



Grads and Dads Newsletter



Hats off to graduates! Graduation is the perfect time to look ahead and express optimism and excitement about the graduate's future. What do grads and dads have in common? They both give us reasons to celebrate this time of year. High school and college graduations are upon us and the first official month of summer also brings Father's Day. It's time to pawty in celebration of eager grads and proud dads.



In this newsletter, EndFIP® wants to congratulate all the kittens who have overcome immense obstacles and now are ready for the next phase in their lives – adoption! We also want to acknowledge all the caregivers who selflessly raise orphaned kittens too young to survive on their own. The first wave of kittens being born in this year's "kitten season" is graduating. Soon they will be in safe and loving homes.

We can't give these kittens diplomas, but we can provide their forever families with much needed information on how to prevent them from becoming infected with feline coronavirus (FCoV), which is the underlying cause of Feline Infectious Peritonitis (FIP). We will also spend some time addressing FCoV and the dads; all those debonair stud cats

in breeding catteries. Let's go on the journey all kittens take as they make their way through their first precious weeks of life to graduation.

A word about FIP

Feline Infectious Peritonitis (FIP) is a devastating viral disease of cats that occurs worldwide and can affect many systems of the body. It is a progressive disease which carries a high mortality rate. 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, a coronavirus. Feline coronavirus (FCoV) is undoubtedly one of the most poorly understood feline viruses and the disease it causes (FIP) is unquestionably the most feared disease in any multi-cat environment and the most shattering diagnosis for a pet parent to come to terms with. Luckily, most cats infected with FCoV never develop FIP. However, for reasons that we don't yet fully understand, instead of clearing FCoV infection, an unfortunate few cats develop the disease.

Since first being discovered decades ago, Feline Infectious Peritonitis is one of the most studied feline diseases and yet, it remains one of the most enigmatic viral diseases 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 feline FCoV and FIP. In spite of promising treatments, FIP still remains an almost always fatal disease.

The road to graduation

Kittens! Could anything on earth be sweeter? With their little round heads and tiny paws, their unbalanced tumbling and adorable sleeping positions, you have to agree that kittens are super cute. Kittens hold their heads like they are born rulers of the universe, yet the wobble in their walks shows they aren't yet in command of her own limbs but somehow they marched on solidly into our hearts.

Their journey starts before birth, a cat's pregnancy last for 63 days and in their mom's womb the kittens are already developing some important senses and reflexes. At about 25 days after conception fetal kittens can already start to sense touch and show their first spontaneous movements. At this time, they are only about 15 millimeters in length. At around two weeks before birth, their balance starts to develop and when the moment comes, kittens arrive in the world, blind, deaf, without the ability to regulate their own body temperature, and unable to move more than a few inches. They are totally dependent on their mom.



All kittens develop at their own pace. The information below will provide some general facts as to what should be happening when. Let's take a look at the first few weeks of a kitten's life. From birth to graduation:

🐱 1-3 Weeks: Kittens Open Their Eyes and Ears



Kittens weight around 3-4 oz at birth. All kittens are born with blue eyes; they are however still closed, and so are their ears. At about 2 weeks of age, the kitten's eyes and ears begin to open. Whilst still tiny, their weight has doubled and baby teeth emerge, and suckling reflexes become stronger. At this stage, they are completely dependent on their mother's care, not interacting much with siblings. They are still just interested in nursing and staying warm.

🐱 3-5 Weeks: Walking and Using the Litter Box

At this age, kittens can now eliminate on their own and gradually can be introduced to the litter box. They are now able to crawl so they begin their quest to explore the world. Their ear canals have opened and the kittens can recognize sounds. They discover self-grooming and that playing with their litter mates is a lot of fun. They may begin purring to communicate with mom and siblings.

Their taste buds are now receptive to other things than just mom's milk so it is a good time to introduce them to kitten soft wet food whilst they continue to nurse until the mom decides to wean them.



🐱 6-8 Weeks: Socializing and First Vaccines



Kittens now weight about one pound and they are able to stand on their own legs. They are better aware of their surrounding and are receptive to noises and sights. Social play is at a fully rambunctious level. This is the beginning of their learning phase; it is therefore a critical period to socialize with humans and get ready for graduation in a few weeks. At six weeks, kittens should receive their first *FVRCP vaccine to protect them against viruses (rhinotracheitis, calicivirus and panleukopenia). Male kittens' testicles begin to descend around age 7 weeks.

