

A New Hope for FIP

Fifty years is a long time to devote to studying one disease, but the complex nature of feline infectious peritonitis (FIP) holds the attention of Dr. Niels C. Pedersen like no other mystery in veterinary medicine. FIP affects approximately one in 300 cats (mostly young ones) and is nearly always fatal. There is hope on the horizon, however.

A collaborative group of researchers from the UC Davis School of Veterinary Medicine, Kansas State University and Wichita State University recently reported they successfully blocked progression of FIP in a clinical trial for the first time.

"This is the first attempt in veterinary medicine to attack a fatal systemic viral disease using modern anti-viral drug technology, such as that used in HIV-AIDS therapy and in treating Hepatitis C in humans," said Pedersen, founding director of the Center for Companion Animal Health (CCAH), who leads the efforts at UC Davis to find a treatment. "Hopefully this is the first step toward the end."

FIP affects approximately one in 300 cats (mostly young ones) and is nearly always fatal. But there is hope on the horizon.

**UCDAVIS****VETERINARY MEDICINE**

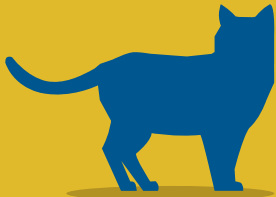
Center for Companion Animal Health

Continued on page 3

Dedicated to improving the health of companion animals

CCAH – Major Impacts

Celebrating 25 years of advancing the health of companion animals

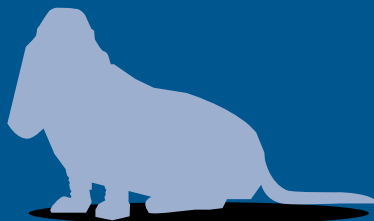


Programs Launched

- 1st companion animal hemodialysis in U.S.
- International veterinary exchange – Koret School of Veterinary Medicine, Hebrew University of Jerusalem, Israel
- 1st veterinary genetics residency in the world
- 1st Canine Health Foundation grant (Canine Hypothyroidism Seminar)
- 1st academic shelter medicine program and residency in the world
- Million Cat Challenge – joint project with University of Florida
- Stereotactic radiosurgery for more accurate and safer cancer treatments

Infrastructure and Facilities Investments

- CCAH facility –integrated design for clinical and research space
- Veterinary physical rehabilitation/integrative medicine facility
- Hemodialysis unit renovation
- New linear accelerator
- Veterinary hospital information system
- Annual research equipment funding



Research Achievements

- Pioneered research in feline immunodeficiency virus, feline coronavirus, and feline calicivirus
- Engineered a reconstructive procedure to regrow jawbone in dogs following traumatic injury or disease
- Identified the impact of copper on feline reproductive efficiency
- Determined the nutritional requirements and kidney effects of folate and Vitamin D in kittens
- Identified feline requirements and toxicity levels for Vitamins A, B & K, choline, chloride
- Linked taurine with feline pregnancy failure
- Defined causes/risk factors for cats living in multi-cat facilities
- Established strategies to reduce morbidity of shelter animals due to infectious diseases
- Discovered decreased zinc results in cleft palate in kittens
- Developed nutrition strategies for obese dogs and cats
- Developed the feline leukemia vaccine
- Discovered and/or identified genetic causes for:
 - feline hypertrophic cardiomyopathy
 - feline polycystic kidney disease
 - Alaskan husky encephalopathy
 - spinal dysraphism in Weimaraners
 - bladder stones in Dalmatians
 - heart disease in Newfoundlands
- Designed a surgical technique for corneal disease in dogs
- Discovered a stem cell therapy to successfully treat feline chronic gingivostomatitis
- Determined safe antibiotic dosage for rabbits

A Message from the Director

Happy 25th Anniversary CCAH! As I look back at what we have accomplished, and forward to the work yet to do, I am proud and heartened at the work being done at the school to advance animal health. The complexity and strengths of this School of Veterinary Medicine are unmatched in the world. We are not just a teaching academy, not just the world's largest clinic, not just a research institution—we are the integration of all these missions. By collaborating in all of these areas, we've created a unique environment that allows the faculty to accomplish much more to help animals.

It is your generous support that has made the CCAH successful. With your partnership, we have awarded more than \$17 million to SVM research projects, built state-of-the-art facilities and grown the CCAH endowments to ensure our financial sustainability for the future. I've enjoyed meeting many of you and learning of your interests and passions that drive your support for companion animals.

Your devotion inspires our commitment. I hope you will continue to partner with us. Together, we can collectively advance the knowledge and treatment options for improved companion animal health. The future looks bright!

