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Characterization of defense immune protein for Feline Infectious Peritonitis Virus (FIPV)

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Coronaviruses can induce highly prevalent diseases in both humans and animals. Feline infectious peritonitis virus (FIPV) is classified within the Alphacoronavirus genus, leading to a lethal systemic granulomatous disease known as feline infectious peritonitis (FIP). FIP is considered one of the most significant fatal infectious diseases affecting cats on a global scale. As of now, there are no approved specific vaccines or drugs for treating FIP.

In this study, we identified the predominant FCov1 and FCov2 sequences in a population by analyzing deceased felines affected by FIPV. Next, we utilized diverse supercomputing analysis methods, including MHC server, protein docking (Cluspro2), molecular dynamics simulation(MD), MMGBSA free energy calculation, and coevolution analysis, to predict potential epitope candidates. Our current efforts involve validating these epitopes through protein expression and comprehensive epitope characterization.