



WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

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Molecular Basis of Feline Coronavirus Pathogenesis and Development of FIP in Cats

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Feline infectious peritonitis (FIP) is a lethal systemic disease in cats, caused by a feline coronavirus (FCoV). The most common form of FIP, feline enteric coronavirus (FECV), causes only mild enteritis. However, a virulent biotype of the virus called FIP virus occurs with the ability to cause severe disease. It is hypothesized that the mutation that changes FECV to FIP virus occurs within individual infected cats. The goal of this project was to determine the molecular changes that account for the change in virulence from FECV to FIP virus.

The researchers proposed that key changes in the surface protein of the FIP virus make it more efficient at infecting cells of the immune system. These *in vitro* experiments using gut and immune system cells were designed to define the differences between FECV and FIP virus. Specifically, the researchers examined a viral gene encoding an important protein that enables the FIP virus to infect Immune system cells via a receptor called DC-SIGN (**D**endritic **C**ell-**S**pecific **I**ntercellular adhesion molecule-3-**G**rabbing **N**on-integrin). They found a critical change in this protein that allows the virus to infect certain types of white blood cells that are targets in FIP (macrophages). Characterizing these changes that occur in the virus surface proteins will allow a more detailed understanding of how FIP occurs. Eventually, the research may lead to future therapies or improved diagnostic tests for FIP.

Reference:

Regan AD, Whittaker GR: Utilization of DC-SIGN for entry of feline coronaviruses into host cells, *J Virol* 82:11992, 2008.

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