



## Open-heart Surgery Improves Prognosis in Dogs

“Surgery is essentially curative in a large proportion of canine patients,” says veterinary cardiologist Leigh Griffiths, who leads the open-heart surgery program at the William R. Pritchard Veterinary Medical Teaching Hospital.

“About 20 percent of our cases are young dogs with congenital heart disease,” says Griffiths. “The majority of our cases have mitral valve disease, the most common acquired heart disease in dogs. The surgical success rate is 70 percent. Currently the only other treatment is medical therapy, which

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## New Curriculum Adopted

School of Veterinary Medicine faculty moved forward in July 2010 to overhaul the DVM curriculum for the first time since 1990. Faculty will introduce the new curriculum beginning with the class of 2015.

### New standards

Associate Dean of Academic Programs Jan E. Ilkiw states, “The new curriculum is radically different from the present curriculum and has been designed with adult learning theory in mind. It is learner centered rather than teacher centered, and it is based on body systems rather than by discipline. Learning content is vertically and horizontally integrated so that students learn in the context of how they will use the content in the future.”

Designed with an emphasis of placing the responsibility of learning on the student, contact time in the classroom will be reduced to allow students time to work in small groups researching information and problem solving.

The planning process occurred in several stages over the past five years. First, faculty researched educational theory and other veterinary and medical school curricular models. Then, faculty members formulated a framework and, finally, established its feasibility.

### Framework

The model adapts to all learning styles. It includes delivery of content via traditional lectures and laboratories as well as newer techniques such as case-based and team-based learning.

The first two years of the curriculum will be core for all students and will feature a comparative approach. The first year will start with a prologue block where students will be introduced to what it means to be a veterinarian. They will participate in exercises that emphasize team building, leadership and communication skills as well as ethics and professionalism. The next block will provide foundational material common to all blocks. Blocks for each body system will

follow for the next two years, integrating normal and abnormal form and function. New blocks covering oncology, immunology, infectious disease and population health have been designed.

For the third and fourth years, students will select one of three streams: small animal, equine or food animal. These blocks will initially contain core material, but will also provide elective opportunities for students in wildlife, environmental health, preventive medicine and research. Students who choose small animal or

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# Class of 2014

Dean Bennie Osburn welcomed the class of 2014 on September 1, 2010. He described the school's commitment to students, asked them for their feedback and posed several ideas for consideration. "I encourage all of you to be open-minded to the multitude of educational offerings now available to you," Osburn told them. "You may find aspects of veterinary medicine you have not thought of that will train you for exciting and challenging career opportunities." He also recommended that students explore leadership opportunities and connect with classmates.

The class of 2014 began the four-year DVM program with a week-long orientation retreat led by Drs. Jim Clark, Cheryl

Scott and Karen Boudreaux; a formal luncheon with the California Veterinary Medical Association; and a White Coat Ceremony marking the students' initiation into the profession.

The class contains 135 students, including 126 California residents. Women make up the majority of the class at 110; 25 students are men. The students' ages range from 20 to 40 years old, with an average age of 24. The cultural mix for the class includes 29 Asians, 81 Caucasians, 10 Hispanic/Mexican American/Other Spanish students, one Native American and a dozen individuals who declined to state ethnicity.

The average cumulative GPA of the student body is 3.48, with required science



course grades averaging 3.33. Most students studied biology or animal science. All have obtained bachelor's degrees, with 18 class members already holding master's degrees.

These students also bring a broad base of experience to the table, with a mean number of 3,025 hours of veterinary-related experience logged in by the time they applied.

Student interests include small animal (49), equine (16), mixed (10), wildlife or zoo animal (16), large animal (4), lab animal (10), small animal/equine (4), research (8), avian/exotics (6), food/large/dairy (12) and academia (2).

## Network Leads in Gulf Spill Response

Michael Ziccardi spent most of his summer in the Gulf of Mexico managing the response for oiled marine mammals and sea turtles affected by the Deepwater Horizon spill. Ziccardi is an associate professor and director of the Oiled Wildlife Care Network (OWCN) housed at the school's Wildlife Health Center.

