



**2002 Grant Awards**  
**George and Phyllis Miller Trust**  
**San Francisco Foundation**  
*Three studies funded for a total of \$74,265*

***An investigation of the epidemiology and pathophysiology of a virulent strain of feline calicivirus causing high mortality in vaccinated and unvaccinated cats***

\$11,411; Janet E. Foley, DVM, PhD, Kate F. Hurley, DVM, Patricia A. Pesavento, DVM, School of Veterinary Medicine, University of California at Davis

Feline calicivirus (FCV) is a very common infection of cats, especially in multiple cat environments. Cats often shed virus for months to weeks after recovery. Although FCV is not usually fatal, since 1998 at least five local outbreaks have been reported of a highly virulent strain, causing death in up to 50% of cases and affecting both vaccinated and unvaccinated cats. Analysis of tissue samples has only been reported for one of the outbreaks. There has never been follow-up of survivors or exposed cats. A new outbreak was reported in July 2002 and is currently being investigated. Case reports have been collected, the spread of the disease has been tracked, and virus has been isolated and characterized from affected cats. Surviving cases have been identified, and specimens have been obtained from cats that died. The proposed research will follow up on the initial investigation in two areas: follow up of survivors and exposed cats to assess length of time after recovery cats remain infectious, and whether sub-clinical or mild infection is possible; and detailed analyses of tissues from cats that died of the disease, including electron microscopy and special staining to see where virus is located in affected organs. Tissue examination will provide the most detailed information to date regarding what types of organ damage can be seen with this strain of calicivirus, and how the virus causes the observed symptoms.

***FIV Vaccination: effects on FIV diagnostic testing***

\$41,688; Margaret Slater, DVM, PhD, College of Veterinary Medicine, Texas A&M University, Julie Levy, DVM, PhD, DACVIM, and Cynda Crawford, DVM, PhD College of Veterinary Medicine, University of Florida, Christian M. Leutenegger, Dr.med.vet., PhD, FVH, School of Veterinary Medicine, University of California at Davis.

Feline immunodeficiency virus (FIV) affects between 1 and 14% of the cats in the United States. Although infected cats may be asymptomatic for many years, an AIDS condition ultimately develops, leading to opportunistic infections, cancer, and wasting. No treatment exists for FIV, other than for the secondary diseases that develop. Until recently, the only method for avoiding FIV infection was to prevent cats from having exposure to FIV-infected cats. Isolation of infected cats was accomplished by testing cats for antibodies against FIV, a highly reliable indicator of infection. The recent release of Fel-O-Vax FIV®, the world's first vaccine against FIV, was a scientific breakthrough in terms of overcoming the challenges of FIV vaccination. However, the vaccine also opened a Pandora's box regarding diagnosis of FIV, because the vaccine interferes with all of the currently licensed FIV diagnostic tests based on detection of antibodies. Vaccinated cats produce antibodies that are indistinguishable from those used for diagnosis of FIV infection. Polymerase chain reaction (PCR) has been suggested as an alternative testing methodology, but virtually nothing is known about the sensitivity, specificity and overall diagnostic performance of the currently available tests. Various PCR tests have been shown to be incapable of detecting some FIV strains, due to the marked variability of the viral genome. The sensitivity of PCR for low amounts of virus may lead to false positive results if even minor contamination occurs during handling of samples. Failure to identify infected cats (false negative) may lead to inadvertent exposure and transmission of FIV to uninfected cats. Misdiagnosis of FIV in uninfected cats (false positive) may lead to the inappropriate euthanasia of cats or of kittens born to vaccinated queens. This is an especially problematic issue in shelter medicine, since confirmatory testing is frequently impractical due to financial and logistical limits. In this dawning era of FIV vaccination, it is essential to evaluate all of the currently available FIV diagnostic tests to determine which are the most reliable and where the pitfalls lie. This study will evaluate test results for all of the currently available FIV diagnostic tests in FIV-free, FIV-vaccinated, and FIV-infected cats against a gold standard of viral isolation.

***Serum total and ionized magnesium concentrations and “Refeeding Syndrome” in anorexic cats***

\$21,166; Andrea J. Fascetti, VMD, PhD and Sean J. Delaney, DVM, School of Veterinary Medicine, University of California at Davis

According to the literature, 28% of cats in intensive care units are low in magnesium based on total serum magnesium concentrations. Cats with low magnesium concentrations are hospitalized longer than cats with normal concentrations. However, in cats, total serum magnesium is a less sensitive measure of magnesium status compared to ionized magnesium concentrations. Less than 15% of cats with low magnesium concentrations, based on ionized magnesium analysis, were detected when evaluated using total magnesium. Currently, there is no clear recommendation concerning the most sensitive measure of magnesium status in cats. It is likely that many patients with low magnesium are not identified if they are evaluated using total magnesium analysis. Furthermore, although most patient's nutritional support include some magnesium, it may not be enough to correct their deficits. Low magnesium levels may also occur, or worsen

during the refeeding process. This study will provide clinically relevant information concerning magnesium metabolism in cats by accomplishing the following objectives:

- 1) Establishing reference intervals for ionized and total magnesium concentrations,
- 2) Determining the prevalence of low magnesium levels in anorexic cats,
- 3) Determining the effect of nutritional support on magnesium status, and
- 4) Determining outcomes (including illness and death rates) in patients with low magnesium levels that receive magnesium supplementation versus those managed traditionally.

This study will provide recommendations concerning the most sensitive indicator of magnesium stores, and the impact of anorexia and re-feeding on magnesium status, as well as the potential benefits of magnesium supplementation in cats.

**For more information, contact:**

Winn Feline Foundation  
P.O. Box 1005,  
Manasquan, NJ 08736-0805  
Phone: 732-528-9797  
<http://www.winnfelinehealth.org>

Janet Wolf, Executive Director  
Phone: 856-447-9798  
E-mail: [winnfeline@aol.com](mailto:winnfeline@aol.com)

Susan Little DVM, President  
Phone: 613-741-2460  
E-mail: [SusanLittleDVM@compuserve.com](mailto:SusanLittleDVM@compuserve.com)