At about 8 weeks of age, their baby teeth are all out! Sometimes kittens are sent to their forever homes at this time. It is however better to be more patient and wait four more weeks as kittens still have a lot to learn from their families.

**Generally, the initial kitten vaccination protocol recommended is to begin at 6-8 weeks of age, then 2-4 weeks until 16 weeks of age or older. Then two doses 2-4 weeks apart are recommended.*



🐱 9-12 Weeks: Weaning and Learning Cat Skills

Healthy kittens now weigh about 2 pounds. That shows how critical and busy those growth weeks are. At this time in their lives, kittens begin losing their mom cat's immunity making them more susceptible to infections until they build their own immunity. If 2-4 weeks have passed since their first FVRCP vaccine, kittens may receive boosters at this time. Also, if the kitten has not been dewormed, oral dewormer can be administered. It is also a good idea to have a fecal test run to check for internal parasites.

Their neurological development has reached a mature level, and their adult color eye has also emerged. Their ears will be proportionate. Clawing behavior for scent marking begins during this growth stage.



🐱 3-6 Months: Neutering and Ready for Adoption... **Graduation!**



Kittens are ready for adoption! They are still growing very fast but will not reach full size until 1-2 years old, or even a bit older if it is a large-breed cat. At this stage, kittens are really beginning to test their physical limits. They can be fully socialized and ready to be separated from mom and siblings. Their suckling reflexes begin to subside and sexual maturity has been reached. In most cases, by this age cats have been sterilized so no big changes in their behavior.

It is worthwhile to note; all kittens work to their own schedules toward graduation. As they complete their respective curriculum, it is important for caretakers to keep records of weight. Kittens should gain weight steadily and seek veterinary attention if weight gain stops. Furthermore, it is crucial to be diligently on the lookout for signs of sickness in the kittens. These could include loss of appetite, sleeping alone (at a very young age), rejection from mother, vomiting, diarrhea, weakness, discharge from the mouth, eyes, anus, etc. If any of these signs are noted, please seek the assistance of a qualified veterinarian immediately.

Kittens are Born FCoV Free

Help them have the long and healthy life they deserve.

Feline coronavirus (FCoV) does not cross the placenta to the unborn kitten. Kittens are born FCoV free and are protected from FCoV infection by antibodies they receive in their mother's milk. When these antibodies wane at around 5-7 weeks of age, the kittens become susceptible to FCoV infection and the attendant risk of FIP.

Do not invite pain and heartache into theirs and your life. FIP doesn't discriminate and it is merciless. Please prevent kittens from being infected by FCoV. Want to learn how? Detailed information is found on **Page 7**

Prevention of FIP in Multi-Cat Environments

The single best way to prevent FIP is to prevent cats becoming infected with feline coronavirus. FCoV infection occurs via the fecal-oral route. FIP is a major problem in multi-cat environments, especially in shelters and breeding catteries. Thus an understanding of feline coronavirus (FCoV) shedding and rigorous hygiene protocols are the most effective ways to prevent this disease. Stress reduction is also an important factor, since the development of FIP is often preceded by a stressful episode in the cat's life.

The main source of virus is the feces of infected cats and infection is by accidental ingestion of such feces. FCoV is also very readily spread by fomite transmission. Feline coronavirus is a fragile virus, surviving a few days outdoors, but can survive up to 7 weeks in dried up feces in cat litter particles.

In most instances, it is unlikely that cats could become infected by directly contacting an FCoV infected cat, even by close contact, such as fighting, mutual grooming or sharing food bowls. However, FCoV is occasionally (rarely) shed in the saliva for a few hours early in infection, so in situations such as boarding catteries or rescue shelters, where there may be a lot of newly infected cats, care must be taken not to transmit virus via contaminated food bowls or inhaling sneezed droplets.

FCoV is a very contagious virus, infecting nearly all cats who encounter it, the second major route of infection is the unintentional exposure of uninfected cats to tiny particles of infected feces on people's shoes or clothing, hands, poop scoops, etc. The infected cat likely swallows the virus when grooming, or when tiny particles of feces contaminate their food, it is for this reason that using a non-tracking litter and keeping food bowls in different rooms is highly recommended.



Below are three tables showing the different protocols to implement to keep kittens safe, not just from FCoV, but also from other infectious diseases, while in your care. Every breeding cattery, rescue shelter or private home has its own set of challenges, logistics and resources. Please use these protocol(s) as a guideline and adapt it to better fit your specific situation. In some instances, due to financial constraints, very few of the recommended strategies can be feasibly implemented; but, at a minimum, detailed hygiene practices must be followed.