Through August, numbers of captured oiled wildlife, dead and alive, continued to rise in this immense environmental disaster.

Three response agencies took responsibility for different aspects of the spill. The reconnaissance and recovery effort was directed by the US Fish and Wildlife Service (USFWS). The oiled bird response was led by Tri-State Bird Rescue of Delaware and drew heavily on the expertise and experience of the International Bird Rescue Research Center, a Network member based in California. Finally, with assistance from the USFWS and other animal care organizations throughout the Gulf, the marine mammal and sea turtle rescue were overseen by Ziccardi and the National Oceanic and Atmospheric Administration–National Marine Fisheries Service.

Staff members of the OWCN, including response veterinarian Christine Fiorello, facilities engineer Don Ballard, volunteer coordinator Kaiti Ferguson and administrative coordinator Lavonne Hull also deployed to the Gulf during the summer.



Wildlife veterinarian Michael Ziccardi examines a sea turtle collected after the Gulf of Mexico oil spill April 20, 2010.

Ziccardi was asked to take a lead role in the wildlife response because he is a veteran of more than 40 oil spills in California and elsewhere. He drafted the National Marine Fisheries Service plan for rescuing and treating oiled marine mammals such as dolphins and seals. With hundreds of thousands of gallons of crude oil pouring daily into the Gulf of Mexico, those guidelines and protocols were consulted regularly by federal wildlife officials and were further modified to include sea turtles and manatees.

# A “Roadmap” for Tomorrow’s Veterinary Education

The Association of American Veterinary Medical Colleges launched the North American Veterinary Medicine Educational Consortium (NAVMEC) in 2009 to develop a flexible “roadmap” for veterinary education that considers accreditation, testing and licensure along with curriculum development.

## Stakeholders

Throughout 2010, more than 400 educators, licensing, accreditation, practice and industry stakeholders from the U.S. and abroad explored multiple, intersecting challenges and opportunities in veterinary education.

Dean Bennie Osburn, chair of the NAVMEC board of directors, says, “By approaching these challenges together, veterinary education can grow stronger and more adaptable to society’s needs.”

NAVMEC noted changing attitudes toward animal welfare, more scrutiny of standards for food safety and environmental protection, a need for multidisciplinary solutions to complex problems, and challenges caused by an explosion of new knowledge and technology.

The group explored what an increasingly diverse society will need from the veterinary profession and inventoried the veterinary skills, competencies and educational tools that will prepare veterinarians to best meet society’s needs.

Competencies include clinical expertise with many species; ability to communicate, manage, adapt and lead in an ethical way; understanding of public health and One Health concepts; and commitment to lifelong learning. (See related curriculum story.)

## New teaching models

Consortium participants educated themselves about student debt, adult learning and clinical training required to produce “practice ready” graduates. Members also explored potential collaborations among veterinary schools to provide in-depth clinical experiences more economically through species-focused centers.

NAVMEC participants evaluated eight current curricula and one new model, finding several successful elements in common among them:

- Problem-based learning and student-managed, self-paced delivery
- More emphasis on public practice
- Integration of non-technical and technical skills into courses
- More emphasis on primary care and wellness
- Improved use of technology and distance learning



The school’s new curriculum promotes early and frequent exposure to clinical experience.

- Use of outcomes assessments to evaluate teaching/learning
- More flexible programming to allow for career changes and second-career students
- Standardized prerequisites and entrance exams

At the final meeting in July 2010, NAVMEC participants reviewed competencies and discussed how curriculum change could affect testing, licensing and accreditation.

“Implementation of the recommendations in the final report is critical for the initiative to bring about the comprehensive change needed in veterinary medical education,” says Osburn. “Each meeting brought us closer to making this change possible.”

Consortium directors expected to produce an implementation plan in late 2010 to guide schools as they develop new curricula.

The NAVMEC website contains detailed information on issues, meetings and recommendations: [www.navmec.org](http://www.navmec.org).

