



## Veterinary Center for Clinical Trials

Veterinary clinical trials are used to assess the efficacy of new treatments, drugs, devices and procedures that are not yet available in clinical practice. Here at the UC Davis School of Veterinary medicine, owners voluntarily enroll their pets in relevant clinical trials with the hope of improving the quality of life for their own pets and to benefit veterinary medicine in general.

In 2013, the school expanded its ongoing comparative clinical trials program into a national initiative, the Veterinary Center for Clinical Trials (VCCT). Investigators seek to enhance the quality of life in companion animals while reducing the time required to bring novel therapies, diagnostics and preventive strategies into much-needed human clinical trials.

### Success Stories –

- **Laminitis** - After a tendon injury, racehorse Hulahalla retired from her career. For unknown reasons, she developed laminitis, a devastating inflammatory condition that affects the nailbed, causing severe pain and suffering. Many of these cases are unresponsive or poorly responsive to current standard of care practices. As a consequence, many horses are put down as a last resort to end the pain and agony. A veterinary anesthesiologist administered an experimental compound, t-TUCB, to Hulahalla and three other horses suffering from laminitis. At the time of treatment, Hulahalla was lying down for most of the time, and had extremely high blood pressure and pain. After only four days of treatment, veterinarians saw great improvements in Hulahalla's demeanor, blood pressure, and pain levels. They also observed that the other three horses showed marked improvement in their pain levels. Happily, Hulahalla experienced a complete recovery, and has been laminitis-free for over three years. A clinical trial to further examine this experimental anti-inflammatory compound is awaiting funding.
- **Cancer** - A 9-year-old chocolate Labrador retriever with cancer inside his nasal cavity was brought to UC Davis by his owners, who opted for a novel treatment offered by one of the school's leading veterinary cancer surgeons through the VCCT. This new approach was a minimally-invasive method of killing the tumor by freezing it with cryoprobes. The Lab's procedure was successful, and he has returned for many positive rechecks. At the latest, a CT scan showed no evidence of nasal tumor regrowth and no evidence of the cancer spreading to his lungs or lymph nodes.
- **Chronic Gingivostomatitis** - Bob, a 14-year-old male Domestic Shorthair, suffered from painful feline chronic gingivostomatitis (FCGS), which causes inflammatory lesions that affect the gums and back of the mouth. His owner had tried everything available to treat Bob, including a full-mouth extraction and



several courses of corticosteroids and antibiotics; however, nothing seemed to work or even improve his quality of life. Bob's owner elected to enroll Bob in a VCCT clinical trial investigating a novel stem cell therapy to treat FCGS. Bob's own fat-derived stem cells were processed and given back to Bob intravenously to downregulate the inflammation and promote tissue regeneration. Three months after starting the treatment, Bob resumed a normal happy life, free from pain and the disease.

### **Helping pets helps people, too –**

- As animals receive treatment, veterinarians generate essential insights into the safety and efficacy of new approaches that the medical profession may apply in human patients.
- Many naturally occurring diseases that affect companion animals – cancer, heart disease, dry eye, genetic abnormalities like cleft palates, to name a few – also occur in people. Veterinary clinical trials, therefore, offer the potential for new advances in human medicine.
- Successful outcomes from veterinary clinical trials can accelerate the drug development process for use in human and veterinary medicine. And since veterinary studies may take place in less time and at lower cost than similar trials in people, this “in tandem” approach may also speed the approval process for new therapies in humans.

### **Cutting-Edge Cancer Treatments –**

- Veterinary oncologists paved the way for better veterinary treatments when they provided the first evidence that an experimental anticancer agent could inhibit the growth of several types of canine malignancy. The VCCT study also gave scientists valuable and timely information to apply to human clinical trials. In 2009, the FDA approved the drug, now known as Palladia, as the first medication developed specifically to treat mast cell tumors in dogs.
- In collaboration with neurosurgeons at UC San Francisco, veterinary neurologists used a novel delivery system to administer drugs directly into spontaneously arising brain tumors of dogs, specifically gliomas. Tumor size was reduced for many of the patients, which extended their survival rate and quality of life. Because of the promising outcome, this new method is awaiting FDA approval for use in human patients.
- Veterinarians oversaw 12 dogs with lymphoma, a fairly common cancer in dogs and humans. Through the VCCT, the clinicians used an alternative method to deliver paclitaxel, or Taxol, a powerful drug used to treat breast cancer, to reduce problems that dogs suffer from Cremophor, which is usually mixed with paclitaxel. The veterinarians determined that paclitaxel delivered at the right dosage via an encapsulation process was well tolerated by their patients. Future trials will involve using a target molecule to deliver the drug directly to receptors inside cancer cells.
- Small animal veterinary surgeons have introduced minimally-invasive procedures and specialized imaging to treat cancers considered inoperable just a few years ago. Some of these cutting-edge procedures include: intravascular tumor therapies; intraoperative near-infrared fluorescence imaging; cryoablation; chemoembolization and intra-arterial chemotherapy; and laparoscopic and thoracoscopic surgical procedures to relieve obstructions in a variety of locations (urethra, ureter, colon, esophagus, trachea and blood vessels). Many of these new procedures are now available to our veterinary patients, who recover more quickly with fewer complications.

### Cat spraying -

- Researchers discovered that administration of fluoxetine hydrochloride or clomipramine for treatment of urine spraying in cats can considerably reduce the rate of urine marking. Longer treatment increased efficacy of the drugs. However, most cats returned to marking after abrupt drug withdrawal. A second course of treatment was predicted to be as effective as the first.
- Another study suggested that male cats and cats from multi-cat households are more likely to exhibit urine marking behavior than females and cats from single-cat households. Results also showed that attention to environmental and litter box hygiene can reduce marking frequency in cats, regardless of sex or household status of the cats.



### Impacts of Neutering Dogs -

- Researchers examined, in Golden Retrievers, the variables of gender and age at the time of neutering versus leaving dogs gonadally intact. Given the importance of gonadal hormones in growth and development, the VCCT study invited an analysis of the multiple organ systems that may be adversely affected by neutering. The results were eye-opening, and have health implications for Golden Retriever companion and service dogs, and for oncologists using dogs as models of cancers that occur in humans. Some discoveries were:
  - Of early-neutered males, 10 percent were diagnosed with hip dysplasia - double the occurrence in intact males.
  - Almost 10 percent of early-neutered males were diagnosed with lymphosarcoma - 3 times more than intact males.
  - The percentage of hemangiosarcoma cases in late-spayed females (about 8 percent) was 4 times more than intact and early-spayed females.
- A study was conducted on the effect of gonadectomy on subsequent development of age-related cognitive impairment in dogs. Scientists concluded that the presence of circulating testosterone in aging sexually intact male dogs may slow the progression of cognitive impairment, at least among dogs that already have signs of mild impairment. Estrogens would be expected to have a similar protective role in sexually intact female dogs. Scientists also suggested that there may be a need to evaluate hormone replacement therapy to maintain optimal health.

**Award-winning team** – In 2013, the National Cancer Institute (NCI) acknowledged our translational researchers, indicating that UC Davis has made “unique and noteworthy scholarly contributions in the field of cancer drug development.” The clinical investigators are members of the NCI’s Comparative Oncology Trial Consortium, which includes 20 veterinary schools across the United States and Canada.

*For more information about the VCCT or our current clinical trials, please visit our website [www.vetmed.ucdavis.edu/clinicaltrials/](http://www.vetmed.ucdavis.edu/clinicaltrials/) or contact us via phone (530-752-5366) or email ([vetcintrials@ucdavis.edu](mailto:vetcintrials@ucdavis.edu)).*