



Summer Newsletter



“Envisioning the end is enough to put the means in motion”

Dorothea Brande

Preface

Imagine a world where one day no cat will be robbed of a long and healthy life. Imagine a world where no pet parent will ever need to deal with the aftermath of Feline Infectious Peritonitis touching and changing their lives. Those were my thoughts the night of Saturday October 5, 2013 when I needed to give my beloved cat Luca the ultimate gift of love. His battle with FIP was lost in spite of all our efforts and his bravery. Luca fought this formidable foe with fortitude and dignity but at the end the virus won. Feline coronavirus took another cat and that “one more cat” was my cat and life was never the same.

Losing Luca was shattering. I've never experienced that profound grief before even though I've loved and lost many times in the past. It took a long time to come to terms with what had happened to Luca and the unfairness of it all. FIP marked my life and left a devastating emptiness which can only be filled by being involved with, and doing what I can to help find permanent solutions to end FIP, and to help those touched by this dreadful and insidious disease.

Right before he was forced to leave me behind, I'd promised Luca his passing was not going to be in vain and that heartfelt promise was the premise for what today are the EndFIP® global initiative and the Luca Fund for FIP Research.

Back in 2013, I was oblivious about feline coronavirus and had never heard of FIP until it was too late. I needed to understand the angles of life and the differences between what could be changed and what could not. I couldn't change the fact that my cat was gone but I could give impetus to, and put things in motion to create a project which, like FIP, crossed borders.

Feline Infectious Peritonitis is a global problem, it doesn't discriminate and we must work together to impart worldwide awareness and understanding of FCoV (the virus which causes FIP), and respect for the seriousness of FCoV infection, so that one day no one will have to go through the pain of losing their cherished cat to a disease that has claimed so many for so long.

From the outset I wanted to create a global vision for the EndFIP® brand. I realized this project needed to provide a service that solves a mass market problem using a different approach. The simplicity of the ideas, and the passion, needed to penetrate overseas markets. To accomplish this an infrastructure, a team and a culture needed to be developed as a brand will grow to the environment that was created for it.

Since our launch on October 5, 2018, people from all over the world have embraced our vision. As a result, we found ourselves in the position of having to expand our social media presence. In this newsletter, in addition to addressing several topics related to feline coronavirus and Feline Infectious Peritonitis, EndFIP® proudly announces the launch of a newly designed Facebook group. EndFIP® publicly acknowledges and expresses gratitude to all its moderators for their respective contributions. Each one of them provides valuable insight about the intricacies of Feline Infectious Peritonitis in their own corner of the world.

It takes a community to save cats; I am grateful that you are part of ours. Thank you for doing your part in the global quest to end FIP.

In gratitude,

Maria S. Bonino
Founder/Director
EndFIP® | Luca Fund for FIP Research

Join us in the fight to EndFIP®. Please request membership at:
<https://www.facebook.com/groups/EndFIP/>

**“It is during our darkest moments that we must
focus to see the light”**

Aristotle



What is Feline Coronavirus (FCoV)?

All of us at EndFIP® want to do our best to make learning about FIP enjoyable. We know it is a challenging task as behind each FIP loss there is a sad and heartbreaking story. You think you know a story but you only know how it ends. To get to the heart of the story, you have to go back to the beginning; to permanently end a problem, you need to cut it at its roots. FIP is an unusual consequence - aberrant immune response - to infection with Feline Coronavirus (FCoV). In other words, FCoV is the root of the FIP problem, which is why the EndFIP® project targets FCoV. What is Feline Coronavirus (FCoV)?

Feline coronavirus (FCoV) is an enveloped RNA virus. The name coronavirus comes from the shape of the structure which resembles a crown (corona in Latin) when viewed under an electron microscope. The virus (crown) spikes are what attach it to the cell when it infects a cat. For those of you who prefer fancy scientific information, FCoV contains the largest known viral non-segmented RNA genome. It has an enveloped virion which is composed of four major viral proteins: spike, envelope, membrane and nucleocapsid

We all want stories with happy endings but for cats with FIP the ending is rarely happy. In that spirit, this newsletter shares information about Feline Coronavirus (FCoV) and how to prevent infection. Quite simple:

NO FCoV = NO FIP!



