioners met informally with faculty and mingled with residents and staff.

Wilson is already planning for next year. "We want to continue building relationships with our current and future referring veterinarians through CE," he said. "We can help their patients, and the patients help us train our veterinary students and residents."



## THIRTY-SIX STARS ALIGN: SUMMER 2009

Red-tailed hawks, diabetic rats, and lemurs—projects with these and other species reflect the scientific curiosity of 36 veterinary students in the 2009 Students Training in Advanced Research program, or STAR.

The STAR program fosters interest in research careers through 10-week fellowships with faculty mentors.

“Because there’s a shortage of veterinary researchers,” says Kent Lloyd, associate dean for Research and Graduate Education, “we provide financial incentive for students to forgo summer jobs and explore this avenue of veterinary medicine.” The program pays each student \$5,500 from school funds, foundations and corporate sponsors.

Chalk talks and a poster session showcase results each year and prepare students to explain their work. Mia Lieberman, class of 2011, won a prize in June 2009 for her scientific poster on bacteriophages and infection. Her project was supported by STAR and the Morris Animal Foundation in 2008.

Projects in 2009 included examinations of birds and other wildlife, a study of rats with diabetes, a model of brain injury, and diagnostics in domestic and wild species.



Aimee Reed, class of 2011 and STAR, studied lemur health.

## STAR International Projects

“I had the incredible opportunity to spend four weeks alongside Dr. Scott Larsen at Beza Mahafaly Special Reserve, Madagascar, collecting data on the free-range ring-tailed lemurs,” reports Aimee Reed, class of 2011. She and Larsen, an assistant professor and zoological medicine specialist, collaborated with the Lemur Biology Project.

Reed says, “I will be screening [blood and fecal] samples for antigens or antibodies against diseases such as hepatitis, measles, toxoplasmosis and rotavirus. I hope to compare this year’s results to last year’s samples to gain a longitudinal perspective on immunological status.”

The STAR curriculum includes scientific communication, ethics, laboratory experience and methods, and other tools of veterinary practice. While not every STAR student pursues a research career, several have entered the Veterinary Scientist Training Program to earn dual (DVM/PhD) degrees.

For more information, visit the STAR Web site ([www.vetmed.ucdavis.edu/research/Funding/STAR/star.cfm](http://www.vetmed.ucdavis.edu/research/Funding/STAR/star.cfm)).

## CANINE PHYSICAL REHABILITATION

## Mechanical Walkers Get Dogs Back on Their Feet

Unlike humans, even dogs with spinal cords that have been completely severed can get back on their feet. But they need a lot of therapy to accomplish the task.

During rehabilitation sessions with paralyzed canines at the William R. Pritchard Veterinary Medical Teaching Hospital, physical therapist Jackie

Liese Greensfelder, UC Davis photo



Woelz manually supports her patients’ weight, with her hand under the sternum between the animal’s front legs. Woelz says that, to the best of her knowledge, there’s no device available that can do as good a job supporting the dogs.

“The slings and carts on the market now create restrictions around the legs,” she says. “I can’t hold up every dog that needs help, so I needed a device to fill the gap.”

During winter and spring quarters, two student teams worked with Woelz to do just that. A biomedical engineering group designed a mechanism to hold smaller dogs while a mechanical engineering group designed one for larger animals.

One day in June, four mechanical engineers wheeled the culmination of six months of their design and fabrication work into the Physical Rehabilitation Service. They were

greeted by 7-year-old Chelsea, a Lab/shepherd mix, whose surgery for a brain tumor in December had left her with severely diminished use of her left legs.

Chelsea didn’t pay much attention to the adjustable, padded supports and side rails that were being fitted under and around her. The dog stood motionless for a moment, then pulled forward with her two good legs. After some adjustments, she was once again mobile, supported by the students’ apparatus.

Referring to the students as “professional and so ingenious,” Woelz says, “The supports work. They are going to help a lot of our patients.”

