



# Autumn 2020 Newsletter



**Autumn whispered to the wind, “I fall; but always rise again.”**

**Angie Weiland-Crosby**

## ***Foreword***

I'm delighted to welcome you to our autumn issue, and I hope that you are keeping safe and well at this difficult time. Needless to say, 2020 has been quite an eventful year. Autumn is upon us and, whether you like it or not, the air is cooler and crisper. As the leaves on the trees are starting to change colors, and are now readily beginning to fall off; the global Covid-19 pandemic continues to evolve, and disrupt, many aspects of our daily lives. This is a difficult and uncertain time, and our first concern is for you and your families. EndFIP® hopes that you are all safe and taking precautions to stay that way.

At EndFIP®, we have always considered ourselves, and everyone associated with us, as family. Today, this sense of community – sharing our strength, support and care for one another – seems more important, more fragile, and more meaningful than ever. As we face the uncertainty of the current moment, one thing we know for sure is that we're all in this together.

These are extraordinary times, and EndFIP® is no ordinary organization. We have always been a science-driven organization and now is as good a time as any to embrace a reasoned, methodical approach to this new ground-shift. We know that the significant challenges facing cats around the world will not stop for this pandemic. Despite the uncertainty of the world around us, our work to build a future in which people and cats (domestic and wild) thrive goes on - and takes on a new level of importance, as does your commitment to EndFIP®. Through our work with partners, communities, scientists – and each of you – we are protecting cats around the world from becoming infected with feline coronavirus, thus avoiding FIP altogether.

Since our launch in 2018, EndFIP® has remained a resilient and spirited organization. Our approach, is never to retreat but to find a way forward, guided by science, with swiftness and compassion, and above all with kindness towards all animals.

In this issue, EndFIP® will tackle several topics related to feline coronavirus amid the Covid-19 pandemic, FIP diagnostics, and knowing that autumn can be a dangerous time for cats, we will also provide some advice on how to make sure your cat stays healthy during this change of seasons.

EndFIP® is committed to keeping cats healthy and happy, and to enable global collaboration in a way never seen before in the FIP field. We are tremendously grateful to each of you as friends within the EndFIP® family. Thank you for being passionate advocates and for all that you do in the global quest to end FIP. We appreciate your friendship, loyalty, and support, and never take it for granted.

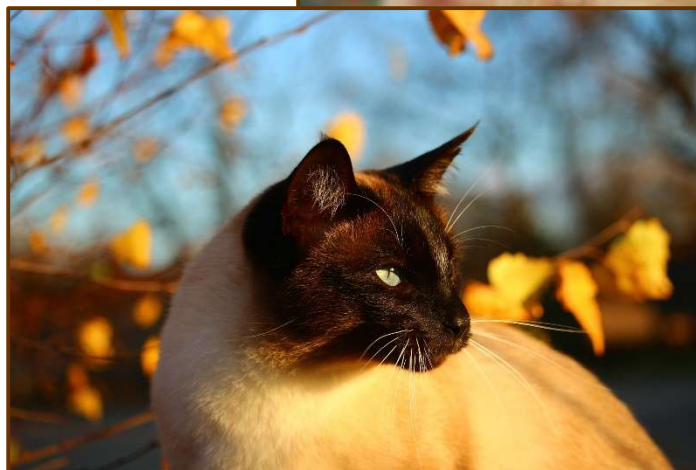
I know the state of the world is unsettling and I am deeply grateful for your friendship and support. I am honored to be on this journey with you and genuinely heartened by your never-ending caring for cats. You are in my thoughts, and I hope you, and your loved ones are safe and well during this historic – but temporary! – period for humanity.