FCoV and the pathogenesis of FIP



FCoV is a virus of the gastrointestinal tract. Most infections are either asymptomatic, or cause diarrhea/mild intestinal upset, especially in kittens as maternally derived antibody wanes at between 5 and 7 weeks of age. Feline coronavirus (FCoV) is endemic globally and perhaps you are wondering why some cats developed FIP whilst the vast majority of FCoV infected cats thankfully don't.

The pathogenesis (fancy word meaning the manner of development of a disease) of FIP is complicated: the reductionist view is that it is entirely due to mutation of the virus. Whilst this internal mutation theory is the most widely accepted, no consistent mutation has been identified. The holistic approach is that FIP occurs as a result of a number of factors, including viral load, the immune status and general health of the cat.

Want to learn more about FCoV and the pathogenesis of FIP.

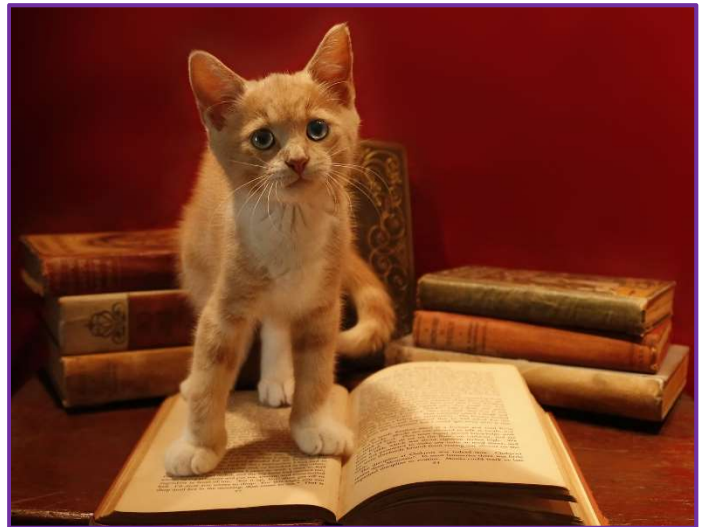
Visit: <http://www.endfip.com/virus-pathogenesis/>

FCoV: a little bit of history

Above, we addressed the importance of going to the beginning of a story. In this section, we will take you back in history. A few decades to be precise.

In 1963, American veterinarian Jean Holzworth first described a peritonitis in cats which caused the abdominal cavity to fill up with fluid. The condition appeared to be infectious, hence the name Feline Infectious Peritonitis (FIP). Within a few years, it was recognized that the cause of the disease was a virus: the poorly understood feline coronavirus (FCoV).

FIP is an immune mediated disease. The name Feline Infectious *Peritonitis* is slightly misleading: FIP isn't inflammation of the peritoneum (the lining of the abdomen) it is a vasculitis (inflammation of the blood vessels). The clinical signs which the cat develops depend on which blood vessels are damaged, and in which organ(s) the damaged blood vessels supplied.



FCoV exposure and transmission

How is feline coronavirus is transmitted? How do cats become infected with FCoV? FCoV is the virus which causes FIP.

Feline coronavirus (FCoV) is shed in the feces. FCoV infection occurs when cats ingest (or inhale) the virus. FCoV is a very contagious virus and it only takes a tiny speck of cat litter dust from a litter tray previously used by an infected cat for the virus to spread. Therefore, exposure to feces in litter boxes is the most common mode of infection.

FCoV is a relatively uncommon virus in pet cats allowed access to the outdoors and kept in households of one or two cats, but in situations where there are a lot of cats (i.e. breeding catteries, rescue shelters, hoarding situations, etc.) FCoV is endemic, infecting almost all of the corresponding cat population.