## New Curriculum Continued from page 1

equine streams may spend additional time in clinical rotations if desired.

## Outcomes

“The new curriculum emphasizes what a Doctor of Veterinary Medicine from UC Davis needs to know and do at graduation” Ilkiw says. “It will be built on the DVM learning outcomes and the core competencies established by the faculty with input from stakeholders in the veterinary profession. The curriculum will emphasize early exposure to clinical material to encourage learning by doing and learning in context.”

An ongoing model of outcome assessment will be in place. The Curriculum Committee will monitor the new curriculum, collecting data, analyzing that data and then making smaller, more frequent curricular changes to reduce the need for major overhauls.



# Welcome

## NEW FACULTY and ASSISTANT DEAN

### Sara Allstadt Frazier

Assistant Professor of Clinical Medical Oncology, Surgical and Radiological Sciences

#### Education

- DVM, Auburn University, 2002
- BS, zoology, Auburn University, 1999

#### Experience

- Resident, medical oncology, UC Davis, 2007-2010
- Intern, small animal oncology, Angell Animal Medical Center, Boston, MA, 2006-2007
- Intern, small animal medicine and surgery, Affiliated Veterinary Specialists, Maitland, FL, 2005-2006
- Associate veterinarian, Biles Animal Hospital, Bay Minette, AL, 2002-2005

#### Specialty

- Identifying novel therapeutics for clinical investigation
- Investigating the role of PPAR gamma agonists as anti-cancer agents
- Identifying synergistic anti-cancer drugs, e.g., between Rosiglitazone, a PPAR gamma agonist, and Carboplatin, a common chemotherapy agent



### Alonso Guedes

Assistant Professor of Clinical Anesthesiology, Surgical and Radiological Sciences

#### Education

- PhD, veterinary medicine, University of Minnesota, 2006
- Diplomate, American College of Veterinary Anesthesiologists, 2005
- MS, veterinary medicine, University of Santa Maria, RS, Brazil, 2001
- DVM, University of Santa Maria, RS, Brazil, 1999

#### Experience

- Chief, Section of Anesthesia, Dept of Veterinary Small Animal Clinical Sciences, Texas A&M University, 2008-2010
- Assistant professor, Texas A&M University, 2006-2010
- Instructor, University of Minnesota, 2005-2006
- Veterinary medical associate, Veterinary Medical Center, University of Minnesota, 2001-2005
- Instructor, surgery, University of Santa Maria, RS, Brazil, 2001

#### Specialty

- Clinical anesthesiology
- Hormonal and cytokine regulation of smooth muscle function



### Assistant Dean Named

The School of Veterinary Medicine welcomes Mr. Tom Venturino as the new assistant dean of advancement.

Venturino joined the development team in 2005

after serving in fundraising positions in the UC Davis School of Medicine and the campus' central development office as well as nonprofit organizations in the Sacramento area. Venturino is a Certified Fund Raising Executive with more than 22 years in the fundraising profession.

The assistant dean for advancement leads the school's efforts to generate private, philanthropic funds for faculty research, student scholarships, clinical and research programs, and capital improvements. The development team prepares strategies for soliciting support from individuals, corporations, and foundations to meet current and long-term priorities.



## Open-heart Surgery Continued from page 1

gives patients a prognosis of about six to 18 months. With a successful surgery, we have patients without any clinical signs of heart disease after six years.

"UC Davis is now the only place in the United States that has regularly scheduled open-heart surgery for animals," he says. "A team of about 20 people spent more than a year training together—with everyone learning about not just their bit, but every stage of the procedures and equipment."

The program started in October 2009 with one case per month. "The goal as we build the program is to do at least 100 to

150 cases per year. We can basically do anything they can do in humans," says Griffiths. "The only exceptions are coronary heart disease, because dogs don't get it, and aortic valve replacement, a procedure that is far more difficult in dogs than in humans.

"There are two types of open-heart surgical techniques. Only a handful of schools in the U.S. could even consider doing either highly specialized technique," says Griffiths.