Sending abundant blessings,

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

**Anyone who thinks fallen  
leaves are dead has never  
watched them dancing on a  
windy day.”**

**Shira Tamir**

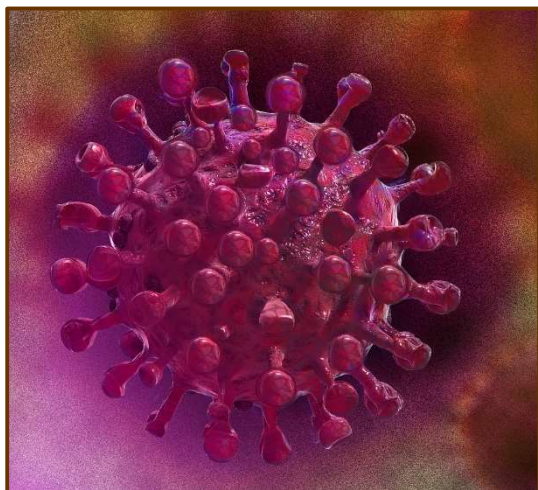


## ***A word about feline coronavirus amid the Covid-19 pandemic***

The Covid-19 pandemic has raised questions about the potential role of cats and other companion animals in the transmission of the SARS-CoV-2 virus which is the Covid-19 causal pathogen. Thankfully, **the evidence strongly indicates that pet animals are NOT involved in the pandemic.** Feline coronavirus, which causes enteric infection and FIP in cats, belongs to a different coronavirus family than the Covid-19 virus and is effectively unrelated.

During the Covid-19 pandemic, naturally occurring SARS-CoV-2 infections have been reported in cats (domestic and non-domestic), dogs, and farmed mink. Some cats and dogs of human Covid-19 patients have tested positive. At this time the significance of SARS-CoV-2 as a feline or canine pathogen is unknown as cats and dogs with reported infections have apparently recovered and there has been no evidence of transmission occurring between cats or dogs in the field. Extensive and most up-to-date information on the role of SARS-CoV-2 in animals, can be found at: <https://www.oie.int/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/>

It is extremely important to emphasize that the current Covid-19 pandemic is being sustained through **human to human transmission** of SARS-CoV-2.



Coronaviruses (CoVs) are enveloped, positive-sense, single-stranded RNA viruses. Coronaviruses in general are ubiquitous in the environment. You may recognize the names SARS (Severe Acute Respiratory Syndrome) and MERS (Middle Eastern Respiratory Syndrome) both diseases are caused by coronaviruses.

Feline Infectious Peritonitis (FIP) is caused by infection with feline coronavirus (FCoV). The virus may be genetically classified into two genotypes of FCoV (FCoV I and FCoV II). Both genotypes have the ability to cause FIP. FCoV I genotype has been estimated to be responsible for approximately 80% to 95% of FCoV infections in the field.

Very important to keep in mind: **FCoV does NOT infect humans.** Commonly coronaviruses are host specific, only infecting closely related species. FCoV is genetically similar to the canine coronavirus and it has been postulated that FCoV II originated from a double recombination event involving FCoV I and canine coronavirus I (CCoV).

FCoV transmission is fecal-oral, primarily through sharing litter trays, and from cat litter fomites. Virus transmission is mainly indirect. Infected cats shed the virus in their feces from about 2-3 days post infection. FCoV Type I shedding persist for weeks to months. It is estimated that about 13% of cats infected with FCoV Type I become persistently infected (carrier cats). The duration of FCoV Type II shedding is unknown, but based on experimental infections, it is likely about 2 weeks.



**Most cats who become infected with FCoV do NOT develop FIP.** Sadly, an estimated 5% - 10% of infected cats at one point in their lives will develop FIP. Incidence is higher in kittens with undeveloped immune systems. Kittens are exposed to infection when maternally derived antibodies wane between 5-7 weeks of age. The vast majority of cats who develop FIP do so within the first 18 months post-infection, and by 36 months post-infection, there is only a 5% chance of the disease developing. Therefore, in order to reach a proper diagnosis, it is not only important to establish that the cat could have become infected, but also if the opportunity to become infected with FCoV occurred within the previous 3 years.



Seroconversion (the time period during which a specific antibody develops and becomes detectable in the blood) occurs at 18-21 days post-infection. The presence of FCoV antibodies indicates **ONLY** that the cat has been infected with FCoV, **NOT** that the cat has FIP *nor* that for certain the cat will develop FIP. About 70% of FCoV infection is transient, and it is estimated that 1% - 3% of cats are resistant to feline coronavirus.

Feline Infectious Peritonitis (FIP) is an almost always fatal infectious inflammatory disease of cats. **FIP** is a progressive *disease* which is caused by **FCoV (virus)**. The disease, FIP, is **NOT** contagious whilst FCoV infection is widespread in the feline population. A cat must have had the opportunity to become infected with FCoV for FIP to develop.

