

Teams Advancing Animal Health

Dear Friends:

Tackling the toughest problems in animal health is our job—something we work at everyday. But over the years we have learned that we make the greatest strides when we work in teams. Depending on the disease or problem, we bring together different combinations of basic science researchers, geneticists, clinicians, students, statisticians, engineers, physicists—and patients and their families—so that we can approach each and every challenge with the best team possible. This is true whether we are trying to find the cause a particular disease, developing a new treatment, or improving and saving the lives of shelter animals.

In this issue, we share a few of recent examples of the power of teamwork. The first is the Million Cat Challenge—a collaborative effort to save 1 million cats from euthanasia across the United States. Our shelter medicine program is working with universities and shelters around the country on this project, which launched earlier this year—and together they have already saved more than 100,000 cats. Meanwhile, by combining forces with researchers and clinicians at the Koret School of Veterinary Medicine in Israel, we are making even greater strides in discovering the causes of—and developing new treatments for—kidney disease and bone disease in animals, which is improving animal health around the world. We are even impacting cancer in people by forming teams with researchers from the UC Davis School of Medicine's National Cancer Institute-designated Comprehensive Cancer Center.

Through these and other team efforts, we are making great strides toward achieving our mission of improving the lives and livelihoods of all animals. But much work still needs to be done. At the CCAH, one of our primary roles is to ensure that our teams have the resources they need to carry out and advance their work—everything from the equipment to run tests on to the freezers they need to store samples to modern clinical facilities to salary support for the lab technicians and clinical trials nurses—and the list goes on. Our donors are part of the team that helps makes it all happen. We thank you for your support and commitment, because of you we are able to accomplish great things!

My best,

Michael Kent, MAS, DVM
 Director, Center for Companion Animal Health

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UC Davis Researchers Probe Risks Associated With Chemo Drug Compounding

Compounding—or the customized preparation of drugs that are not commercially available from the manufacturer in the desired formulation or strength—is becoming more and more common in veterinary medicine. Compounded drugs, which are not regulated by the FDA, can be created in any capsule size, which could, in theory, enable safer and more accurate dosing.

But a new study spearheaded by UC Davis veterinary researchers found that compounded chemotherapy drugs are not always as consistent or as accurate as their labels claim—which can unintentionally lead to suboptimal treatment and possibly even put animals at risk.

In late 2013, UC Davis veterinarians noticed that dogs that were prescribed the compounded version of CCNU—a chemotherapy drug used to treat a range of cancers, including mast cell tumors and lymphoma—were not experiencing the predictable drop in white blood cells associated with the drug.

When they compared the blood work of the animals prescribed the compounded CCNU to the records of animals treated with the FDA-approved version, the differences were significant. While 100 percent of the animals treated with the FDA-approved CCNU saw a decrease in white cell count, only one in four animals treated with the compounded CCNU showed any decline in these cells.

“Ultimately, we found that both the incidence and the severity of those counts were dramatically less than what we would expect to see,” says Dr. Robert Rebhun, associate professor of medical oncology at UC Davis Veterinary Medical Teaching Hospital, and one of the authors of the study.



Further analyses of the compounded CCNU capsules found that the concentrations varied widely and could be as low as 50 percent of what the compounded medication was labeled to contain.

The study’s findings raise concerns about the potential to underdose or overdose animals that are treated with compounded chemotherapy. Inaccurate dosing is especially dangerous when

it comes to chemotherapy drugs, says Dr. Rebhun, because the margin of safety is very narrow. “If there is a drug that we can’t really afford to have be ‘off,’ it’s chemotherapy,” he says.

The study adds to UC Davis’s growing body of research into the accuracy and efficacy of compounded drugs. Previously, Dr. Scott Stanley and Dr. Heather Knych of the UC Davis Kenneth L. Maddy Equine Analytical Chemistry Laboratory identified similar problems with several compounded drugs used to treat horses. For this study, they teamed up with the veterinarians investigating CCNU, lending their expertise by providing input on study design and performing analyses.

The combined team is now conducting similar investigations into four or five other chemotherapy drugs—research that is funded by the CCAH and is being led by Dr. Jenna Burton. “The CCAH stepped in very quickly and said they’d cover the cost for the analysis of these other drugs,” says Dr. Rebhun.