Want to learn more about FCoV transmission. Visit: <http://www.endfip.com/virus-transmission/>



FCoV prevention

The single best way to prevent FIP is to prevent your cat becoming infected with feline coronavirus. FCoV infection occurs via the oral-fecal route. Therefore, your best chance of preventing FCoV infection of your cats is to prevent your cat(s) coming into contact with infected cat feces. Litter tray hygiene helps prevent FCoV transmission and minimizes the dose of virus to which a cat is exposed to.

General recommendations to prevent FCoV transmission:

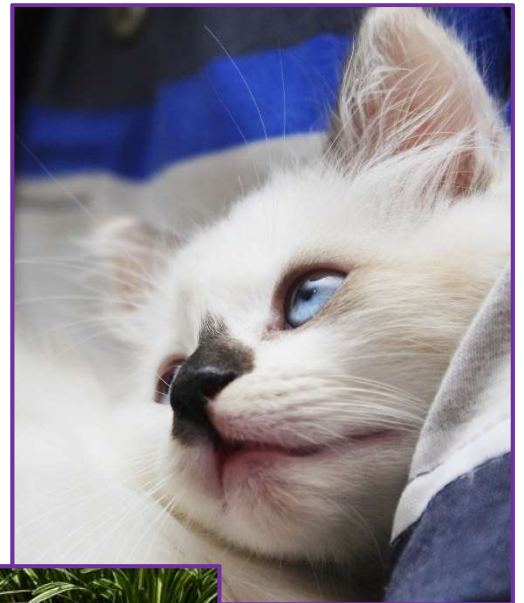
- Have a least one litter tray for each cat that you have (ideally one per each cat plus one more)
- Place litter trays as far away from food and water as possible
- De-clump litter trays at least once per day (ideally twice or more)
- Make it as easy as possible for yourself to clean the litter trays as often as possible (site litter trays in places which you frequent throughout your day)
- Use a non-tracking (clumping) cat litter
- Use a dirt trapper mat beside the litter tray
- Vacuum frequently (at least once a day – ideally keep a hand held vacuum close to the litter trays and vacuum that area as needed)
- Sterilize litter trays with steam or boiling water and disinfectant at least once a week (ideally a mixture of household bleach and hot water in a 1:32 solution). Other options include steam and surgical spirits. Please make sure to avoid any disinfectant containing phenol which is toxic to cats, most pine-based disinfectant contain phenol.
- Trim the hair of back legs and tail (trim the “trousers” of long-haired cats to reduce the chances of feces getting trapped on them).

FIP: who's at risk?

Which cats are more at risk to develop FIP?

In domestic cats, males and females are affected equally. Cats of any age can develop FIP, but as you would imagine cats with the weakest immune system are most likely to develop FIP. This includes kittens, cats infected with FeLV (feline leukemia virus) and geriatric cats. The larger number of cases are in kittens and cats under 2 years of age.

In a cat under 2 years old, with a history of coming from a breeder or rescue shelter, FIP must be suspected when there are vague clinical signs, such as increased temperature (fever), being off food, failure to gain weight (as a kitten) or loss of weight (as an adult).