Cardiopulmonary bypass, only being done for dogs at UC Davis, involves the heart-lung machine, and allows surgeons

to open the heart in a controlled way for one to two hours.

Inflow occlusion, which is much less expensive, allows only a minute or two for the entire procedure. Griffiths explains, "We stop all blood flow, empty the heart of blood, open the heart and do the procedure. Inflow occlusion is most commonly used for pulmonic stenosis, a congenital heart disease in dogs; surgeries such as tumor removal; and cor triatriatum, a disease in cats."

For more information, visit: [www.vetmed.ucdavis.edu/vmth/small\\_animal/cardiology](http://www.vetmed.ucdavis.edu/vmth/small_animal/cardiology).

# DNA Database “A Voice for Victims” of Dogfighting

The nation's first criminal dogfighting DNA database has been established by the American Society for the Prevention of Cruelty to Animals, the Humane Society of Missouri and the Louisiana SPCA.

One of their key partners is the school's Veterinary Genetics Laboratory, which maintains the database and provides DNA analyses.

“Dogfighting is a multimillion dollar criminal enterprise that leads to the cruel treatment and deaths of thousands of dogs nationwide every year,” said Tim Rickey of the ASPCA. “This database is an unprecedented and vital component in the fight against animal cruelty.”

The database contains individual DNA profiles from dogs seized during dogfighting investigations and from unidentified samples collected at suspected dogfighting venues. The database includes 400 samples of dog DNA supplied by the Humane Society of Missouri as a result of being collected from dogs seized in July 2009 during the nation's largest dogfighting raid.

## Establishing connections

DNA analysis and matching through the canine database will help law enforcement officials identify relationships between dogs and establish connections between breeders, trainers and dogfight operators. Blood collected from dogfighting sites also will be searched to identify the source.

In July 2010, the American Society of Crime Laboratory Directors/Laboratory Accreditation Board accredited the Forensic Unit of the Veterinary Genetics Laboratory as a crime lab dedicated to animal DNA profiling.

Beth Wictum, associate director, said that the unit has one of the largest sample databases in the world, which is crucial for estimating the rarity of a DNA profile. She noted that the canine database contains many more DNA markers than are normally tested. The Veterinary Genetics Laboratory has a large repository of DNA samples independent of the forensic unit, and those samples may be accessed as needed.

“That precision provides greater power when calculating match probability or

Photo by William McLeod



Beth Wictum (foreground) and lab member Teri Kuhn process an evidence sample in the Forensic Unit.

assigning parentage,” Wictum said. “When these cases come to trial, it's important to make your strongest case. We can tie blood...to a specific dog and tell his story for him,” Wictum said. “We become the voice for those victims.”

## Feline Forensics: Another Tool

A database of genetic markers based on parentage and health testing of dogs has provided a solid foundation for DNA identification of canine evidence. A team led by veterinary geneticists Leslie Lyons and Robert Grahn has now found a way to trace the source of cat fur from crime scenes. Cat fur from a suspect's clothing may provide a valuable clue in determining if he or she was present at a crime scene.

Lyons' extensive collection of feline DNA from purebred and random-bred cats used in her research has led to the publication of a feline database for DNA profiling in *Forensic Science International: Genetics*. The study evaluates mitochondrial DNA, which can show that animals are related through the mother. While mitochondrial DNA is not as individualized as nuclear DNA, it is useful when samples are small or evidence is degraded.

## Research: A Better Heart Valve with Tissue Engineering

One aspect of Leigh Griffiths' cardiology research program is to produce a better heart valve for dogs with mitral valve disease using a type of tissue engineering designed to be applicable in dogs and humans. “Our research examines what the immune system reacts to and how we can remove those things from the tissue—at which point we would have a tissue-based material appropriate for making valves for dogs,” Griffiths states.

Tissue valves made from either bovine pericardium or porcine aorta are already being used for heart valve replacement in humans. “The goal, for either human or canine application, is to remove from the tissue everything to which the immune system would react,” Griffiths explains. “In dogs this material alone would be sufficient to form a valve which would function for the life of the patient. In humans, you would take stem cells from the patient and grow them into the material to provide the additional ability for long-term growth and repair of the tissue.”