In the meantime, veterinarians and owners should weigh the pros and cons of compounding and be aware of the risks associated with opting for a compounded drug. “There is no doubt that there needs to be better oversight in the production and sale of compounded drugs,” offers Dr. Rebhun. “But for now, raising awareness of the issues with compounded drugs is critical—and that is our primary goal.”

To read our Q&A interview with Dr. Rebhun, please visit www.vetmed.ucdavis.edu/ccah/local-assets/pdfs/compounding_qa.pdf.



Koret Shelter Medicine Program Spearheads Campaign to Save a Million Cats

Dr. Kate Hurley, director of the CCAH-supported UC Davis Koret Shelter Medicine Program, issued a bold challenge last year to shelters across the United States and Canada—to join together to help save 1 million cats over the next five years.

Overseen jointly by the Koret Shelter Medicine Program and the University of Florida Maddie's Shelter Medicine Program—two of the most widely recognized shelter medicine programs in the world—the aptly dubbed Million Cat Challenge is already on track to meet its bold and game-changing goal.

The Million Cat Challenge is designed to address the most persistent and heartbreaking issue plaguing animal shelters today: while 75 percent or more of dogs commonly leave a shelter alive, 75 percent or more of cats are euthanized at many shelters. “The estimate now is that 1.5 million cats are euthanized annually in shelters,” says Dr. Hurley. For staff, volunteers, and animals alike, the emotional toll exacted by this practice is incalculable.

Yet in recent years, new shelter programs and practices have emerged that dramatically lower this euthanasia rate—and greatly improve the rates of both survival and adoption for shelter cats. Launching the Million Cat Challenge was a way to spread and share these practices more widely across North America. “We saw the real practical opportunity for rapid change,” says Dr. Hurley, who has been working in animal shelters since 1989. “We knew that there were doable, affordable, scalable things that could be put in place and replicated, shelter by shelter.”

At the heart of the campaign are five key initiatives that participating shelters can adopt to help to help dramatically improve outcomes for the cats coming through their doors:

1. Creating **alternatives to intake**, so that not every cat is automatically admitted to the shelter. For example, lost cats are more than 10 times more likely to get reunited with their owners if they aren't brought into a shelter, and kittens held at home until they are old enough to get



Dr. Kate Hurley, Director, UC Davis Koret Shelter Medicine Program

neutered or spayed have a much higher chance of getting adopted. “Providing an alternative to admission means really broadening the way we think about service,” says Dr. Hurley. “It’s asking the community to step up and help us and partner with shelters.”

2. **Managing admissions**, which means scheduling the intake of cats to match the shelter’s ability to accommodate them. “It can be as simple as putting people on the waiting list and calling them when there’s room,” says Dr. Hurley. “Or if you do all your adoptions on Fridays and Saturdays, maybe you schedule your intake during the other days of the week.”

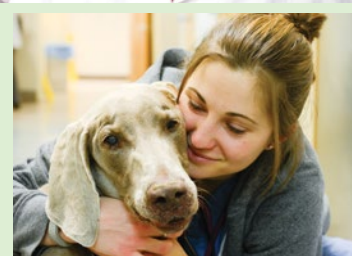
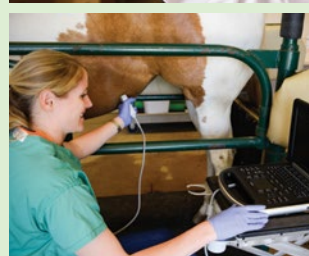
3. Building the **capacity for care**, or guaranteeing humane care to every cat that comes into a shelter, as well as the five freedoms of animal welfare: freedom from hunger and thirst, freedom from discomfort, freedom from fear and distress, freedom from disease and injury, and the freedom to express normal behaviors. “To be able to assure these five freedoms is so profound. And working in an environment where you can give these things has tremendous impact.”

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UC Davis School of Veterinary Medicine Ranked **No. 1** in Nation and World

In its latest rankings, released in March 2015, *U.S. News & World Report* recognized the UC Davis School of Veterinary Medicine as the nation's best veterinary school. The school was ranked second in 2011, the last time the magazine created its rankings. In April 2015, QS World University Rankings released its own inaugural list of top schools for veterinary science, not just in the U.S. but globally—and the UC Davis School of Veterinary Medicine was again awarded the top spot. “Our research, teaching, and clinical care are recognized around the world as being at the forefront of veterinary medicine,” says CCAH director Dr. Michael Kent. Having the resources to fund the groundbreaking research being conducted every day by the school's residents and faculty is a critical part of that. Each year, the CCAH distributes more than \$1 million in grants for faculty and resident research projects. “Our work, and our donors, are having an impact,” says Dr. Kent.