FIP clinical signs

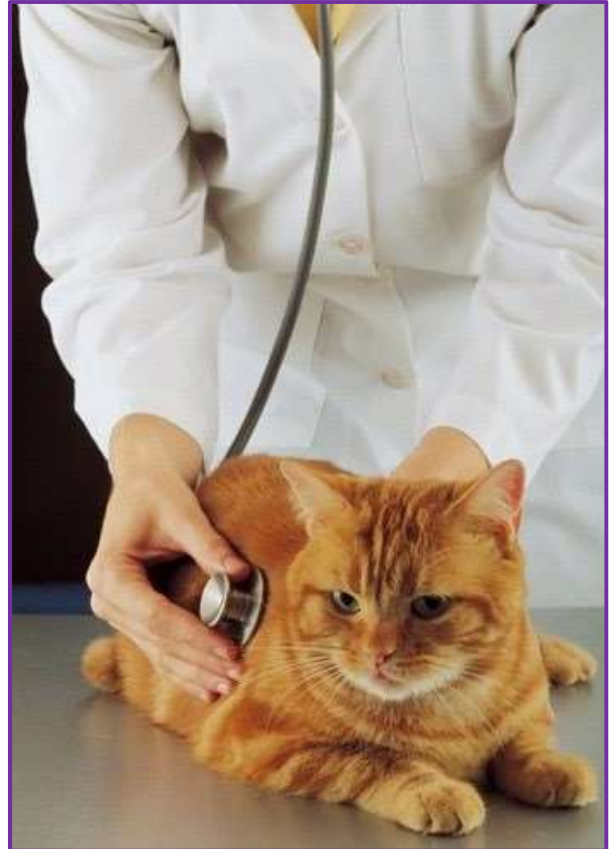
There are two major forms of FIP - an effusive form, often called “wet FIP”, which is characterized by high protein fluid accumulation in body cavities, and a non-effusive form or “dry FIP” which is characterized by pyogranulomatous lesions in any body organ or system. Although FIP is separated into these two forms, there is really a gradient between these forms and sometimes signs of both forms can be seen. Signs common to both forms of FIP include fluctuating antibiotic unresponsive fever, lethargy, anorexia, and weight loss.

The two forms of FIP

Symptoms of FIP vary greatly from case to case depending on the strain and load of virus involved, each cat's immune system status as well as the organs and/or systems affected. In general, the wet form progress much quicker than the dry form and in both scenarios the cat's body condition takes a toll with the hair coat becoming rough or dull and the sick cat becoming increasingly lethargic and depressed. Please see below for details:

Effusive or wet FIP

- Persistent and antibiotic unresponsive fever
- Poor appetite
- Lack of appetite
- Weight loss (gradual)
- Diarrhea
- Accumulation of fluid in the chest or abdomen cavities
- Gradual swelling of abdomen (appearing potbellied)
- Breathing difficulties
- Sneezing or runny nose
- Lethargy



Non-effusive or Dry FIP

- Persistent and antibiotic unresponsive fever
- Poor growth in kittens
- Depression
- Anemia
- Jaundice
- Diarrhea
- Ocular signs, inflammation of various parts of the eye(s)
- Neurological symptoms (i.e. lack of motor skills/loss of ability to use hind legs, loss of vision, etc.)



Looking at the eyes is extremely helpful. If you noticed the third eyelids are protruding more than is normal, that is a sign of gut infection, in most cases FCoV.



Other signs of FCoV infection in kittens are mild flu-like signs. Please check whether the kitten is sneezing or if there is a discharge from the eyes.



FIP: do the right tests!

FIP is a notoriously difficult condition to diagnose. Many other conditions present with very similar clinical signs. Because we can't rely on any specific test for a diagnosis, we must combine the history, clinical signs, laboratory test results, FCoV tests results and possibly imaging to come to a "probable" diagnosis.



The tests commonly used are:

- Chemistry panels
- Complete blood count (CBC)
- FCoV titer test on blood/serum with dilution <1:25
- FCoV RT-PCR on effusions
- Rivalta test on effusions

Want to learn more about FIP diagnosis. Visit:
<http://www.endfip.com/diagnosis/>

FIP treatments

Before treating the cat, it is absolutely essential that every effort has been made to ensure a correct diagnosis. Since Feline Infectious Peritonitis is an immune-mediated disease, the treatment is either modulation of the immune response, or direct action against the virus plus modulation of the immune response.

If you have a sick cat at home and are looking for caring support, EndFIP® recommends the FIP Advisory and Care Group. This group provides advice on FIP diagnostics, tests and treatment options for your cat utilizing approved and regulated substances in a professional and nurturing environment.