Thank you,



Michael S. Kent, MAS, DVM, DACVIM, DACVR
Director, Center for Companion Animal Health



“Your devotion inspires our commitment.”

— Dr. Michael S. Kent
Director, Center for Companion Animal Health

A New Hope for FIP Continued from page 1

The researchers have focused on developing compounds with broad anti-viral activity and recently demonstrated that one of their research compounds stopped progression of the disease and led to clinical recovery when given to cats with FIP.

“We’ve had a series of breakthroughs over the past half century, but each time you think you have an answer, it leads to more questions,” said Pedersen, a distinguished professor emeritus of medicine and epidemiology. “It’s the complexity of FIP that never ceases to amaze me—it’s kept my interest for this long!”

The Morris Animal Foundation recently committed \$1.2 million to fund research that will advance knowledge of FIP. After a rigorous selection process, Dr. Yunjeong Kim and her team at Kansas State received an additional grant to conduct a clinical trial investigating the effect of the newly identified compound in client-owned cats with FIP. The

clinical trial currently is underway as a collaborative effort between Kansas State and UC Davis. The researchers hope to enroll up to 70 cats with FIP into the trial, and anticipate the study will be completed in two years.

The first phase of the trial involving 15 cats with various forms of FIP is fully enrolled, and no more cats are being accepted for treatment at this time. It will take researchers two to three months to evaluate preliminary results and decide on what forms of FIP will respond best to treatment and the optimal dosage regimen. Once those determinations are made, the trial will be re-opened for another small group of cats that meet trial guidelines.

“This exciting development demonstrated that inhibiting growth of the virus is a critical part of treatment,” Pedersen said. “Now we must determine the optimal dosage regimen to bring about a long-term or even permanent remission of disease.”

In the Field with the *Koret Shelter* Medicine Team

The evolving role of a veterinarian who serves homeless animals

By sunrise, UC Davis alum Dr. Cynthia Delany '00 has already cared for dozens of rescue animals in her converted workshop—administering medications, changing bandages, and mashing food for hungry puppies. She distributes buckets of hay to her draft horses and miniature donkeys before practicing a fast round of clicker training with a pair of camels she hopes to ride someday. At 6 a.m., when Delany pulls into her real job at Yolo County Animal Services, she's just getting started.

More than one hundred homeless, sick, and injured animals receive a visit from Delany before 10 a.m. She'll decide who is ready to move to the adoption floor, who needs a little extra love from the volunteer staff, who needs medical care or who may benefit from enrichment and training.

Next up is a check-in with Dr. Stacy Kraus, another member of the UC Davis Koret Shelter Medicine team overseeing UC Davis veterinary students spaying and neutering animals in a donated big rig reconfigured into a surgery facility. Delany downs a protein shake on her way to the surgery suite—no time for lunch today. Before she can get there, she runs into an animal control officer delivering a sick bat. She'll have to tend to this tiny mammal later. Right now, a dog hit by a car and a feral cat with wounds are waiting for surgery, unlikely second chances for shelter animals just a few years ago.

When Delany took the helm at Yolo Animal Services as the head shelter veterinarian in 2011, only 48 percent of animals left the shelter alive. Today, 90 percent will.

As a shelter medicine clinician, Delany knows the more days an animal spends in their care the more it impacts the shelter's tight budget. The faster she can move healthy animals through, the more funds she'll have to save the ones that need extra care. Delany is one of many shelter veterinarians who also perform duties typical of a shelter manager, dividing her day between animal care and shelter operations. Indeed, the role of a shelter veterinarian has long been changing. Many of the nation's best animal welfare organizations are led by veterinarians who now have a seat at the executive table.

By 7 p.m., Delany will return home to begin the second round of care on the tiny neonatal kittens that have been awaiting her return. Her own pack of rescued dogs pace eagerly nearby; it's almost time for agility training. She'll settle in for the night reading a book on animal behavior, her own cat curled on her lap.

"It's how I recharge my batteries," she smiles.

Dr. Delany joined the UC Davis shelter medicine program in 2001 as the first university-employed veterinarian to work full time on contract with a local shelter.

In 2015, more than 1,500 animals were spayed and neutered by UC Davis veterinary students at Yolo County Animal Services under Delany's supervision.

The program networks with nearly 2,000 animal welfare agencies and shelters in an effort to improve the welfare of homeless animals and reduce euthanasia.

Just one of the program's campaigns, the Million Cat Challenge, has already tallied over 600,000 lives saved in North American shelters since 2012.



Thank You



Friends of Companion Animals – Honor Roll

(July 1, 2015 – June 30, 2016)

We gratefully acknowledge members of the Friends of Companion Animals for supporting the CCAH and advancing animal health and well-being. The following benefactors contributed \$1,000 or more with gifts totaling more than \$7 million.