International Teamwork: UC Davis Faculty Exchange with the Koret School in Israel

Since 1995, the CCAH has been helping to advance veterinary medical knowledge and improve animal outcomes not just in the U.S. but internationally. A prime example: the CCAH's continued collaborations with the Koret Veterinary School in Israel. To date, there have been 98 faculty and resident exchanges between the two schools, with UC Davis veterinarians sometimes traveling to Israel to offer advanced in-person training and collaboration. This program has been funded through the Koret School-UC Davis Exchange Program Endowment and by a gift from the Koret Foundation in San Francisco.



Dr. Zwingenberger (far right) with veterinarians from the Koret veterinary school in Israel

In February, UC Davis' Dr. Allison Zwingenberger, a radiologist and an associate professor in the Department of Surgical and Radiological Sciences, spent

two weeks at the Koret Veterinary School. She helped to better familiarize its faculty with the full range of diagnostic imaging made possible by the school's new MRI machine, which was acquired with funding from the Koret Foundation and the first dedicated for use in animals in the country. “They'd never had an MRI machine before, so it was a big deal for them to get one,” Dr. Zwingenberger says. She provided a different perspective on a range of imaging cases, helped give Koret's faculty the confidence that they were doing a great job, and offered supervised MRI training to residents from neurology, emergency, medicine, and surgery.

Says Dr. Zwingenberger: “It was a great experience for everybody.”



The Value of Animal Cancer Research to Human Medicine

In early June, the Institute of Medicine—the health arm of the National Academy of Sciences—held a workshop on the role that companion animal cancer studies play in advancing human cancer research. Among those attending the workshop were representatives from the National Cancer Institute, the US Food and Drug Administration, the business sector, the media, animal advocacy organizations, foundations, and numerous universities, including UC Davis.

The two-day gathering featured many talks and panel discussions, including one led by Michael Lairmore, Dean of the UC Davis School of Veterinary Medicine, on the ethics surrounding clinical trials. Throughout the workshop, there

were many discussions of the ways in which companion animal cancer research continues to shed new light on the causes and treatments of human cancer as well. For this and other reasons, participants agreed, ensuring that companion animal cancer research gets the funding and support that it needs should be a high priority.

The Institute of Medicine's workshop underscored the need for entities like the CCAH. It also further reinforced our commitment to funding basic science and clinical research by UC Davis faculty and residents—all of it designed to advance our fight against cancer in animals and humans alike.

Koret Shelter (continued from page 3)

4. **Removing barriers to adoption**—such as cost, process, or location—to expand the pool of people adopting shelter cats. Restrictive adoption policies—from required fees to arduous application processes—sometimes do more harm than good, says Dr. Hurley. “It’s not worth it to collect a \$50 adoption fee if that’s going to mean the difference between a cat getting euthanized or not.”
5. **“Returning to field”** means sterilizing, vaccinating, and returning healthy unowned (“feral”) shelter cats to their location of origin as an alternative to euthanasia. There are somewhere between 30 million and 80 million unowned cats in the United States. Given this startling number, says Dr. Hurley, “trying to euthanize the ones that can’t be placed into a home is not solving the problem, and recent evidence has shown it may actually make it worse.”

So far, nearly 250 shelters have signed up for the Million Cat Challenge—and, as of May 2015, they have collectively saved

or pledged to save 205,096 cats. Some of the shelters have already dropped their euthanasia rate by 90 percent or more. Others have reduced their costs so significantly that they are now funding other much-needed projects, like adopting out special needs cats or starting a trap and neuter return program in their community.

While the high rate of shelter cat euthanasia isn’t something that will change overnight, the Million Cat Challenge is helping to steer shelters in a new direction. Says Dr. Hurley: “I hope that as shelters and communities try this out and see how well it works, it will spread—and more and more shelters will be empowered and resourced to do this.”