# Food Safety Lab Selected for Seafood Testing

The California Animal Health and Food Safety Laboratory (CAHFS) is one of eight state and federal laboratories nationwide—and the only one in California—chosen by the federal government to monitor seafood from the Gulf of Mexico for toxins related to the Gulf oil spill. Seafood from the oil spill area was expected to begin arriving at the Davis laboratory for testing in early August.

“We will be looking at a variety of seafood, including finfish, crabs, oysters and shrimp from the impacted areas of the Gulf of Mexico,” said Robert Poppenga, the veterinary toxicologist who is coordinating the seafood analysis team.

The federal surveillance program will rely on two levels of testing. First, a panel of experts at an initial lab will administer sensory tests, checking for the telltale odors of petroleum contamination. If contaminants are suspected, samples

will then be sent on for more sensitive chemical diagnostic tests at CAHFS and other participating laboratories around the country.

“Petroleum crude oil is a very complex mixture of chemicals, and some of the chemicals within that mixture are potential cancer-causing agents,” Poppenga said. “So we’re going to focus on those that are of primary concern to human health.”

In preparation, CAHFS received equipment valued at roughly \$140,000 from the U.S. Food and Drug Administration to complement existing diagnostic equipment. The FDA is coordinating the testing program in collaboration with the National Oceanic and Atmospheric Administration.

Of interest to the CAHFS surveillance team is a group of chemicals known as polycyclic aromatic hydrocarbons such as benzene, naphthalene, fluorine, anthracene, pyrene, benzo(a)pyrene and others.

“The method used to detect these chemicals is very complex and sensitive because we are examining for contamination down to the parts-per-billion level,” he said, noting that it would probably take four to five days to process each seafood sample.

All data from the tests will be reported to the FDA. The results will be used to determine which areas of the Gulf of Mexico have oil-contaminated seafood and which areas can be reopened to commercial fishing.

## Lab Inaugurates Food Safety Residency

The California Animal Health and Food Safety Laboratory has launched a two-year food safety residency to provide broad-based expertise in public health, animal welfare and food safety issues.

The first resident is Stephanie R. Ostrowski, DVM, MPVM, DACVPM (Veterinary Preventive Medicine). Ostrowski comes to the laboratory from the Centers for Disease Control, where she worked in the Epidemic Intelligence Service. She began her residency in August 2010.

Ostrowski’s training is intended to prepare her for a leadership role in an academic, government or veterinary diagnostic laboratory dealing with animal diseases, animal welfare, and environmental and food safety issues.

The CAHFS setting is ideal for future veterinarian-scientists, who may interact with a range of experts in toxicology, infectious diseases and food safety. Food safety specialists are also likely to address animal welfare concerns. In addition to the training at CAHFS and taking selected courses in graduate school programs across campus, residents will participate in externships with government agencies, dairy production units and dairy food manufacturing plants. Equipped with food animal diagnostics, risk assessment and research methodologies, residents who complete the program will be able to conduct sound, clinically-based research and/or disease or toxicoses outbreak investigations.

The California Dairy Research Foundation provided funding for this position.



Robert Poppenga and Linda Aston demonstrate how they test seafood samples from the Gulf of Mexico oil spill for contamination by petroleum-based chemicals, including some that have the potential to cause cancer in people.



# THANK YOU NOTES

## Celebrating New Endowed Chair

K. Gary Magdesian, chief of Neonatology and Critical Care at the William R. Pritchard Veterinary Medical Teaching Hospital, has been appointed to the Roberta A. and Carla Henry Endowed Chair in Emergency Medicine and Critical Care. Magdesian is the first to hold this honor, which was made possible by a generous gift from the estates of the two sisters for whom the endowment is named.

“The endowed chair will contribute to the advancement of veterinary emergency and critical care by furthering teaching, clinical developments and research,” Magdesian says. “It is a tremendous opportunity to both learn and teach new things, to be creative and broaden our thought processes, and to better veterinary emergency and critical care medicine in the process.”

