# 020009: Compositions and Methods for Epizootic Catarrhal Enteritis (ECE) Therapeutics and Diagnostics in Ferrets

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## Technology description

In 1999, a coronavirus was identified as the cause of Epizootic Catarrhal Enteritis (ECE) in ferrets, a highly contagious diarrheal disease for which there are no effective diagnostics, therapeutics, or preventatives. This disease costs ferret breeders and owners millions of dollars a year in health care costs and lost revenue. In 1996, approximately 800,000 domestic ferrets resided as pets in the United States and many other ferrets are used extensively as animal models in biomedical research. Currently, ECE is restricted to the ferret population, however coronavirus can cause disease in many other species including canine, feline, porcine, bovine, rodents, and man (SARS). Pharma is keenly interested in the Animal Health arena, including diagnostics, screening, treatment, and prevention, as demonstrated by the rise in R&D and acquisitions in this market. The veterinary vaccine sector accounted for 20% of global animal health product revenues in 2004, and global sales totaled $3.2 billion. It is estimated that the sector will grow in excess of $4 billion by 2009.

## Description

This invention encompasses compositions of novel oligonucleotide sequences from the ferret coronavirus and methods to develop ECE therapeutics, prevention, and diagnostic screening assays for use in ferrets. This invention also includes the generation of cell lines that express these oligonucleotide sequences, enabling a screening test for potential therapeutics such as proteins that bind to ferret coronavirus binding sites.

## Application area

The invention's compositions and methods would be used by veterinary and medical pharmaceutical companies to develop preventatives, diagnostics and therapeutics for ECE in ferrets and possibly in other species including humans. The end users would be veterinarians and possibly physicians.

## Advantages

Specifically targeted effective therapies and prevention:Mutations or fragments of the coronavirus oligonucleotide sequences could be used to produce antibodies for therapeutic interventions or to elicit a preventative protective response, e.g. vaccine.
Effective diagnostic assay for ECE:Antibodies to the coronavirus oligonucleotide sequences could be used to identify key components of the coronavirus involved in cell mediated immunity and viral assembly
Targeted screening assay for therapeutic candidates:The screening test targets proteins that bind specifically to ferret coronavirus binding sites.
A new in vitro model for coronavirus research:This invention provides an in vitro system for future coronavirus research which may result in R&D discoveries that will later benefit human health.

## Institution

Michigan State University

## Inventors

Matti Kiupel
Professor
PDI
Annabel Wise
Postdoctoral Fellow
AHDL/MIC
Roger Maes
Professor
Diagnostic Center for Population and Animal Health

# 联系我们


叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com