**If you can prevent FCoV infection then you prevent FIP.**

**NO FCoV = NO FIP!**



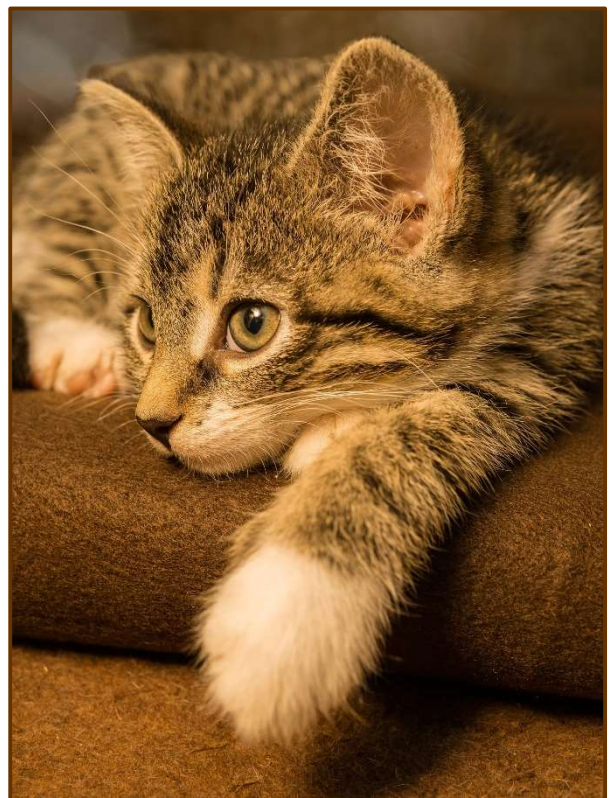
## ***FIP Diagnostics***

Feline Infectious Peritonitis diagnosis can be elusive most of the time and may depend on the logical exclusion of other possibilities. FIP is a shattering infectious disease of felids (domestic and wild) infected with feline coronavirus (FCoV). In many viral infections, clinical signs are a result of the virus directly damaging the target cell. However, in Feline Infectious Peritonitis, FCoV takes over the cell which controls the immune response – the monocyte/macrophage and an abnormal pro-inflammatory immune response is the cause of the disease.

Feline Infectious Peritonitis diagnosis is notoriously challenging and is often only confirmed post-mortem (autopsy). Clinical signs of FIP depend on the location and severity of vascular damage and perivascular pyogranulomata which is why FIP can present in so many different ways. In lay terms, the clinical signs associated with the disease are non-specific and could be related to many other diseases and infections. Both chronic (dry) and acute (wet) forms of FIP occur, with cats presenting vague signs including (amongst others) the following:

- Pyrexia (antibiotic unresponsive fever)
- Lethargy
- Reduce appetite
- Anorexia (loss of appetite)
- Weight loss
- Mood changes
- Neurological and/or ocular changes
- Acute form of FIP commonly presents with a build-up of viscous fluid in the chest or abdomen

FIP occurs **ONLY** after a cat has become infected with feline coronavirus (FCoV), however, unlike many other infectious diseases, FCoV serology alone is insufficient to determine whether the cat has or does not have the disease (measurement of FCoV antibodies is **NOT** useful for the diagnosis of FIP). Many cats are co-incidentally seropositive but do **NOT** develop FIP. To be clear, **a positive FCoV antibody test does NOT equate to a diagnosis of FIP!**



The pathogenesis (development of a disease) of FIP remains poorly understood even after decades of research, this lack of knowledge impedes diagnosis, treatment and prevention. **VERY** important to keep in mind: the majority of FCoV infections cause only mild-enteritis, the infected cat suffers no long-term disease and eventually eliminates the virus. In a very small number of cases, the infected cat continues to shed FCoV in feces for a prolonged period, becoming a virus carrier.

FIP occurs in 5% - 10% of the FCoV infected cat population and exists mainly in two forms, a “wet” form where effusion is observed (ascitic, thoracic or pericardial) and a “dry” form where there is no effusion present but acute vasculitis is observed and granulomatous lesions may occur on various organs, leading to additional clinical signs. 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.





10% to 25% of cats with dry FIP will develop neurological signs. When granulomas occur in the central nervous system, we see paralysis, disorientation, loss of balance, tremors, convulsions, behavior changes and urinary incontinence. Granulomas can also occur in the chest. Sometimes the eye is the only organ affected. The pupil may appear irregular and the eye may appear discolored because of the inflammation that is present. Some cats with the dry form can live a few years after first showing clinical signs.

Ante-mortem (in vivo) diagnosis of FIP in cats without an effusion is especially difficult. A number of new diagnostic tools are in development to improve FIP diagnosis; however, there is currently no gold-standard, non-invasive tool available for the diagnosis of dry FIP.

