



WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

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Identification of the Cellular Receptor for Feline Coronaviruses

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Feline coronavirus is well known as the cause of a lethal and devastating disease – feline infectious peritonitis (FIP). Unfortunately, currently there is no adequate vaccination to prevent the disease and no treatment. FIP research has long been hampered by the inability to propagate feline coronaviruses in a laboratory setting. Cell cultures that can support efficient virus replication have been difficult to develop. A working cell culture system will allow researchers to propagate coronaviruses and study infection mechanisms.

This study involves identification of the cellular surface molecule used by feline coronavirus to invade its target cells. A surface protein of the virus, the spike protein, binds to this cellular molecule as a first step in infection. Identification of this cellular molecule will allow development of cell lines that will support virus replication and can be used to study the virus in the laboratory, without infecting cats.

The researchers have successfully developed a system for artificially synthesizing the virus spike protein. This purified protein is now being used to discover which surface proteins on intestinal cells and white blood cell targets (macrophages) the coronavirus is binding to. Once pinpointed, this cellular protein will be used to obtain the gene coding for the cell surface receptor. This gene can then be introduced into cultures in the laboratory, which will be infected with feline coronavirus. These feline cell cultures can then be used for in-depth characterization of the virus causing FIP.

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