To read our interview with Dr. Hurley and learn more about the genesis of this project, visit www.vetmed.ucdavis.edu/ccah/local-assets/pdfs/hurley_qa.pdf.

To learn more about the Million Cat Challenge, visit <http://www.millioncatchallenge.org>.

Thank You!

Companion Animal Memorial Fund – Honor Roll

We gratefully acknowledge supporters of the Companion Animal Memorial Fund, which helps to fund clinical research advancing animal health. The memorial fund has helped advance important work in the areas of cancer, genetics, nutrition, infectious diseases, endocrinology, immunology, anesthesiology, and internal medicine. The following veterinary clinics and practitioners contributed heartfelt gifts of \$500 or more in 2014.

ABC Veterinary Hospital
Acadia Veterinary Clinic
Acorn Veterinary Clinic
Adobe Animal Hospital, Concord
Adobe Animal Hospital, Los Altos
Advanced Veterinary Specialists
Alamo Animal Hospital
All Pets Hospital
All Pets Veterinary Clinic
allCreatures Veterinary Clinic
Alto Tiburon Veterinary Hospital
Animal & Bird Clinic of Mission Viejo
Animal Hospital of Cloverdale
Animal Housecall Service
Animal Medical Center
Animal Medical Center, Inc.
Aragon Veterinary Clinic
Arbor View Veterinary Clinic
Arcata Animal Hospital
Ark Pet Hospital
Balboa Pet Hospital
Belmont Pet Hospital
Wayne L. Berry, BVSC, MMedVet
Bird & Pet Clinic of Roseville
Bishop Ranch Veterinary Center
Blue Cross Veterinary Hospital,
Carmichael
Blue Cross Veterinary Hospital,
Signal Hill
Blue Oak Veterinary Hospital
Brandner Veterinary Hospital, Inc.

Broadway Pet Hospital
Camarosa Veterinary Clinic
Canyon Hills Animal Clinic, Inc.
Carlsen Animal Hospital
Cat and Bird Clinic
Cats Only Veterinary Hospital
Centennial Animal Hospital
Chabot Veterinary Clinic
Coast Veterinary Clinic
Codornices Veterinary Clinic
Colyer Veterinary Service
Companion Animal Hospital
Contra Costa Animal Eye Care
The Country Vet
County Line Animal Hospital
Cross Street Small Animal Veterinary
Hospital
Crystal Springs Pet Hospital
Cuyamaca Animal Hospital
Dana Niguel Veterinary Hospital
Del Mar Heights Veterinary Hospital
Del Mar Pet Hospital
Diablo View Veterinary Medical Hospital
Discovery Bay Veterinary Clinic
Disney Pet Hospital
Doctors Pet Clinic
Donner Truckee Veterinary Hospital
East San Rafael Veterinary Clinic
Edgewood Veterinary Clinic
El Cerrito Veterinary Hospital
El Sobrante Veterinary Hospital

Evergreen Animal Clinic, Inc.
Evergreen Veterinary Clinic
Evers Veterinary Clinic
Exeter Veterinary Hospital
Four-Legged Friends Animal Hospital
Granite Bay Veterinary Clinic
Harden Ranch Veterinary Hospital
High Valley Veterinary Hospital
Hillcrest Veterinary Hospital
Howard Animal Hospital
Indian Creek Veterinary Clinic
Irving Pet Hospital
Jennifer Rau, D.V.M.
La Costa Animal Hospital
La Cumbre Animal Hospital
Ladera Ranch Animal Hospital
Larkspur Landing Veterinary Hospital
Lifetime Animal Care Center
Los Alamitos Animal Hospital
Los Altos Veterinary Clinic
Los Osos Pet Hospital
Marina Hills Animal Hospital
Matilija Veterinary Hospital, Inc.
Mid-Peninsula Animal Hospital
Midtown Animal Hospital
Mid-Valley Veterinary Hospital
Miramonte Veterinary Hospital
Mono Way Veterinary Hospital
Montecito Animal Clinic
Morro Bay Veterinary Clinic

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Veterinary Faculty Appreciate the Memorial Fund



Dr. Andrea Fascetti, pictured second from left, works with veterinary students to advance companion animal nutrition thanks to support from the Companion Animal Memorial Fund.