Ideal Protocol for minimizing FCoV introduction or spread

Breeding Catteries | Rescue Shelters

- **Reduce the number of cats in any area**
 - In rescue facilities cats should be kept singly (if not possible – not more than 2 cats per cage)
 - Cats should be kept in small groups according to their antibody or virus excretion status
 - Antibody or virus negative cats together
 - Antibody or virus positive cats together
- **Prevention of kitten infection**
 - Rescuers or owners of pregnant cats should follow the “early weaning and isolation” protocol outlined below (Table II).
- **Reducing fecal contamination of the environment**
 - Have adequate number of litter trays (1 tray per 1-2 cats)
 - Have adequate number of scoopers (1 x each tray)
 - Litter trays should be de-clumped at least daily (using its own scooper)
 - Use non-tracking litter
 - Remove all litter and disinfect litter trays at least once a week
 - Place litter trays away from food dishes
 - Wash food and water dishes in hot water (ideally in dishwasher hot cycle – 140F / 60C)
 - Wash bedding in hot water (140F / 60C)
 - Vacuum around litter trays regularly
 - Clip fur off hindquarters of long-hair cats
 - Disinfect pens between occupants using 1:32 dilution of sodium hypochlorite (household bleach) and hot water
 - Allow pens to lie empty (if possible)
 - Vacuum floors diligently and clean with cat friendly disinfectant and steam clean (if possible)
 - In rescue shelters, please train your personnel and/or volunteers to use disposable gloves and change them regularly (every time they move from cleaning one pen to another)
 - In rescue shelters, please train your volunteers to notify the employee in charge of the cat facility if any signs of disease are noted in the cats
 - Please isolate sick cats to prevent spread of infection (not just FCoV)



Ideal protocol for prevention of FCoV infection in kittens

Breeding Catteries | Rescue Shelters | Private Homes

- Prepare kitten pens/nesting areas
 - In shelters or rescue groups, disinfect pens between occupants using 1:32 dilution of sodium hypochlorite (household bleach) and hot water
 - In breeding catteries or family home, the queen will seek a cozy and quiet space to give birth. You can help her create this area by providing her with a freshly cleaned, towel-lined box or tub and place it in a quiet, dark room. Please clean floors and surfaces using the above mentioned 1:32 dilution of sodium hypochlorite and hot water.
 - Vacuum diligently, removing any microscopic dust sized particles of infected cat litter
 - Color code and dedicate litter trays, food and water bowls to kitten section and disinfect frequently with sodium hypochlorite (1:32 dilution – meaning 1 cup of bleach and 31 cups of hot water). Please make sure to rinse dishes thoroughly in hot water upon disinfecting
 - Provide nice, clean, newly washed bedding, avoiding any type of chemical smells
- Practice barrier nursing
 - Deal with the kitten section before tending other cats; meaning, deal with the least infected area of the environment and gradually move up to the most infected area (i.e. known FCoV shedding cats)
 - Clean hands with disinfectant before going into the kitten section
 - Have shoes and coveralls (clothes) dedicated to the kitten section
 - Very large shelters should have disinfectant foot baths between each major area
- Early weaning and isolation of kitten
 - Test queen for FCoV antibodies either before or after kittening
 - If queen's antibodies titer is greater than zero, the kittens should be removed to another clean pen when they are 5-6 weeks old, or at least keep the queen's litter tray out of the kittens' reach
 - If the queen has an antibody titer of zero (FCoV free), she can remain with the kittens until they are older
 - Keep kittens isolated from any other FCoV infected cat(s)
 - At 10 weeks of age, test kittens for FCoV antibodies