**Effusive (wet) FIP** can be confirmed by the evidence of FCoV RNA in cavity effusion (typically thoracic or abdominal). **Non-effusive (dry) FIP** diagnosis can be confirmed if positive FCoV RT-PCR test on mesenteric lymph node ultrasound guided fine needle aspirate (FNA is a somewhat invasive procedure).

A battery of tests may be used to help diagnose FIP including the following:

- FCoV serology
- FCoV viral RNA detection
- Hematology
- Cytology
- Biochemistry



A number of the parameters and their related reference ranges were first described decades ago. Sadly, FIP still presents many challenges for veterinarians to diagnose. Often by the time a diagnosis of FIP is reached, unfortunately an affected cat has very little time left to live, either it dies naturally of the disease or is euthanized due to the progression of the disease and associated suffering.

The Luca Fund for FIP Research provides much needed support for a number of research initiatives at the University of Glasgow which investigate feline infectious peritonitis (FIP) and its causal pathogen, feline coronavirus. One of them is a data-driven study, aimed at improving diagnostic testing based on information from the standard laboratory tests used to diagnose FIP. Usually a panel of blood tests from a suspect cat is used when investigating a possible case of FIP. However, the result of no one single test is conclusive, and diagnosis is usually reached by interpreting these test results as a group. Through decades of diagnostic testing, the University of Glasgow Veterinary Diagnostic Services have data from thousands of cats, which the research team is statistically analyzing to look for 'signature' patterns among the results which can either rule-in or rule-out FIP as a diagnosis. The team have been making good progress in this area and have developed a computerized pattern recognition system which can look at an individual cat's test results and determine whether he/she has FIP or not, with the same level of accuracy as an expert veterinary pathologist. Ultimately, we all hope that this approach will help standardize and improve the ability of veterinarians to diagnose, and equally importantly, rule-out FIP in the future.

## Autumn Care for Cats

**EndFIP® has a vision: every cat a healthy cat.** This vision expands beyond the boundaries of FIP. With that in mind, below we provide some information and advice pertinent to this time of the year. Autumn brings some specific concerns for cats, so if you have a kitty, you'll want to consider taking some steps to keep your feline friend safe and secure.

### 🍁 Weather

As the weather cools, your kitty will spend even more time napping. Provide your feline buddy with lots of comfy beds to snuggle up on. Also, make sure your cat's litter box isn't in a drafty spot. Cats don't like chilly bathrooms!

### 🍁 Outdoor Hazards



Cats are always safer living indoors. Your kitty may think of herself as a fierce lioness, but in truth, she's vulnerable to many different hazards, such as traffic, weather, and predators. For one thing, the weather can take a sudden turn for the worse. As the weather cools, wild animals will be preparing to hibernate, and may be more aggressive than usual. Autumn is the season when snakes also prepare for hibernation and are more likely to strike, increasing the possibility of bites to naïve and curious pets.

Chemicals are another big concern. This time of the year, many people fill their cars with antifreeze. Antifreeze is extremely toxic to cats, but unfortunately has a taste many kitties like. Lawn and garden products are also hazardous; your cat could get sick just by walking through a spot that was recently treated, and then licking his/her paws. There are also some hidden environmental dangers like mushrooms, rodenticides and other poisons. There is also increased danger for traffic, especially around the Holidays.

Last but not least, cats go crazy with leaves but leaf piles remaining on your lawn quickly accumulate moisture, which promotes bacterial and mold growth. If your cat ingests these microorganisms, digestive tract upset (vomit, diarrhea, decrease appetite, etc.) could ensue. If you do let your furry friend wander, make an emergency shelter, such as a storage tote with a door in the side, but ideally keep your cat safe and sound indoors!

### 🍁 Indoor Hazards

Even inside Fall brings specific hazards for our beloved cats. Candles, decorations, seasonal candies, and toxic plants are a few concerns. Candles can make your home look and smell nice, but they don't mix well with inquisitive cats. Keep candles in high, secure spots your feline can't reach. Be careful of space heaters as well. At all times, keep your feline friend's safety in mind, and store anything that could be dangerous out of rambunctious paws' reach.