Alameda Land Company, Inc.
Baileys Foundation
Gary and Debra Baird
Perk Bell
Eric Berg
Thomas Bertken and Sheila McManus
Grace Blair
Boehringer Ingelheim Vetmedica, Inc.
Michael Borck and Kathleen Brannan
William and Katy Borgers
Bosack and Kruger Charitable
Foundation, Inc.
Diana Brelsford
Patricia Brennan
Calaveras Veterinary Clinic
Renee Cali
Sergio and Claudia Caminha
Colin Campi and Arlene Morris
Martin Checov
Ellen Cheung
Jack and Janet Collins
Caron Compactor, Inc.
Victoria Corrales
James and Sharon Day
Louise Dela Cruz
Lawrence Devin
DMARLOU Foundation *in memory of*
Dorothy & Martell Kaliski
Dennis and Susan Driver
Arthur Dubow Foundation
John Dutro
Elanco Animal Health
Robert Emerson and Lauren Westreich
Stephen Evans and Kathleen Correia
Zalec Familian and Lilian Levinson
Foundation
Edwin and Patricia Fichtner
Alan and Melinda Fitch
Winifred Fong
John and Ann Fornoff
John Giffin

Allan and Roberta Ginsberg
Charlotte Goland
Golden Gate Cat Club, Inc.
Floyd and Sandra Greene
Charles and Marion Hair
Raymond and Marianne Hammerschmidt
Heppy Trust
Suzanne Hill and Linda Jensen
Karen Hooper
Brooks and Carol Horace
JBF Corporation
Dan and Jill Johnson
Song Kang and Helen Kwong
Barbara Kerr
Jane Kievit
Koret Foundation
Collin and Catherine Lau
G.M. Lawrence Insurance Brokerage
Lazin Animal Foundation, Inc.
John and Pamela Leggett
J. Levendowski
Paul and Lea Levine Foundation
Chee and Christina Louie
Lucky Fund
Maddie's Fund
Richard and Anne Marder
Howard McGill
Meadowview Foundation
Sharon Melnyk
Mark Miller
Brooke Moore
Paul Neumeyer and Kim Ooi
Charles and Phyllis Newman Foundation
Joanne Nicholson
John Noll
Ogena Solutions LLC
Stephen and Susan Ohanian
Michael and Ann Parker
Perforce Foundation
PetSmart Charities
Thomas Pollock and Eileen Tabios

Poodle Club of America Foundation Inc.
Bob and Lori Pryt
Lori Raineri
Raskin Foundation
A.J. Reynertson
James and Janell Riker
Rosemary Rodd Charitable Fund
David Rubcic and Kristi Abrams
Albert and Nancy Sarnoff
Bille Sarzin
Cheryl Sedestrom
Randy and Christina Sesser
Linda Smith
SOCK FIP
William Sommers and Sandra Black
Shirley Ruxton Soper
Richard Spickard
Gary and Cathy Spratling
James Stimson
Mariko Sugiyama
George Sydney and Phyllis Redmond
Miller Trust
Marcia Syufy
Sheila Thornton
Jean Tindel
Michael Tracy and Debra Lelek
Timothy Trucano
Katharine Tyson
James Vokac and Stacey Baba
Suzanne Walchi
Shane Ward
Linda Wark
Weathervane For Women
Sherry Williams
Erin Wilson
Linda Wroth
Franklin and Deborah Wyman
Lev and Tatyana Yurovsky
Lin Zucconi



Heritage Society for Animals

Recognizing individuals who have chosen to include the School of Veterinary Medicine in their estate plans

For more information about joining, contact the Office of Development at 530-752-7024.

Unique Advantage: The Integrated Approach

The CCAH, one of the school's 36 units, brings together faculty expertise, facilities, equipment, staff, students and funding to tackle the toughest problems in animal health. Center faculty conduct cutting-edge research investigations, as well as work in the veterinary hospital and teach in the classroom. Their discoveries lead to new diagnostic tests and treatment options for the school's animal patients. In the clinic, faculty see patients with injuries, naturally occurring diseases and other health conditions. This information is then taught to DVM students, and shared with practicing veterinarians in the community. Over time, the clinical caseload data—hundreds of thousands of medical records—provides a valuable resource of searchable information for scientific studies.

Powered by donations to the CCAH, the faculty partner with colleagues across the school to search for common elements to unlock the door to new discoveries, and improved animal health.