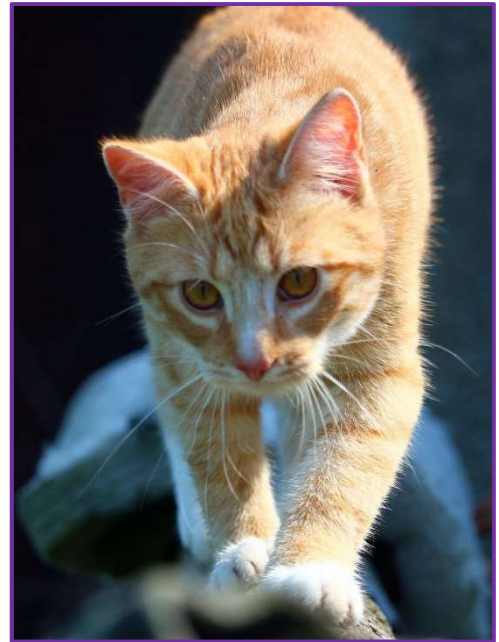
Please request membership at:

<https://www.facebook.com/groups/FIPcare/>



We are honored you decided to join the EndFIP® community.

EndFIP® has a vision: every cat a healthy cat.



We hope you enjoyed this newsletter and will give us your feedback, which is truly a gift that help us improve every day. We are available at: reachus@endfip.com



EndFIP® is committed to impart worldwide awareness and understanding of feline coronavirus and we will continue to encourage people to respect the seriousness of FCoV infection and inspire them to create lasting solutions to prevent feline coronavirus (FCoV) infection in multi-cat environments.

EndFIP®: A vision and a mission

- Bring awareness
- Raise funds for research
- Eradicate FCoV and end FIP





LUCA July 20, 2012 - October 5, 2013

Luca is just one of many faces of FIP.

They need us to be their voice!

Please help spread the word to encourage further research and efforts to eliminate the underlying cause of FIP: the ghastly feline coronavirus (FCoV).

Awareness, knowledge and propagation of knowledge are the biggest tools we all have to help eradicate FCoV thus end FIP. Please spread the word about FIP, whether it's with your veterinarian, the breeder or rescue shelter you got your cat from, your family, your friends, wherever – the more people who know the true facts about FIP, the greater our chances to eradicate it.

“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.” – Marie Curie

Join us in the fight to EndFIP®. Please request membership at:

<https://www.facebook.com/groups/EndFIP/>

Why Donate?

Since first being discovered in the 1960s. Feline Infectious Peritonitis is one of the most studied feline diseases and yet, it remains one of the most poorly understood viral disease of the cat. Much progress has been made since those early days and encouraging new treatments have surfaced in recent years but there's much work to be done in the fields of FCoV and FIP.

In spite of promising treatments. FIP still remains an almost always fatal disease. It is up to us, FIP parents who are part of a growing, strong and caring community to create much needed change, not simply by donating to well-known institutions but by investing in ideas and people in whom we believe, based on our principles and values. We are united by the pain and sorrow FIP left in our lives and we must work together to promote kindness to animals and mobilize resources towards ethical and humanely conducted research.

Help us accomplish our goals. Your donation is both needed and appreciated. EndFIP® is committed to exclusively support research that does not use laboratory cats and does not conduct experimental infection of healthy cats with a deadly virus.

www.endfip.com/donate

www.LucaFundforFIP.com

The Luca Fund for FIP Research is part of the global vision of the EndFIP® project. Your donation to the Luca Fund for FIP Research will be applied to studies conducted at Glasgow University School of Veterinary Medicine. The Luca Fund for FIP Research is a special fund of the American Alumni of Glasgow University. AAGU has been recognized by the IRS as a section 501(c)(3) charitable organization and all donations to AAGU are deductible as charitable contributions to the full extent permitted by law.

