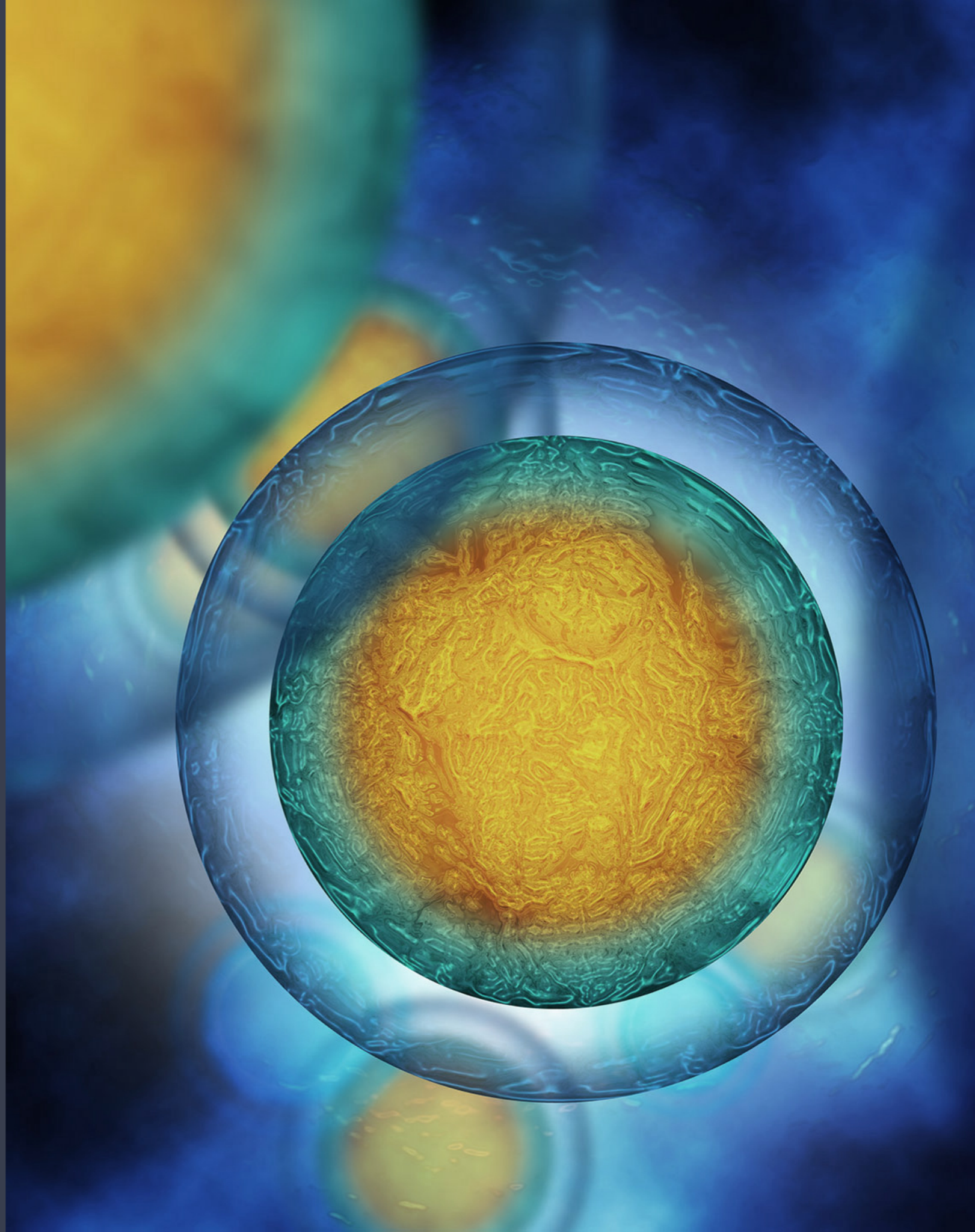


July 2019

FRED SCOTT SYMPOSIUM AT CORNELL UNIVERSITY

Report By: Jessica Petras



Dr. Pedersen

FECV, FIPV & FIP

- Studied FIP for the past 55 years
- .03 - 1.4% of FIPV infections develop FIP
- Only 1 in 10 FIPV mutants will lead to FIP
- Wet versions of FIP include massive inflammatory response of yellow thick fluid inside the abdominal cavity.
- Less common symptoms of wet and dry versions of FIP can display neurological symptoms, skin lesions and or blindness.
- Sub-Clinical infected often displayed rough coats, slow growth and intranasal congestion.