*During the same period, another engineering student team took their professor’s challenge to solve a real-world problem by adapting a laryngoscope that allows veterinarians to access the long throat of a llama.*

**The College of Engineering and School of Veterinary Medicine frequently collaborate on biomedical investigations. From left, engineering students Nelson Dichter, Jay Panchal, Blake Summers and David Shira fit Chelsea into the mobile supportive apparatus they designed and built.**

## Carcass Disposal Conference Taps Expertise

California has more than 7 million cattle, 260 million chickens, 13 million turkeys, 15 million cats and dogs—and other animals. An infectious disease outbreak or natural disaster could cost thousands of animal lives. How would we deal with those dead animals?

More than 100 attendees of an international meeting July 21–23 tackled the subject, identifying new avenues of research, training and cooperation among agencies responsible for handling animal carcasses.

The event was coordinated by the University of Maine Cooperative Extension and hosted by the UC Davis School of Veterinary Medicine. Members of public agencies, research teams and technology companies covered key topics:

- Carcass disposal in response to routine mortalities, accidental deaths, natural disasters and disease outbreaks
- Costs and indemnification
- Technologies of euthanasia, carcass handling and decontamination
- Carcass management options
- Federal and state agency response, training and coordination
- Research and public policy
- Studies with farm animals, marine mammals and other wildlife

Keynote speakers Patricia Conrad, UC Davis School of Veterinary Medicine, and Stephanie Ostrowski, Centers for Disease Control and Prevention, urged veterinarians, medical professionals and other scientists to consider disease and its aftermath in the context of their effects on animal health, public health and environmental contamination.

Participants discussed carcass disposal methods such as rendering, burial, incineration and composting. Each technique has costs and issues related to local regulation, disease prevention, water quality protection and other ecosystem effects.



Lynn Narlesky

**A method based on using locally available materials for composting animal carcasses is demonstrated at UC Davis.**

Composting received much attention. New York, for example, composts road-killed animals and uses the resulting material in highway landscaping. Specialists from University of Maine Cooperative Extension and Cal Poly San Luis Obispo demonstrated a protocol for composting animals based on locally available materials.

*We're better prepared than last year... than 10 years ago, but we're still not as prepared as we need to be.*

The USDA Animal and Plant Health Inspection Service updated attendees on the national veterinary stockpile of vaccines, personal protection gear and other resources available to states in the event of an animal health emergency.

During the conference, Donald Klingborg, associate dean and director of Veterinary Medicine Extension, speaking on a local radio station said, "We're better prepared than last year... than 10 years ago, but we're still not as prepared as we need to be. Luckily, we have the right people at this meeting to take the steps to identify barriers, recognize research needed and get policymakers together."

## HUMAN HEALTH

### STUDY SHOWS LUNGS AFFECTED BY OZONE

In a new study, Edward Schelegle, associate professor in the Department of Anatomy, Physiology and Cell Biology, describes how ozone exposure can have a significant negative effect on lung function—even at levels considered safe by current clean air standards.

In an article in *Lab Spaces* that reported the findings, Schelegle says, "The National Ambient Air Quality Standard for ozone was recently revised to set lower limits for ozone concentrations. Our research indicates that the threshold for decrements in ozone-induced lung function in healthy young subjects is below this standard.

"Specifically, we found that 6.6 hours of exposure to mean ozone concentrations as low as 70 parts per billion have a significant negative effect on lung function, even though the current standards allow ozone concentrations to be up to 75 parts per billion over an eight-hour period."

Though researchers note that the changes in their healthy subjects were reversible, Schelegle says that studies with asthmatics and other susceptible individuals are important to understand why the number of hospitalizations increases sharply when ozone levels rise.

The study was published in the *Journal of Respiratory and Critical Care Medicine*.

As part of a study comparing the properties of dirt and synthetic horse racetracks, PhD candidate Jake Setterbo determines the moisture content of a sample of the synthetic material.



Right: Setterbo works with a horse racetrack testing device designed for a study that measures the force, acceleration and velocity of impact on dirt horse racetracks compared to synthetic racetracks.

Above: He enters surface properties measured with the device into software that simulates equine locomotion to measure tendon and ligament strain in relation to surface characteristics.