Major discoveries by the CCAH team impacting clinical practice include:

- Identifying the gene mutation for hypertrophic cardiomyopathy in cats
- Advancing cancer treatments using a linear accelerator and stereotactic radiosurgery
- Developing a reconstructive procedure to regrow jawbone in dogs following bone injury or tumor removal
- Creating a surgical technique for corneal disease in dogs
- Linking low taurine levels to cardiomyopathy in cats
- Developing stem cell therapy clinical trials for feline chronic gingivostomatitis, knee diseases in dogs, and inflammatory bowel disease in dogs
- Identifying the genetic cause of cleft palate in Nova Scotia duck tolling retrievers
- Designing nutritional treatment strategies for obese dogs and cats

“The CCAH is a vital component of the school. These collaborative teams not only investigate and identify solutions to some of the world’s most complex health challenges for animals and people, but they translate their findings to provide excellent animal patient care.”

— Michael D. Lairmore, Dean



Treating Cancer in Dogs

Provides Hope for Humans

When Krista DeZerega-Thomson got the dreaded news that Rohan, the family's beloved Labrador retriever, had cancer, she was devastated. He had metastatic melanoma—an aggressive form that affects dogs and humans—and was given only two months to live.

Fortunately, Dr. Michael Kent, a radiation oncologist at the school, was able to enroll Rohan in a unique clinical trial in an attempt to extend the length and quality of his life. In collaboration with Dr. Arta Monjazebl, associate professor of radiation oncology at the UC Davis Comprehensive Cancer Center, and others at the veterinary school, Kent was examining the use of a three-pronged approach to treating these types of cancer.

"These are the most challenging cases in cancer medicine—a tumor that has already spread," said Kent, who also serves as CCAH director.

In addition to radiation treatments, veterinarians injected immune-enhancing drugs into Rohan's tumor site to stimulate his immune system to mount a local response to the tumor. He also received oral drugs to put a damper on regulatory T-cells that normally lower a body's immune response—a safeguard that keeps the immune system from recognizing the body as foreign, but also hampers fighting a tumor.

Rohan was given another six months with his family—three times longer than predicted without therapy. Just as importantly, his remaining life was a fun one.

"Every time he came out of treatment, he had more energy," DeZerega-Thomson said. "We took him to the lake and hiking—he really enjoyed his last months."

Melanoma, lymphoma, gliomas—all of these types of cancer, to name a few, affect both dogs and people. For that reason, dogs make excellent models for better understanding not only how cancer forms in humans, but also in developing more efficient treatments. Monjazebl said based on the

success of the canine clinical trial, he is beginning a safety trial in human patients with metastatic melanoma.

"This collaboration was an excellent example of how physicians and veterinarians can work together to tackle a disease that affects both species," Kent said. "Now our job is to follow up, refine, and improve the technique so it can be used for both dogs and humans."

The study was graciously funded in part by donors to the CCAH and published in the journal *Clinical Cancer Research*.

Adapted in part from Synthesis, the magazine of the UC Davis Comprehensive Cancer Center.



vetmed.ucdavis.edu/ccah

(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

CCAH Update is published by the School of Veterinary Medicine at the University of California, Davis: Michael D. Lairmore, dean; Michael Kent, director, CCAH; Linda Ybarra, director of communications; Sharon Anglin, Katie Blakewell, Celeste Borelli, Vickie Gustafson, Mandy Newkirk, Don Preisler, Carolyn Sawai, Rob Warren, Trina Wood, contributors; Steve Dana, ATS Mediaworks.

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. *The University of California does not discriminate in any of its policies, procedures or practices. The university is an affirmative action/equal opportunity employer.*

 If you would like to receive this publication electronically, please contact the Office of Development at 530-752-7024 or development@vetmed.ucdavis.edu.

Highlights of CCAH Faculty Proposals Funded

Through the generous philanthropic support of our friends, the CCAH is able to fund more than 70 proposals annually, including these current projects:

- Evaluating the safety of fish oil as a nutritional supplement in cats – a feasibility study (Dr. Jennifer Larsen)
- Identifying the characteristics which will aid in social pairing of parrots (Dr. Joanne Paul-Murphy)
- Scanning the canine genome for longevity-related traits in aged golden retrievers and Labrador Retrievers (Dr. Robert Rebhun)
- Developing a toxoplasma vaccine for cats (Dr. Jeroen Saeij)

Center for Companion Animal Health

Business Office: 530-752-7295 Fax: 530-752-7701
Small animal appointments: 530-752-1393



vetmed.ucdavis.edu/ccah
Support CCAH

Inscribe a brick at the CCAH as a lasting tribute to your special companion.

You may wish to honor a much-loved pet, pay tribute to a family member or friend, recognize a special veterinarian or memorialize a beloved animal. If you would like to establish a memorial brick in Edna's Park patio, please call 530-752-7024 or visit <https://give.ucdavis.edu/Go/MemorialBrick>

