



THE WINN FELINE FOUNDATION

For the Health and Well-Being of All Cats

1805 Atlantic Ave., PO Box 1005, Manasquan, NJ 08736-0805
Voice 732-528-9797, ext 31 Fax 732-528-7391 www.WinnFelineHealth.org

2003 HEALTH STUDY GRANT AWARDS

Ten studies funded for a total of \$118,669

2003 ENDOWMENT STUDIES (Funded from investment income derived from our perpetual Endowment Fund)

Feline herpes virus - oral delivery system for an immunocontraceptive vaccine specific for cats?

\$14,957. Stephen M. Boyle and Beverly Purswell; Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech

The development of a safe and cost-effective non-surgical contraceptive that can be given orally as a vaccine and easily delivered to multiple cats would be a very useful tool for controlling stray and feral cat populations. Recent studies have shown that immunizing one animal species with proteins surrounding the female egg (zona pellucida, ZP) from another animal species stimulates an immune response in the recipient and blocks subsequent reproduction, presumably by preventing the male sperm from binding to the female egg. Studies in Germany have shown that antibodies against rabbit ZP are capable of blocking sperm from fertilizing the egg in cats. Together, this suggests that it should be possible to use rabbit ZP in a contraceptive vaccine for cats. If successful, this feline specific virus will be tested for its ability to induce contraception in cats and to vaccinate feral cats without worrying about antifertility effects on non-feline animal species living in the same areas.

CONTINUATION OF PROJECTS PREVIOUSLY FUNDED

Development of a real-time RT-PCR technique to study feline glucose metabolism

\$9,638. Thomas Schermerhorn, VMD, DACVIM; Kansas State University

Diabetes mellitus is one of the most common endocrine diseases of cats but relatively little is known about the factors responsible for its development. Glucose (blood "sugar") is abnormally elevated in diabetic cats. It is also well known that even normal cats can develop elevated blood glucose under some circumstances, such as a stressful event. In contrast to cats, "stress" hyperglycemia, as the elevation in blood glucose is called, is unusual in dogs. The propensity of cats to develop stress hyperglycemia along with other peculiarities in the regulation of blood glucose suggests the possibility that cats may possess unique physiologic mechanisms for glucose control. The purpose of this study is to develop a novel method to study glucose metabolism in cats using polymerase chain reaction (PCR) technology. The results of this study will shed light on the normal glucose metabolism of cats and provide the foundation for additional studies into the role of abnormal glucose metabolism in the development of feline diabetes.

RICKY FUND STUDIES (a fund for the study of hypertrophic cardiomyopathy in cats established by Steve Dale in memory of his cat, Ricky)

Anticoagulant effects of low molecular weight heparin in normal cats

\$15,000. Amy J. Alwood, DVM and Lori S. Waddell, DVM, DACVECC; Veterinary Hospital of the University of Pennsylvania

A frequent complication of hypertrophic cardiomyopathy is blood clot formation, typically obstructing blood flow in the aorta. The most frequently recommended therapies to combat this problem are warfarin, aspirin, and unfractionated heparin. Our knowledge of the effects of these drugs in cats, one of which is hemorrhage, is incomplete. In human medicine, low molecular weight heparin is recommended for prevention of blood clots, with the benefits of decreased monitoring and lower risk of hemorrhage compared to other drugs.

This study will compare the effects of two low molecular weight heparins, unfractionated heparin, and a placebo in normal cats. The researchers will monitor a series of blood tests. These tests include the traditional blood clotting tests and two newer methods to monitor clotting activity. One of these tests has not been validated in cats; therefore, this validation represents the first phase of the study. The second phase of the study will evaluate the effects of the low molecular weight heparins, unfractionated heparin and placebo on blood clotting in healthy cats.

This study will provide invaluable information regarding how these drugs work in the cat, as well as vital information in further studies evaluating heparin use in cats with hypertrophic cardiomyopathy.

Effect of ramipril on cardiac mass and fibrosis in feline familial hypertrophic cardiomyopathy

\$14,880. MD Kittleson, DVM, PhD, DACVIM (Cardiology), KA MacDonald, DVM, DACVIM (Cardiology) and ER Wisner, DVM, DACVR; University of California (Davis), School of Veterinary Medicine

One of the characteristics of hypertrophic cardiomyopathy (HCM) is scarring of heart muscle. Both the death of abnormal heart muscle cells and circulating hormones stimulate scar tissue formation. This study will utilize a colony of Maine Coon cats that are affected by a dominant, heritable form of HCM.

One aim in treating HCM is to decrease the thickness of the heart and decrease the scar tissue formation. Anecdotal experience has dictated that the use of drugs called ACE inhibitors to treat this problem, but further study is needed. The objective of this study is to evaluate the effects of ramipril, an ACE inhibitor, in Maine coon cats with moderate to severe HCM. Following an initial evaluation, the cats will be treated with ramipril and re-examined a year later. If ACE inhibitors cause improvement in cats with HCM, they would become a standard of care for HCM. Furthermore, early usage of ACE inhibitors may be successful in preventing or slowing progression of disease and subsequent congestive heart failure.

