



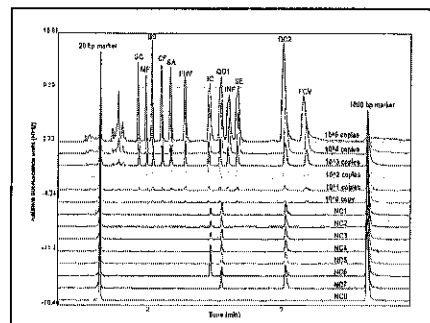
## Simultaneous detection of nine feline respiratory pathogens with quantitation innovated for clinical diagnostic practice using an integrated multiplex RT-PCR/PCR-capillary electrophoresis platform

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Experience: [https://www.vim.ntu.edu.tw/products\\_detail/27](https://www.vim.ntu.edu.tw/products_detail/27)

**Market Needs:** Feline respiratory diseases are commonly associated with polymicrobial co-infections, and the clinical manifestations caused by each pathogen are often similar, making differential diagnosis challenging. Moreover, treatment strategies and medications vary depending on the causative agents. Current diagnostic methods primarily target single or a limited number of pathogens, which frequently results in the omission of significant etiological agents, including emerging zoonotic agents with epidemiological importance. Currently, there is no commercially available system for the simultaneous quantitative detection of 9 feline respiratory pathogens. Existing quantitative assays are mostly for one pathogen and rely on real-time PCR with cycle threshold (ct) values for indirect interpretation, and the accuracy is highly influenced by variability in sampling techniques and the animal's cooperation. Therefore, the development of a rapid, comprehensive multiplex pathogen detection platform, coupled with a clinically practical direct quantification model, is critical and highly demanded in the market. At present, no comparable technology or product exists in the market.



### Our Technology:

The primer design underwent initial computational screening, followed by extensive clinical validation. All primer pairs were optimized to be compatible with the integrated multiplex RT-PCR/PCR and capillary electrophoresis-based quantitative system for concurrent detection of nine pathogens. The novel quantification model incorporates three distinct functional quantitative controls, strategically embedded throughout the amplification and capillary electrophoresis processes. Coupled with automated analysis software and a newly developed algorithm, this system enables direct quantification of pathogen load, presenting results as bacterial or viral counts per scraped cell. This consistent quantification approach remains stable and unaffected by sampling techniques and the animal's cooperation, aligning closely with the practical needs of clinical settings.

### Strength:

1. Comprehensive detection of 9 feline respiratory pathogens, including emerging zoonotic agents
2. Novel quantitative model, more in line with practical needs
3. High specificity and sensitivity, the detection limit is 1 copy number
4. Rapid semi-automated workflow

### Competing Products:

1. Traditional non-quantitative multiplex RT-PCR or PCR detections for 3-4 pathogens
2. Real-time RT-PCR or real-time PCR detections for single or two pathogens

### Intellectual Properties:

Our research team possesses over 20 years of experience and has established foundational techniques that serve as the cornerstones for the development of this novel technology. Our prior technological capabilities have been recognized through the granting of multiple patents, including ROC I 711701, ROC I 707864, ROC I 531654, and US 10017830 B2.

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