## 🍁 Nutrition

Cats eat more this time of the year, both in terms of quantity and frequency. Like many other animals, their metabolism undergoes some changes and to stay well they have to take in some extra protein, fat, vitamin and minerals. Even if you prefer to feed your cat only dry food, the inclusion of a bit of red and white meat alternated with some fish and a veggie or two is highly recommended as these additions will boost your cat's immune system. Busy pet parents can find properly balanced and highly nutritious canned food at pet retail stores. If the cat lives outdoor, please consider warming up the food.



## 🍁 Shedding | Grooming

Autumn is a peak shedding time for cats. As summer comes to an end, your cat's fur will begin to change, with most of this change happening during the first few weeks of autumn. To speed up the growth of the undercoat and help your furry friend to gain a thick and healthy winter coat, consider brushing your cat regularly (ideally once a day, and if your kitty has long fur, twice a day). Brushing your cat will also help cut down on the amount of fur you find stuck to your furniture and clothes. You may also want to consider using washable slipcovers. If your cat has a thick and/or long coat, ask your veterinarian for advice on using hairball remedies.

## 🍁 Seasonal illnesses



This time of the year, the grass seems to be damp with dew each morning, with a slight frosty sheen on the colder mornings. One quick stroll outside, or a walk in high, wet grass can give your cat a seasonal ailment, like a cold, the flu or even bronchitis. It is not so much the cold, but humidity you have to beware of. If your cat likes to spend time outside, consider allowing him/her out in the afternoon. If your cat lives outside, please make sure his/her house is nice and dry at all times. Please consider stuffing the bottom of the interior with straw or other insulating materials (no blankets or towels) to provide both insulation and a comfortable spot to lie down.

## 🍁 Parasites

Fleas and ticks will try to get indoors as the weather cools. Parasites can come and bother your cat even when summer is long gone. You can never let down your guard! As soon as the heating comes on, if your cat lives indoors, any flea eggs hiding in the carpet or on the sofa or bedding, will hatch and infect your kitty once again. In addition, some tick species are active pests even in winter and actually survive the first freeze. Please make sure your furry friend is current on his/her parasite control.



## 🍁 Veterinary Care

Keeping your cat up to date with vaccinations and specific anti-parasitic medicine is of utmost importance. If your cat hasn't had an exam in a while, please take him/her in as soon as possible. Older cats often get stiff and sore in cold weather, so if your furry friend is a senior or is afflicted with chronic bone or joint issues, he/she may benefit from supplements, medication, and/or pain management treatments. Please make sure to discuss all the specifics of your situation with the veterinarian to obtain the proper advice.



**All of us at EndFIP® are dedicated to keeping cats healthy and happy.**

We hope that you find the information provided helpful and that you will take our advice to heart. Above all, **we wish your cat will have a safe Autumn!**



**Autumn is a second spring  
when every leaf is a flower.”**

**Albert Camus**

**[www.endfip.com](http://www.endfip.com)**







**EndFIP®**

## Luca Fund for FIP Research

### Here Today & Here Tomorrow

Last month we celebrated our **2<sup>nd</sup> Anniversary** and we'd like to **THANK YOU** for your support. Thanks to your generosity, the Luca Fund has received **£50,459** (over \$65,000 based on current exchange rate) since its launch on 5 October, 2018 from Assisi, Italy. We couldn't have done it without **YOU!**

**With a brighter vision, together we fight for a gleaming future for all cats. With courage we follow our dreams.**

Feline Infectious Peritonitis is a global problem. We know that you are reading this newsletter because you care about cats. The alarming truth is that in the time it takes to read these few pages hundreds of cats worldwide are losing their respective battles to this insidious disease.

We can't bring back those we've lost. But together we can use every loss to FIP as a wake-up call, a sign that something must be done!

**Please, make an urgent gift of any amount right now at: [www.endfip.com/donate](http://www.endfip.com/donate).**



### EndFIP®: A vision and a mission

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

Help us accomplish our goals. Your donation is both needed and appreciated. The Luca Fund for FIP Research 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. Help us end FIP, 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.

The Luca Fund for FIP Research is part of the global vision of the EndFIP® project. Your donation to the Luca Fund will be applied to studies conducted at the University of Glasgow School of Veterinary Medicine. The Luca Fund for FIP research is a special fund of the American Alumni of the University of Glasgow established in 2018 to accept tax-deductible donations for Feline Infectious Peritonitis research. AAGU has been recognized by the IRS as a section 501(c) (3) charitable organization. All donations to AAGU are deductible as charitable contributions to the full extent permitted by law.



**[www.endfip.com/donate](http://www.endfip.com/donate)**  
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