A first study using the track-testing device shows that there are large differences in peak force and acceleration between dirt and synthetic surfaces. An ongoing field study will compare measurements from the device and instrumented horses to provide information about the differences between a dirt and synthetic track, and the correct way to build a surface within the laboratory box.

## Track in a Box

*Continued from page 1*

“Fetlock injuries cause 45 to 50 percent of fatalities on the racecourse,” says Stover. The track in a box is expected to provide valuable lessons about fetlock biomechanics that will help researchers predict which track surfaces or other factors are most likely to reduce injury.

***Manufacturers will be able to engineer surface materials that will minimize fetlock injuries in racehorses.***

The box accommodates layers of dirt, stones, asphalt and racetrack surface materials that could include wax, fibers or other materials. The model track also contains a drainage system. Overhead, a spring-loaded mechanism simulates the impact of pounding hooves up to 100 times the force of gravity while measurements are taken to characterize surface behavior.

“We believe that, eventually, standard mechanical properties can be determined, and manufacturers will be able to engineer surface materials that will minimize fetlock injuries in racehorses,” says Stover. “The data will enable the industry to use the appropriate ‘recipe’ for very different climates to achieve surfaces worldwide that have uniform behavior and feel to the horse.”

Stover’s work complements current racetrack assessments that monitor existing surfaces. “We want to be synergistic with those applied studies,” she says, “by working in the controlled environment of the laboratory.”

In January 2009, the California Horse Racing Board reported a decrease in racing fatalities at California racetracks where synthetic surfaces had replaced dirt surfaces. However, other steps to reduce racing fatalities were also initiated, making it difficult to determine each step’s role in the reduction.

The \$50,000 project has been funded by the Grayson-Jockey Club Research Foundation.



Photos: Don Preisler

## Alumni Day, 2009

The class of 1959 reunited at the school to celebrate the 50th anniversary of beginning their veterinary careers. They were joined by the classes of 1969, 1979, 1984, 1989 and 1999, also celebrating reunions.



## ALUMNI DAY 2009

### Classmates Reconnect, Celebrate

Nearly 200 School of Veterinary Medicine alumni from the classes of 1959, 1969, 1979, 1984, 1989 and 1999 returned to UC Davis with their families to celebrate Alumni Day on Saturday, September 12. Festivities included local and campus tours and lunch with Dean Bennie Osburn. The event was held in conjunction with the Practitioner's Seminar September 13.

Members of the class of 1959, celebrating 50 years since earning their veterinary degrees, attended a special dinner in their honor. The class also participated in the traditional Rose Ceremony during which all of the classmates in attendance were given a red rose and invited to share memories of their time spent at the school. Deceased classmates were honored with a white rose.

Several classes celebrated their reunions with class gifts. The class of 1959 presented Dean Osburn with a check for \$60,000 following his welcoming remarks on Saturday afternoon. Class members specified that the gift be used to establish the Class of 1959 Endowed Scholarship Fund. By the conclusion of the weekend, the class had pledged to raise \$75,000. In addition, the class of 1984 had pledged to raise more than \$35,000 for scholarships, and the classes of 1969 and 1999 had pledged to raise more than \$25,000.



Dean Osburn (left) accepts the gift that establishes the Class of 1959 Endowed Scholarship Fund.

## STUDENT SUPPORT

### CVMA AUXILIARY ENDOWS SCHOLARSHIP

In September, the Auxiliary to the California Veterinary Medical Association presented a check for \$108,000 to Executive Associate Dean John Pascoe to permanently endow their student award.

The auxiliary established the scholarship in 1951, and the first award was granted to a member of the class of 1952, the first graduating class of the UC Davis School of Veterinary Medicine.

The auxiliary leadership decided to donate their entire scholarship corpus to the school this year. Karen McCrystle, Tena Gallagher, Dorothy Bizzini and Joan Kugel made the presentation on behalf of the membership. Dr. Pascoe noted that the continuing increase in educational fees makes this scholarship all the more needed and appreciated.

During the school's annual Awards Ceremony May 11, 2010, representatives from the auxiliary will award the scholarship to a fourth-year veterinary student with demonstrated interest in private clinical practice.

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