"Gifts to the memorial fund are thoughtful tributes to beloved pets. In this special way, veterinary practices help bring comfort to clients who have experienced loss of their devoted companions. The CCAH in turn provides critical financial support to a large number of veterinary residents to fund their research projects. These projects are a required component of their specialty training and often a stepping stone to advanced research training programs.

I'm impressed by the number of veterinary practices participating in the memorial program. This funding is also instrumental in generating preliminary data that can be included in a larger proposal submitted to an external funding agency. The inclusion of such data increases the competitiveness of our proposals and the likelihood of getting funding. I am grateful for their support to our programs."

– Andrea Fascetti, PhD, VMD, Professor in Nutrition

Companion Animal Memorial Fund – Honor Roll (continued from page 6)

Mueller Pet Medical Center
Muir Oaks Veterinary Hospital
Murphy Avenue Pet Clinic
Newport Hills Animal Hospital
Northridge Veterinary Center
Northtown Animal Hospital
Oak Park Veterinary Hospital
Oakland Veterinary Hospital
OC Veterinary Medical Center
Oceanview Veterinary Hospital
Ontario Veterinary Hospital
Pacific Palisades Veterinary Center
Park Centre Animal Hospital
Peninsula Center Pet Hospital
Pet Medical Center
Pet Vets of Folsom
Pleasant Valley Veterinary Center
Redlands Animal Hospital, Inc.
Redwood Veterinary Hospital, Vallejo

Redwood Veterinary Hospital, Visalia
Richmond Veterinary Hospital
Rocklin Road Animal Hospital
Rural Animal Clinic
San Diego Pet Hospital
Debra L. Scheenstra, D.V.M.
Seven Hills Veterinary Hospital
Shasta Valley Veterinary
Slate Creek Animal Hospital
South Auburn Veterinary Hospital
South Bay Veterinary Hospital
South County Animal Hospital
South Novato Animal Hospital
Steele Canyon Veterinary Clinic
Summit Veterinary Hospital, Inc.
Sunnyvale Veterinary Clinic
Sunset Cliffs Animal Hospital
Tarzana Pet Clinic, Inc.
Tassajara Veterinary Clinic

Tehachapi Veterinary Hospital
Terra Linda Veterinary Hospital
Town & Country Animal Hospital
Valley Vet Clinic RB, Inc.
VCA Albany Animal Hospital
VCA All Our Pets Veterinary Hospital
VCA Cottage Animal Hospital
VCA Madera Pet Hospital
VCA Monte Vista Animal Hospital, Inc.
VCA West Los Angeles Animal Hospital
Veterinary Housecalls
Veterinary Medical Center, Inc.
Village Oak Veterinary Hospital
Village Square Vet Hospital
Village Veterinary Clinic
Village Veterinary Clinic, Inc.
Washington Square Veterinary Clinic
Waterhouse Animal Hospital
Willow Rock Pet Hospital

(654W)
Center for Companion Animal Health
c/o Office of the Dean—Development
School of Veterinary Medicine
University of California
One Shields Avenue
Davis, CA 95616-8734

New CARE Program

Did you know?

A memorial or tribute gift is a wonderful way to pay honor to a special pet, friend or family member. We frequently receive heartfelt notes of appreciation after receiving notification of these loving tributes. The Center for Companion Animal Health has a fund to receive these special gifts called the Companion Animal Remembrance and Endearment Fund (CARE) to provide support for programs at the CCAH.

Simply send us the name of the pet or person that you would like to honor and the name and mailing address of the person to be notified in the envelope enclosed in this newsletter. We will send a personalized notification (the gift amount is not shared) sharing the news of your gift. Memorial and tribute gifts may also be made online at: www.vetmed.ucdavis.edu/go/ccah_care.



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The CCAH is dedicated to advancing studies in veterinary medicine—encompassing new ways to prevent, diagnose and treat diseases including cancers, genetic and immune disorders, infectious diseases, kidney and heart diseases, and nutritional disorders in companion animals. We welcome visitors to come and learn more about our mission and programs. To schedule a visit, please call (530) 752-7295.

Center for Companion Animal Health
Business Office: (530) 752-7295 Fax: (530) 752-7701
Small animal appointments: (530) 752-1393
vetmed.ucdavis.edu/ccah

For subscription questions, contact the Office of Development at (530) 752-7024 or development@vetmed.ucdavis.edu.