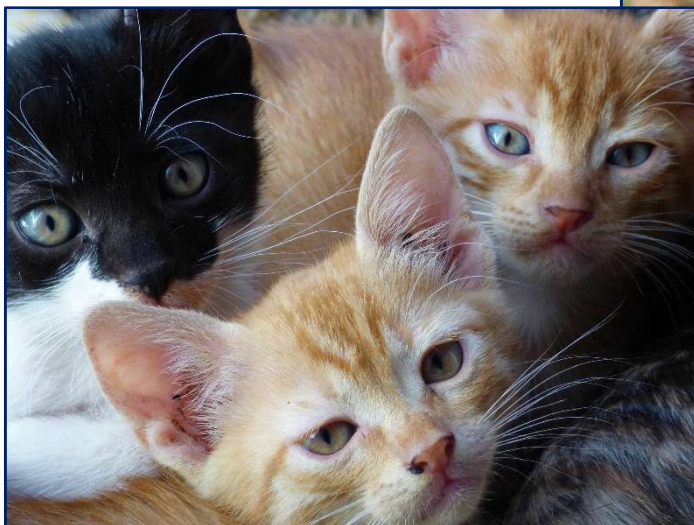
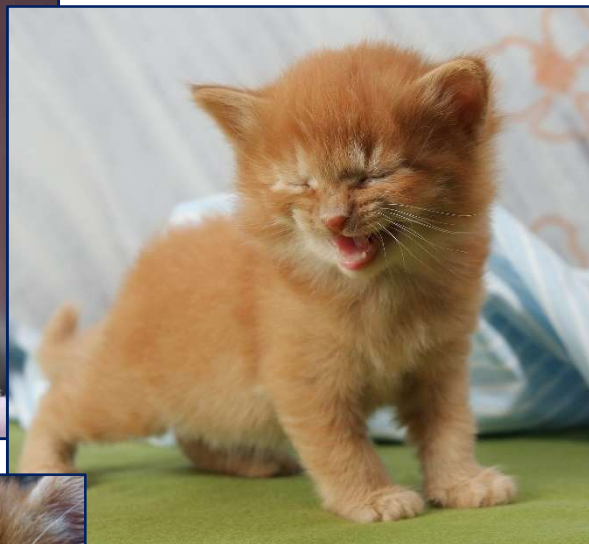
It is inadvisable to 'FCoV antibody test' kittens younger than 10 weeks old: kittens under 10 weeks of age may be infected but some are too young to have produced antibodies of their own.

Most kittens can make antibodies by 10 weeks of age, so 10-16 weeks is the best time to test. Very young kittens may give a positive result not because they are infected, but because they have antibodies from their mother's milk.

Basic Recommendations to Prevent FCoV Transmission

General Public

- 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 disinfectants 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).



Dealing with the Dads and their Purrrfect Charm

Stud cats and FCoV



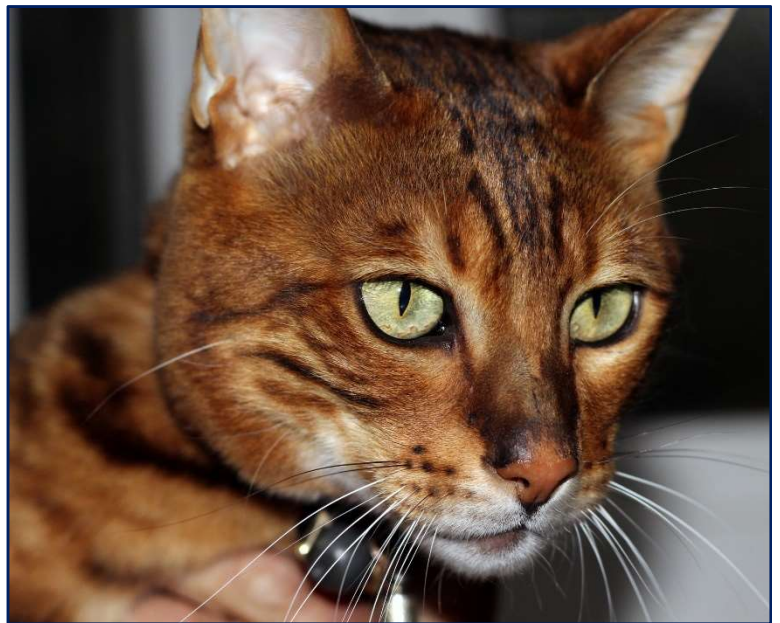
If you have a breeding cattery, the stud cats should be tested every year for FCoV antibodies, along with their routine FeLV and FIV blood tests.

There is some evidence that susceptibility to developing FIP has a hereditary component, so if your stud has fathered many kittens who have developed FIP, you may want to think seriously about neutering him and keeping him as a pet or rehoming him.

The FCoV antibody positive stud cat

If your cat has been an active stud cat for many years, the chances are high that he will have antibodies against FCoV. If he has been exposed to FCoV for more than 2 years, it is unlikely that he will develop FIP now, except perhaps when he gets into old age and his immune system begins to wane, or some other thing suppresses his immune system. If he is a young stud and has only recently been infected with FCoV, then minimize the stress and optimize his nutrition to keep his chances of developing FIP to a minimum.