Magdesian earned his Doctor of Veterinary Medicine degree in 1993 at the UC Davis School of Veterinary Medicine, where he later completed a residency in large animal internal medicine. He is



K. Gary Magdesian

board certified in three specialties, veterinary internal medicine, emergency and critical care, and pharmacology.

A faculty member since 1997, Magdesian developed the first residency in the nation to emphasize large animal critical care. Magdesian investigates *Clostridium difficile*, the most common infection of

critically ill horses being treated with antibiotics. He is also developing new methods for early diagnosis of infections in foals. Magdesian teaches veterinary students in the classroom and the clinic, and he provides advanced training of veterinary specialists.

## Referrals Needed for Canine Stent Study

Veterinary faculty are seeking patients for the evaluation of some of the effects of urethral stents in dogs with tumors that cause urethral obstruction. The goal is to determine the pressures within the bladder and urethra both before and after the placement of a urethral stent. The pressures are determined in a minimally invasive manner via placement of a catheter within the bladder and urethra.

### Enrollment Requirements

- Canine patient with confirmed neoplasia resulting in malignant urethral obstruction
- Patient deemed a good candidate for urethral stenting through the evaluation of clinical signs, cystourethroscopy and fluoroscopy

- Patient available for evaluation three weeks after stent placement at William R. Pritchard Veterinary Medical Teaching Hospital

### For more information, please contact:

William Culp at [wculp@ucdavis.edu](mailto:wculp@ucdavis.edu) or Jodi Westropp at [jlwestropp@ucdavis.edu](mailto:jlwestropp@ucdavis.edu), (530) 752-1393

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

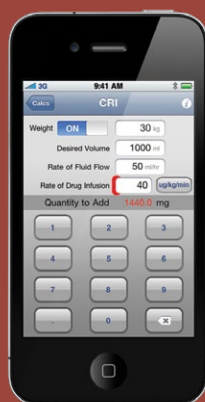
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## VetPDA Calcs Tool Available

VetPDA Calcs, an iPhone application developed by the School of Veterinary Medicine, offers 20 useful calculators for clinical use. The application calculates recommended dosages for more than 40 anesthetic drugs, analyzes blood gas values and assists with constant rate infusion calculations for drug administration.

Other functions include body surface area, drip rate, and conversion calculators. The \$4.99 cost includes free updates to the application, which works on the iPhone, iPad and iPod Touch. VetPDA Calcs is available online at <http://itunes.apple.com/us/app/vetpda-calcs/id356519283?mt=8>



## Continuing Education Calendar

- November 3-10, 2010, George H. Muller Veterinary, Dermatology Seminar, Maui, Hawaii
- November 30 – December 7, 2010, Veterinary Endocrinology & Internal Medicine Seminar, St. Maarten, British Virgin Islands
- January 29, 2011, Minimally Invasive Procedure Symposium, Davis
- March 13, 2011, Veterinary Neurology Symposium, Davis
- May 14-15, 2011, Veterinary Diagnostic Imaging, Symposium, Davis
- July 30 – August 9, 2011, Africa Safari, South Africa, with optional gorilla trekking July 26-30 in Rwanda
- Weekend seminars with a species focus also take place throughout the year in Davis. For details, visit: [www.vetmed.ucdavis.edu/CE/CE.html](http://www.vetmed.ucdavis.edu/CE/CE.html)

## Hiring a Veterinarian? Consult the Online Senior Directory

The School of Veterinary Medicine puts employers in touch with prospective associates with the online *Senior Directory*, featuring the class of 2011. Students provide contact information, educational background, special training, veterinary experience and career interests. Visit the online Placement Services and Resource Center, [www.vetmed.ucdavis.edu/placement-services](http://www.vetmed.ucdavis.edu/placement-services).

Employers may also post career positions or part-time jobs on this site. Questions? Contact Student Programs, [svmplacement@ucdavis.edu](mailto:svmplacement@ucdavis.edu), or (530) 752-1383.