

# The Invisible Threat: Understanding the World of Veterinary Viruses

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## Short Communication

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## ABOUT THE STUDY

### Rhabdoviruses

Rhabdoviruses are a diverse family of single stranded, negative sense RNA viruses that infect a wide range of hosts, from plants and insects, to fish and mammals. The Rhaboviridae family consists of six genera, two of which, cytorhabdoviruses and nucleorhabdoviruses, only infect plants. Novirhabdoviruses infect fish, and vesiculovirus, lyssavirus and ephemerovirus infect mammals, fish and invertebrates. The family includes pathogens such as rabies virus, vesicular stomatitis virus and potato yellow dwarf virus that are of public health, veterinary, and agricultural significance.

### Foot-and-mouth disease virus

Foot-and-Mouth Disease Virus (FMDV) is a member of the Aphthovirus genus in the Picornaviridae family and is the cause of foot-and-mouth disease in pigs, cattle, sheep and goats. It is a non-enveloped, positive strand, RNA virus. FMDV is a highly contagious virus. It enters the body through inhalation.

### Pestiviruses

Pestiviruses have a single stranded, positive-sense RNA genomes. They cause Classical Swine Fever (CSF) and Bovine Viral Diarrhea (BVD). Mucosal disease is a distinct, chronic persistent infection, whereas BVD is an acute infection.

### Arteriviruses

Arteriviruses are small, enveloped, animal viruses with an icosahedral core containing a positive-sense RNA genome. The family includes Equine Arteritis Virus (EAV), Porcine Reproductive and Respiratory Syndrome Virus (PRRSV), Lactate Dehydrogenase elevating Virus (LDV) of mice and Simian Haemorrhagic Fever Virus (SHFV).

### Coronaviruses

Coronaviruses are enveloped viruses with a positive-sense RNA genome and with a nucleocapsid of helical symmetry. They infect the upper respiratory and gastrointestinal tract of mammals and birds. They are the cause of a wide range of diseases in cats, dog, pigs, rodents, cattle and humans. Transmission is by the faecal-oral route.

### **Toroviruses**

Torovirus is a genus of viruses within the family Coronaviridae, subfamily Torovirinae that primarily infect vertebrates and include Berne virus of horses and Breda virus of cattle. They cause gastroenteritis in mammals, including humans but rarely.

### **Avian influenza**

Wild aquatic birds are the natural hosts for a large variety of influenza A viruses. Occasionally viruses are transmitted from this reservoir to other species and may then cause devastating outbreaks in domestic poultry or give rise to human influenza pandemics.

### **Bluetongue virus**

Bluetongue Virus (BTV), a member of Orbivirus genus within the Reoviridae family causes serious disease in livestock (sheep, goat, cattle). It is non-enveloped, double-stranded RNA virus. The genome is segmented.

### **Circoviruses**

Circoviruses are small single-stranded DNA viruses. There are two genera: gyrovirus, with one species called chicken anemia virus; and circovirus, which includes porcine circovirus types 1 and 2, psittacine beak and feather disease virus, pigeon circovirus, canary circovirus, goose circovirus.

### **Herpesviruses**

Herpesviruses are ubiquitous pathogens infecting a variety of animals, including humans. Hosts include many economically important species such as abalone, oysters, salmon, poultry (avian infectious laryngotracheitis, Marek's disease), cattle (bovine malignant catarrhal fever), dogs, goats, horses, cats (feline viral rhinotracheitis), and pigs (pseudorabies). Infections may be severe and may result in fatalities or reduced productivity. Therefore, outbreaks of herpesviruses in livestock cause significant financial losses and are an important area of study in veterinary virology.

### **African swine fever virus**

African swine fever virus (ASFV) is a large double-stranded DNA virus which replicates in the cytoplasm of infected cells and is the only member of the Asfarviridae family. The virus causes a lethal haemorrhagic disease in domestic pigs. Some strains can cause death of animals within as little as a week after infection. In other species, the virus causes no obvious disease. ASFV is endemic to sub-Saharan Africa and exists in the wild through a cycle of infection between ticks and wild pigs, bushpigs and warthogs.

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