It is important in this cat to distinguish the two phenomena:



- The **FCoV antibody positive stud cat** has been exposed to the virus but may **not** be actively infected (i.e. he may not currently be excreting virus in his feces). About one cat in three with FCoV antibodies shed the virus at any given time, although the higher the antibody titer, the greater the chances that the cat is shedding the virus (you can find out if he is shedding the virus by sending a fecal sample to a veterinary laboratory for FCoV RT-PCR).
- The **FCoV RT-PCR positive stud** cat is **definitely** actively infected and is excreting virus in his feces, although in a few weeks, or a month, it is very likely that he will stop doing so.

Your choices are between carrying on as before, with all the attendant risks, or beginning regular testing and introducing controlled mating and hygiene precautions to prevent re-infection of your stud cat once he stops shedding the virus. A small number of cats become FCoV carriers – shedding virus for all their lives. In that case, your choices would be between stop using him as a stud, or controlled mating only.

The important thing is HONESTY. If he is an open stud, please DO NOT be a source of infection for another cat breeder. If you explain your situation openly and honestly, it is surprising how understanding people will be and more people will come to you to use your stud because you are trustworthy and knowledgeable about FCoV and FIP.

The FCoV antibody negative stud cat

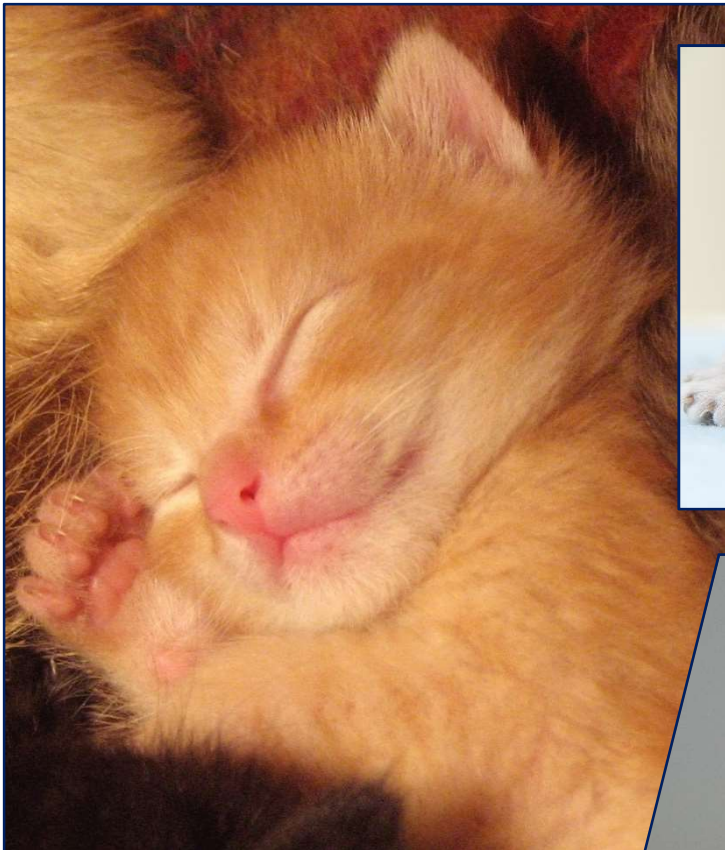
An FCoV free stud is something to be very proud of! If your whole household is FCoV free, then the only risks of him becoming infected are:

- By mating him with a FCoV infected queen
- By introducing into your house an untested, or improperly tested, FCoV infected cat
- By taking him to a cat show

Choosing a Healthy Graduate

Bringing a kitten home is a life-changing and exciting event. Choosing the right one for you and your home is of utmost importance. The young graduate you bring home today will hopefully be with you for many years to come. With that in mind, it makes sense that you should put a lot of time and thought into your choice.

Also, please ask yourself: Do I really want the responsibility of a new kitten? Is now the right time? What should I ask the breeder or rescue shelter? Whether you choose a graduate from a breeder, rescue or a private individual, health should be your top concern.



Let's take a look at a few things to consider which will help you determine exactly which graduate will be a good match for your lifestyle.

Graduate's Health



Inspect the kitten's body. A normal, healthy kitten shouldn't feel particularly fat or skinny. The ribs should not be visible. If the belly feels hard or swollen, the kitten may have worms.

Check the skin and fur. Healthy kittens should have soft fur and no bald spots. The skin should be free of rashes or scabs. If you find something that resembles black dirt in the fur and on the skin, most likely it is flea dirt (excrement), indicating a flea infestation.

