

# Fundamental and applied studies on paramyxovirus persistence and defective interfering particles

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Paramyxoviruses are a family of negative sense, single stranded, RNA viruses that cause a variety of serious diseases in man and animals, including measles, mumps, parainfluenza, Newcastle Disease, and potentially pandemic Nipah virus outbreaks. As well as causing acute infections, some paramyxoviruses can cause persistent infections, both in vitro and in vivo, the latter of which can also lead to chronic diseases such as SSPE.

The molecular basis by which paramyxoviruses can cause both acute and persistent infections is poorly understood. We have recently shown that a single amino acid substitution in the virus P protein, a subunit of the virus polymerase, can switch parainfluenza virus type 5 (PIV5) from an acute to persistent phenotype.

The biological and molecular consequences of acute vs persistent infections will be discussed. In addition, the way in which these viruses trigger and counter the interferon (IFN) response will be described.

By understanding the molecular basis of how these viruses establish persistent infections and their interaction with the IFN system, new therapies, improved vaccines and expression vectors may be developed.