MORRIS ANIMAL FOUNDATION

FELINE INFECTIOUS PERITONITIS

The Path to making FIP Treatable and Survivable

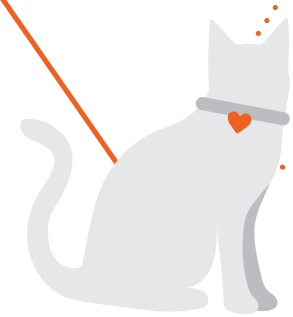
For more than 25 years, Morris Animal Foundation has funded research to find ways to save the lives of cats diagnosed with feline infectious peritonitis (FIP), a fatal viral disease. FIP continues to be one of the most prevalent and complex feline infectious diseases worldwide, without any definitive diagnostics, treatments or preventions. It also is a threat to both domestic and wild cats. But we are here to change that.

1950s First Recognized as a Disease in Cats

100%
MORTALITY RATE

0
CURES

0
COMMERCIALLY AVAILABLE TREATMENTS



1% TO 5% OF SHELTER CATS DIE FROM FIP

AN INSIDIOUS DISEASE WITH MANY CHALLENGES

AFFECTS YOUNG CATS

FIP is a fatal disease in kittens, young cats and immunocompromised cats. The FIP virus usually develops in cats under the age of 3. Healthy siblings of a kitten that has developed FIP are at a five-fold increased risk for developing FIP within the first 9 months of life.

SOME CATS ARE AT HIGHER RISK

The virus is more prevalent in indoor, multi-cat environments, such as shelters, cat sanctuaries and catteries. Studies show some breeds, such as Abyssinians, Bengals, Birmans, Himalayans and ragdolls, are more at risk for developing FIP, suggesting genetics may play a role.

CONTAGIOUS OR NOT?

With reported small outbreaks in multi-cat settings, FIP may have a contagious element, but it is thought to be rarely transmitted from cat to cat. Instead, most cases arise via spontaneous mutation in individual cats initially affected with a benign gastrointestinal coronavirus, a prevalent disease found in cats worldwide. We still have a lot to learn about what triggers this internal mutation process from benign to deadly disease.

CHALLENGING TO DIAGNOSE

There isn't an easy, rapid single test to reliably diagnose FIP. Sometimes the symptoms are vague and can carry on for extended periods of time, making it difficult for veterinarians to form a definitive diagnosis. Available testing is cumbersome and invasive; results sometimes cannot distinguish between the FIP virus and the related and less aggressive coronavirus. There also is no test to prospectively predict which cats are more likely to develop the disease.

TWO FORMS OF THE DISEASE

Cats can have either a wet or dry form of FIP. The wet form is easier to diagnose as symptoms include accumulation of fluid within the abdomen or chest cavity. The dry form is trickier and often comes with chronic weight loss, a clinical sign associated with multiple diseases. Cats with dry form also have localized growths on various organs. Both forms can lead to severe neurological disease.

LACK OF A KEY DEFENSE MECHANISM

Most cats mount a successful immune response against the initial benign gastrointestinal virus with no clinical signs or only transient diarrhea. However, when the virus mutates into the FIP virus, a key component of the cat's immune system no longer works effectively and the FIP virus is left unchecked. This helps the virus to replicate quickly throughout the body, affecting multiple organs.

HOW WE ARE HELPING

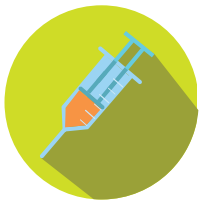
Morris Animal Foundation has invested more than $2 million in decades of FIP research. The bulk of this funding, more than $1 million, helped launch our Feline Infectious Peritonitis Initiative in 2015. This concentrated funding is an effort to push for a breakthrough in the diagnosis, treatment and prevention of the disease as well as help us learn more about its biology and genetics. The initiative has three arms:

DISEASE BASICS

Decades of research have helped us understand how the FIP virus evolves, thrives and spreads in a cat's body. Filling this knowledge gap helps researchers focus on potential targets that could slow or shut down the disease process. We know FIP is caused by a mutant strain of an often benign, highly contagious gastrointestinal coronavirus. We also have better insight into how the cat's immune system reacts (or doesn't react) to the FIP virus. This new knowledge is helping researchers find potential clues and explore novel ways to diagnose and treat this devastating disease.

SEARCH FOR NEW TREATMENTS

A significant breakthrough from the FIP Initiative was a clinical trial treating FIP-affected cats with a novel antiviral drug. While only a few dozen cats were enrolled in the trial, cats at early stages of the disease responded well to the drug. This was a major win for FIP research, netting recorded survivable cases of the disease. Though further development of this drug therapy is not without challenges, it gives hope to those seeking an effective treatment.



VACCINATION ELUSIVE, BUT WE HAVEN'T GIVEN UP

Prevention always is the best strategy for a disease. Coronaviruses are found worldwide in many species, including humans, dogs and pigs, and many of these strains have successful vaccines. However, cats don't respond well to similar coronavirus vaccination strategies. An FIP vaccine is commercially available but the vaccine has fallen short in preventing FIP. Novel vaccination approaches desperately are needed to protect cats from this deadly disease. Researchers are looking at strategies to vaccinate against the benign coronavirus that mutates into FIP. If we can successfully vaccinate for this less aggressive disease, especially at shelter intake, this could be a boon for reducing or eliminating the incidence of FIP in high-risk cat populations.

5 TO 10 TIMES

MORE PREVALENT IN SHELTER CATS

TAKING RESEARCH TO THE NEXT LEVEL

DIAGNOSIS IS KEY

While initial FIP Initiative projects into finding new ways to diagnose FIP did not net us a new diagnostic test, findings did provide us with valuable information on the biological mechanisms of the disease to help us get to the next project. Ongoing research is looking at two novel ways to rapidly and easily diagnose FIP-suspect cases as well as predict if cats may be at higher risk to develop the disease. What we learn may also help us understand disease progression and pinpoint biological mechanisms for targeted preventions.

TURNING THE CORNER ON TREATMENT

The successful outcome of the small antiviral drug clinical trial is encouraging, but more work needs to be done. The drug was highly effective in eliminating clinical signs of disease and very effective at putting some patients into clinical remission. However, it is uncertain whether treated cats can be permanently cured of the infection. The eventual drug development process leading to FDA licensing is daunting; it can take years (and, of course, more money) to get a drug to market. It also is unclear if cats with FIP may need a yet-to-be-developed suite of drugs to combat FIP infections, as we have seen in other complex viral diseases, such as HIV in people. More investigation is needed.

FASTER, BETTER STUDY TOOLS

We are in an exciting era of an explosion of new tools to study diseases. From a gene-editing tool known as CRISPR that can snip out parts of viral DNA, to creating a more robust cat genome, to rapid advancements in gene-scanning technologies, these gamechangers may help propel us in new directions to fight FIP on a genetic playing field.

With more than 70 years of scientific advances, Morris Animal Foundation is here for the long term in the fight against FIP. We will continue to support groundbreaking, innovative FIP research around the world so we can save the lives of thousands of affected cats.

Thank you to all of our donors who generously support FIP research. Cats everywhere are counting on us!

ABOUT MORRIS ANIMAL FOUNDATION

Morris Animal Foundation's mission is to bridge science and resources to advance the health of animals. Founded by a veterinarian in 1948, we fund and conduct critical health studies for the benefit of all animals.

Learn more at **morrisanimalfoundation.org**.

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