NEW STUDIES

Viral replication in lifelong feline coronavirus carriers

\$15,000. Diane D. Addie, Department of Veterinary Pathology, University of Glasgow

Feline infectious peritonitis (FIP) is caused by feline coronavirus (FCoV). The Winn Foundation funded a survey of 129 cats naturally exposed to FCoV in the UK (1996-1999) and 18 lifelong carrier cats were identified. Four of these carrier cats died, one with FIP, and a 5th cat has recently had a tumor removed from her large intestine. In this project pathological samples from these cats will be examined for evidence of virus, to elucidate exactly where FCoV persists in healthy carrier cats, compared with cats that develop FIP. This will give us a greater understanding of how FIP develops and how the virus causes a persistent infection. The latter is important because carrier cats are a likely source of FCoV for other cats in the population and once we understand how the virus persists it might be possible to find a way to eliminate it from carrier cats in a way that does not endanger the carriers themselves.

Rapid clinical assessment of oxidative stress in feline patients using flow cytometry

\$14,465. Craig B. Webb, Ph.D., DVM, DACVIM; Steve Dow, Ph.D., DVM, DACVIM and David C. Twedt, DVM, DACVIM; Colorado State University;

We now understand that certain diseases of cats (diabetes, hyperthyroidism, liver disease and chronic renal failure) create oxidative damage to cells. This damage leads to cell death and has been very difficult to measure in the past. This project will adapt a new test (flow cytometric assay) to easily and accurately measure this damage. This will help to better understand the effects of oxidative stress in diseased cats, and will better define the need and efficacy of treatment with supplemental antioxidants.

Effect of platelet-derived growth factor receptor inhibition on vaccine-associated sarcoma radiosensitivity

\$14,579. Douglas H. Thamm, VMD, DACVIM (Oncology), Michelle M. Turek, DVM, DACVIM (Oncology), David M. Vail, DVM, MS, DACVIM (Oncology), Ilene D. Kurzman, MS, EdD, Lisa J. Forrest, VMD, DACVR (Radiology/Radiation Oncology); School of Veterinary Medicine, University of Wisconsin – Madison

New treatments for vaccine-associated cancer are desperately needed. Investigations have recently begun to evaluate the role of radiation therapy and chemotherapy for these cancers with encouraging results, yet many still reoccur. Recently a new drug (ST1571) that targets a specific growth factor of these cancer cells (platelet-derived growth factor – PDGF) has been shown to increase the benefits of chemotherapy. This new study hopes to prove this drug (ST1571) will also increase the efficacy and benefits of radiotherapy as well.

Plasma vascular endothelial growth factor (VEGF) concentrations and tumor VEGF expression in cats with vaccine associated sarcomas

\$4,100. Craig A. Clifford DVM, MS; Karin U. Sorenmo CMV, Dip ACVIM (Oncology) and Ken Drobatz DVM, Dip ACVIM, ACVCC; Department of Clinical Sciences, School of Veterinary Medicine, University of Pennsylvania

Feline vaccine associated sarcoma (VAS) is an aggressive soft tissue cancer for which a great deal of information regarding cause, progression and ultimate best treatment are still unknown. For many tumors, the ability to make new blood vessels (angiogenesis) is often associated with more aggressive tumors that can spread readily

and are difficult to treat. Vascular endothelial growth factor (VEGF), produced by tumors, creates new blood vessels, thus enabling tumor growth and spread. In people, VEGF levels within the tumor or in the blood are important in determining the course of the disease. In human oncology, a great deal of research has focused on the application of anti-VEGF therapy, and numerous clinical trials using VEGF inhibitors have been conducted or are ongoing. Many results have been promising when these agents have been used in conjunction with chemotherapy.

The goal of this study is first, to examine VEGF blood levels in healthy cats and those with VAS; second, determine tumor VEGF levels and compare these levels with the degree of tumor angiogenesis; and third to compare VEGF blood levels with tumor levels. Results of this study will establish a range of VEGF levels in normal cats for future studies and determine the role of VEGF in VAS. This information will be helpful in designing future studies for VAS.

Genetic characterization of feline calicivirus associated with fatal hemorrhagic disease
\$14,250. Melissa Kennedy, DVM, PhD, College of Veterinary Medicine, University of Tennessee

Feline calicivirus (FCV) is one of the most common causes of upper respiratory tract disease in cats. This virus, along with feline herpesvirus-1 causes more than 80-90% of all upper respiratory tract infections in cats. FCV is highly contagious, and recovered animals may shed virus for months to years. FCV may be associated with other diseases as well, including arthritis and gingivitis. These investigators have identified a new highly hemorrhagic and fatal form of feline calicivirus from an outbreak in Tennessee. These affected animals suffered vasculitis with involvement of the liver, skin, and lungs. The virus was easily transmitted and rapidly spread to other cats in the facility, with significant mortality even in vaccinated cats. This study proposes to characterize this virus at the genetic level and compare it to other well-known respiratory forms to identify its unique features. This will increase the understanding of disease production by FCV and the reason for the apparent vaccine failures that are becoming more common. The latter information will have an impact on the design of FCV vaccines.

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

Susan Little DVM, President
Phone: 613-741-2460
E-mail: SusanLittleDVM@compuserve.com