WINN FELINE FOUNDATION
For the Health and Well-being of All Cats

637 Wyckoff Ave., Suite 336, Wyckoff, NJ 07481 • **www.winnfelinefoundation.org**
Toll Free 888-9MEOWIN (888-963-6946) • Local Phone 201-275-0624 • Fax 877-933-0939

EXPLORING HUMORAL RESPONSES OF FELINE CORONAVIRUSES

PROJECT STUDY: Exploring humoral responses to non-structural proteins of feline coronaviruses.

Principal Investigator: Dr. Magdalena Dunowska; Massey University, New Zealand

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This study has been designed to determine whether cats infected with FCoV develop antibodies to selected non-structural proteins (nsps) of the virus, and whether the targets for such immune responses differ between cats with different disease outcomes.

A total of 92 samples from 72 cats were collected, including samples from non-FIP (*n*=42) and FIP-affected (*n*=30) cats. The serological status of the cats was determined using ImmunoComb (Biogal) FCoV antibody test. Initially, two pools of sera comprising five individual serum samples each were tested using peptide chips with over 28,000 sequences (each 12 amino acid long) representing the entire non-structural polyprotein 1ab (Pp1ab) of feline coronavirus (FCoV). Cats appeared to recognize a large number of 12-mer peptides derived from Pp1ab. The reactivity with peptide chips was higher with pooled sera from FIP-affected cats than with pooled sera from cats that remained healthy following FCoV infection. There was minimal recognition of the peptides by a serum from FCoV antibody (Ab) negative cat.

Selected peptides (*n*=11) were further tested against individual serum samples in ELISA. While there were differences in recognition of these peptides by sera from individual cats, none of the peptides tested reacted exclusively with sera from FIP-affected or with FCoV Ab-positive healthy cats.

However, two of the peptides showed promising results. Peptide 4934 was recognized by the majority of FCoV antibody-positive cats and could be investigated further as an alternative antigen for serological detection of FCoV infected cats. Peptide 16433 was preferentially detected by FIP-affected cats and hence could be investigated further as an antigen for serological confirmation of FIP. However, not all FIP-affected cats recognized this peptide and further work would be required to determine its usefulness for that purpose.

Several other candidate peptides have been identified based on the chip data and these can be further evaluated in peptide ELISA as part of a follow-up project.

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This study has been presented as a poster abstract at the International Nidovirus Symposium in Kansas City, MO in June 2017. Publication of the study's results is planned for a peer-reviewed journal.