Dr. Pedersen - Emeritus Distinguished Professor University of California School of Veterinary Medicine has studied FCoV, FECV, FIPV and FIP for the past 55 years.

Feline Coronavirus (FCoV) is an enveloped single-stranded RNA virus that occurs as two pathotypes: Feline Enteric Coronavirus (FECV), defined as the "ubiquitous enteric biotype," and Feline Infectious Peritonitis Virus (FIPV), the "virulent biotype" which can cause the fatal Feline Infectious Peritonitis (FIP) condition in an individual cat.

Dr. Pedersen prefers to just recognize FECV versus FCoV when discussing concerns of the FIP condition since it does not develop until after the infection of FECV mutating into FIPV and then into FIP.

FECV occurs in nearly 100% of the cat population. Common symptoms of infection are often asymptomatic and not usually harmful. More noticeable symptoms can vary between diarrhea, bowel inflammation, loss of appetite and nausea.

In rare cases, 11% of cats infected with FECV can mutate into the Feline Infectious Peritonitis Virus (FIPV). Of cats infected with FIPV, .03-1.4% of cases throughout the world develop in to a fatal condition known as Feline Infectious Peritonitis (FIP).

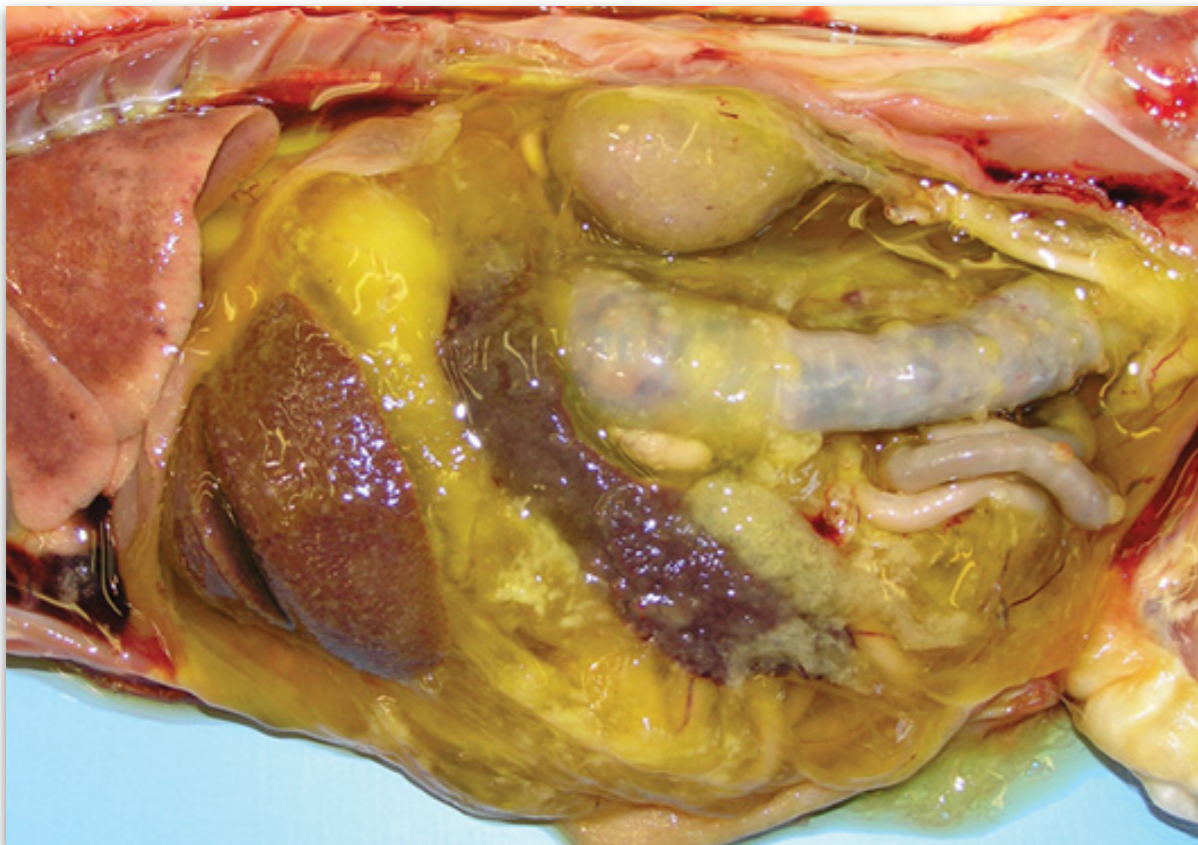
FIP symptoms range between wet and dry versions of the disease with the recommendation of artificial death to end and or prevent further suffering. Currently, treatment is not publicly available to veterinarians and their clients.