Check the ears. Clean ears are a very good sign. Head scratching, shaking or gritty black

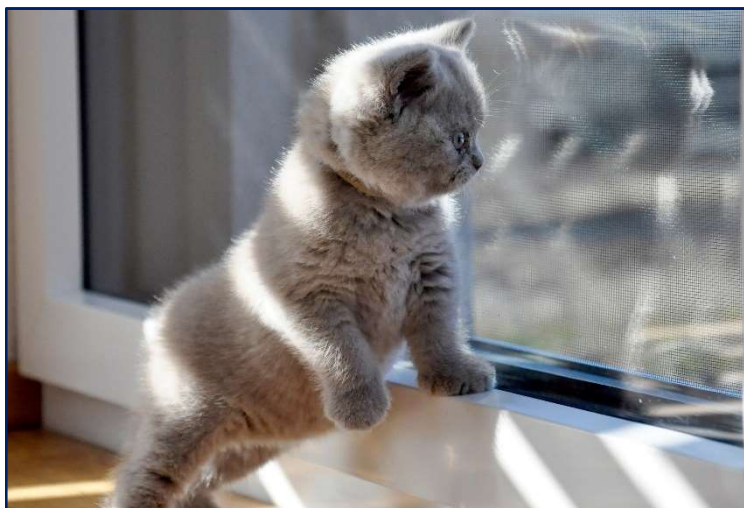
or brown debris may indicate ear mites.

Perform a dental check. Kittens' teeth should be white and gums should be pink, but not red or pale. Please make sure the kitten is eating solid food by the time you will bring this graduate to this forever home.

Be on the lookout for runny nose, coughing or sneezing. These symptoms may indicate a respiratory infection that is treatable but contagious to other cats.

Be careful of dirty rear ends. Healthy kittens' anus should be clean and free of any signs of diarrhea. Observe the kitten's energy level. If the kitten sleeps constantly, is not active or engages in play, this may be sign of illness.

Graduate's Personality



Get down on the floor. Observe how the graduate reacts to your presence. Well-socialized kittens should be comfortable and unafraid. If you have young children at home, avoid a timid kitten and look for a playful, confident graduate.

Play with the kitten. Entice the kitten to play, using something other than your hand or fingers. Kittens should express an interest. Also, try to hold them. A little squirming is perfectly normal, but they shouldn't bite or hiss.



Ask questions. The way kittens were raised can have a huge impact on their personality. Try to learn as much as possible about his/her story, including medical history.

Graduates and tell-tale signs that indicate FIP could be a problem



If you are contemplating buying a pedigree graduate, there are a few other things you may consider asking and doing before bringing the kitten home. Hopefully, if your kitten will graduate from a rescue shelter or private home, you will have access to the same information. Whilst it is unlikely you will obtain that detailed information, it is worthwhile to ask.

As a starting point, please ask to see the entire litter of kittens, not just the one you are planning to purchase or adopt. Look at their sizes, are they all about the same or different size? If the littermates are not roughly equal in size, that could be sign the kittens are infected with feline coronavirus (FCoV).

Please find out, how many cats are in the house. Also, are the kittens running loose or are they in a room on their own?

Overcrowding creates stress in cats, and chronic stress suppresses the immune system, making FIP more likely to develop if the kittens are infected with FCoV. Kittens who are allowed to mix with queens other than their mothers and/or kittens from other litters, are more like to become infected with feline coronavirus.

Whilst socialization of the young kittens is essential for their development, allowing the kittens to run free where they can access litter trays of other cats could potentially infect them with a life-threatening virus and that should be prevented. Please ask to look at the litter trays. A typical sign of early FCoV infection is diarrhea in the kittens. Of course, there are many causes of diarrhea in cats other than FCoV infection, but FCoV is one of the most frequent, and serious, causes in kittens.

Last but not least, please look closely at the kitten's eyes. An early sign of FCoV infection in kittens is a history of mild flu-like symptoms. Are the kittens sneezing? Is there any discharge from the eyes? While you

are looking at the eyes, it is also useful to notice whether the third eyelids are protruding more than is normal, that is also a sign of a gut infection, quite often none other than feline coronavirus (FCoV), the underlying cause of Feline Infectious Peritonitis (FIP).



Hopefully if you follow these guidelines, you will be able to bring home a healthy graduate who will enjoy a long and happy life with you, avoiding the pain and sorrow FIP causes in everyone it touches.



We are honored you decided to join the EndFIP® community. EndFIP® has a vision: every cat a healthy cat. We are 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.

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

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.

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