Common overall symptoms include slow growth for kittens, dull coats, lethargy, loss of appetite, and nausea accompanied by high fever unresponsive to antibiotics.

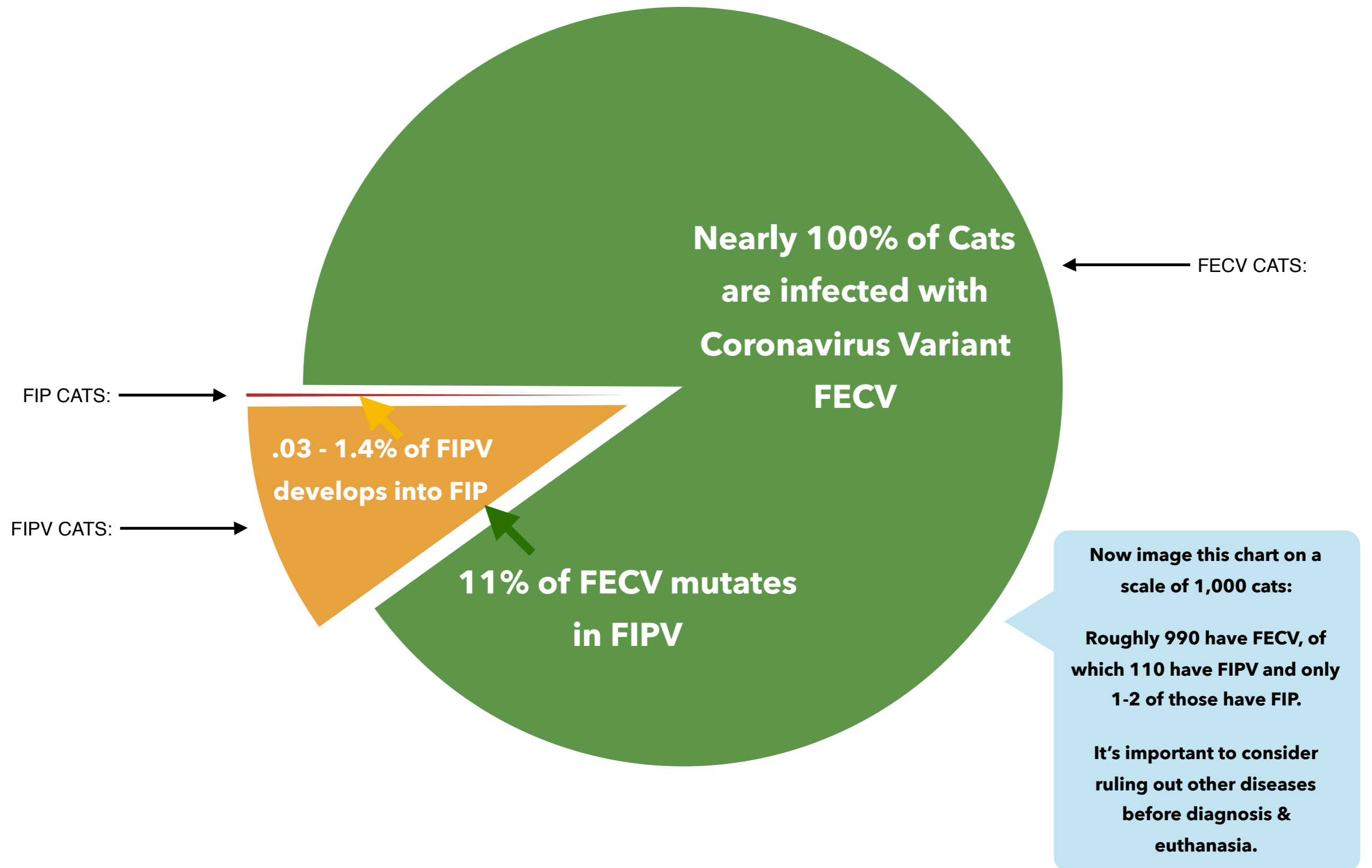


Facts:

- FECV occurs in nearly 100% of cats and usually harmless → FIPV occurs in 11% of FECV cases → .03 - 1.4% of FIPV result in the fatal FIP condition.
- Multi-cat environments such as foster/rescues, shelters, catteries and dense urban areas are at an increased risk of FIPV & FIP versus a rural environment.
- Cats with a greater genetic diversity are at a lesser risk of FIPV and FIP development. Breeding programs should focus on increasing diversity for stronger inherited immune systems to help prevent allowing FECV to mutate into FIPV & FIP. (50% of which is statically inherited)
- The FIPV incubation period varies from days to months and more commonly occurs before 1.5 years of age with males statistically more susceptible.
- FECV is infectious from cat to cat, however if a cat develops FIPV it is unique to its host and not infectious to others.
- 91.6% of FIPV infections are recognized as strand M1058L.
- 4.3% of FIPV infections are recognized as strand S1058L.
- Wet forms of FIP often result in massive amounts of yellow fluid developing inside the abdominal cavity as seen in left photos.



Statistics of Feline Corona Virus (FCoV) Infected Variants



DIAGNOSIS

- FIP Closely resembles lepromatous (wet FIP) and tuberculoid (dry FIP) forms of human leprosy.
- Must understand pathogenic of the disease in order to diagnosis.
- Disease course varies from days to months and rarely a year or more. <5% one - year survival
- May change from wet to dry; dry to wet forms of condition
- PCR Tests are available to detect FECV and FIPV but do not confirm that the cat has developed or will die from FIP.
- PCR Tests are known to only produce 70% of positive FECV and or FIPV test results leaving the other 30% potential false negatives.
- It is important to rule out other parasitic and bacterial infections prior to recommendation of euthanasia. Dr. Gookin suggests collecting stool samples by fecal loop for PCR testing to rule out difficult to detect infections such as Tritrichomonas.
- There is no currently recommended vaccine for FIP and Dr. Pedersen calls the current ones on the market "ineffective and useless."
- The FCoV antibody titer does not predict which cats will develop FIPV or FIP.



TREATMENT

True cases of FIP are known to be 100% fatal until recently.

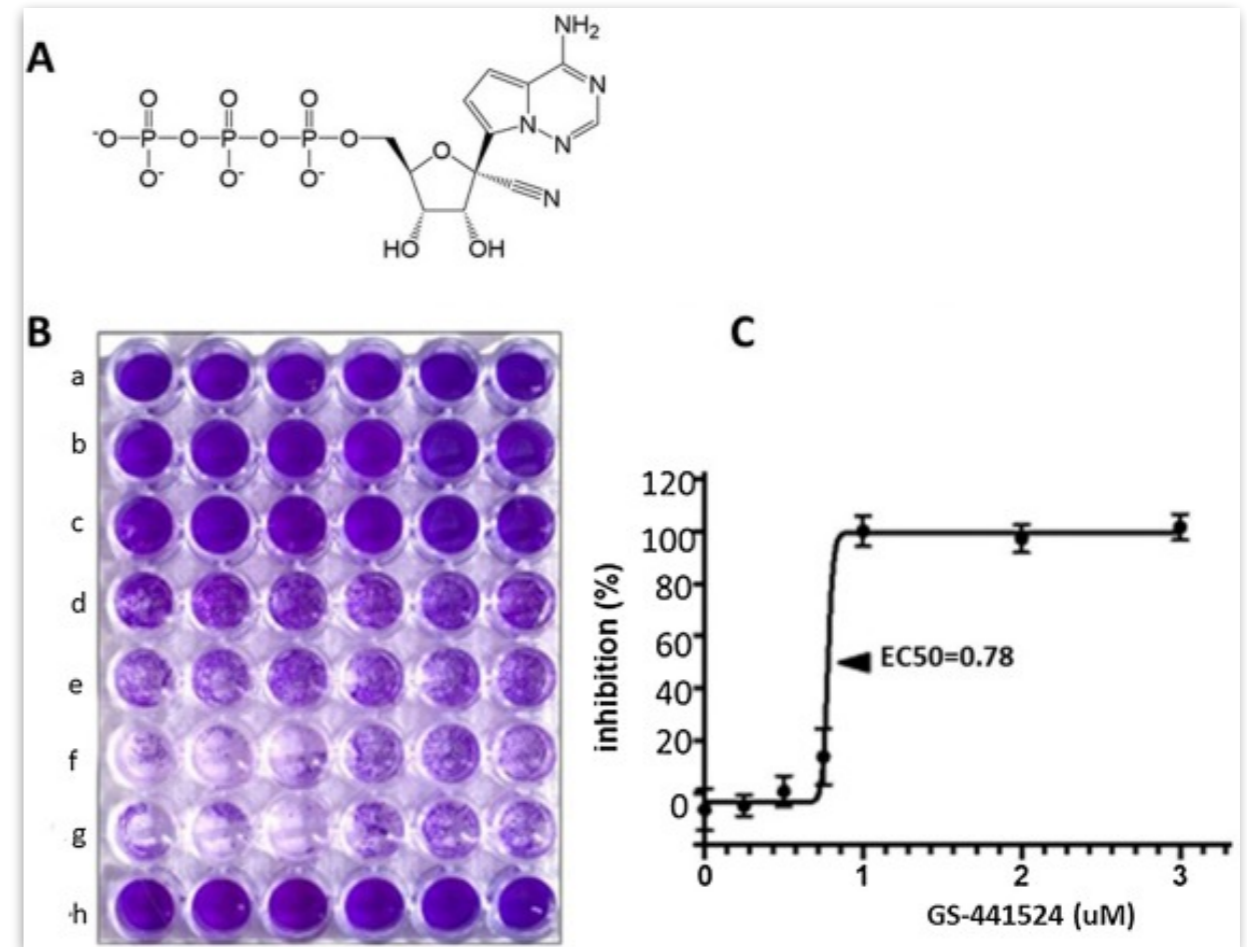
Dr. Pedersen's group and Gilead developed a cure called GS-441524 that statistically cured a significant amount of suspected wet and dry versions of FIP. Volunteers that displayed neurological symptoms were not included for treatment due to their poor known success rates.

Gilead owns rights to GS-441524 and currently refuses to grant animal rights for now due to interference with Remdesvir for human use. Remdesvir is commonly used as treatment for Ebola and Marburg virus infections in humans.

It is noted by Dr. Pedersen that fluid in the abdomen and in skin lesions can only harbor FIPV. There is a test commonly used in Europe called Rivalta, but is personally unsure of overall accuracy. He notes that with GS-441524 that 1 in 3 were cured, but more difficult in those that had additional neurological conditions. Common success signs of treatment were sudden loss of fever, large amount of weight gain, alert and active with eager appetites within 24-72 hours of initial treatment.

Dr. Pedersen reports there is a growing black-market synthesis from China. Quoting: "that the quality appears to be good (?)" and that the "Price is rapidly dropping". He also claims that Gilead is not concerned at this time by the black market sources. He mentions that there is a growing black market use by organized cat groups on the web and social media.

Dr. Pedersen acknowledges that Veterinarians are cautious about black-market treatment obtained by clients. He does however encourage veterinarians to consider teaching proper administration for black market obtainers to increase success rates. Dr. Pedersen ultimately hopes that Gilead reconsiders approving access to animal rights of GS-441524.



SUMMARY

The fatal condition of FIP is rare, encourage owners to rule out other bacterial and parasitic infections through PCR testing prior to conclusion. Dr. Gookin pointed out during a Tritrichomonas seminar to collect samples by fecal loop for greatest odds. Saline flush of the colon was second best, with fresh stool collection third and litter box collection last. Her theory is, that since the fecal loop scraps some of the colon wall, where some difficult parasites thrive, it increases odds of collecting better quality samples and results.

Catteries should also focus on high genetic diversity within their breeding programs to increase chances of stronger inherited immune systems. Optimal Selection Feline Breeding Genetic Analysis is a simple mouth swab that tests for over 40+ genetic diseases and traits as well as genetic diversity. The breeder tool can also combine tests from both Sire and Dam to predict the genetic diversity and inheritance of disease for offspring. To learn more, visit: https://www.optimal-selection.com/optimal_selection_cats/

Sincere thank you, to Anthony Hutcherson, the Jean Mill Family and The International Feline Foundation for their generous sponsorship to attend this fabulous event at Cornell University. I hope to see more speakers such as Dr. Pedersen in the future!

- Jessica Petras 🐾

"The greatest enemy of knowledge is not ignorance; it is the illusion of knowledge" - Steven Hawkins



Mrs. Jean S. Mill
1964 with F1 "Kin Kin"
Photo: Millwood Cattery