This form should be used for all taxonomic proposals. Please complete all those modules that are applicable (and then delete the unwanted sections). For guidance, see the notes written in blue and the separate document "Help with completing a taxonomic proposal"

Please try to keep related proposals within a single document; you can copy the modules to create more than one genus within a new family, for example.

MODULE 1: **TITLE, AUTHORS, etc**

Code assigned:	***2009.011aV***	(to be completed by ICTV officers)

Short title: Name change of Simian virus 5 to Parainfluenza virus 5
(e.g. 6 new species in the genus *Zetavirus*)

Modules attached (modules 1 and 9 are required)	**1** ☒	**2** ☐	**3** ☐	**4** ☐	**5** ☐
	6 ☐	**7** ☐	**8** ☒	**9** ☒	

Author(s) with e-mail address(es) of the proposer:

Richard E Randall	rer@st-andrews.ac.uk
Robert A Lamb	ralamb@northwestern.edu

Has this proposal has been seen and agreed by the relevant study group(s)? Please select answer in the box on the right	**Yes**

ICTV-EC or Study Group comments and response of the proposer:

Approved by EC41 and checked by SGS

Date first submitted to ICTV:	May 10th, 2009
Date of this revision (if different to above):	22.06.09

MODULE 8: **NON-STANDARD**

Template for any proposal not covered by modules 2-7. This includes proposals to change the name of existing taxa (but note that stability of nomenclature is encouraged wherever possible).

non-standard proposal

Code	***2009.011aV***	(assigned by ICTV officers)

Title of proposal: Name change of *Simian virus 5* to *Parainfluenza virus 5*

Text of proposal:

The nomenclature of *Simian virus 5* (SV5), within the genus *Rubulavirus* of the subfamily *Paramyxovirinae*, has always been problematic given the repeated isolation of the virus over many years from numerous species. As a consequence it has now been generally accepted by the scientific community that the virus should be officially renamed as *Parainfluenza virus 5 (PIV5)*. Indeed the vast majority of papers recently published concerning studies with this virus refer to it as PIV5. The problem of using the term SV5 is the general assumption that if a virus is termed 'simian', then its natural host must be monkeys. As the virus was first isolated from rhesus and cynomolgus monkey kidney-cell cultures (Hull et al. 1956; Choppin 1964), it was thought that monkeys were the natural host for SV5, but epidemiological studies in the 1960s showed that wild monkeys do not have antibodies against the virus. However, these animals seroconvert in captivity and, on this basis, it was suggested that infection of monkeys occurs either in transit or shortly after contact with humans (Tribe 1966; Atoynatan and Hsiung 1969; Hsiung 1972). Indeed, Tribe (1966) suggested that monkeys that were brought into captivity should be immunized immediately against the virus to prevent them being infected. There is also experimental evidence supporting the contention that PIV5 (SV5) naturally infects humans (Hsiung 1972; Goswami et al. 1984). For example, PIV5 (SV5) has been isolated on numerous occasions from a variety of human tissues, including bone-marrow cells (Goswami et al. 1984). Despite this, infection of humans with PIV5 (SV5) has remained a subject of some debate and controversy, fuelled by the fact that PIV5 (SV5) can contaminate primary monkey kidney-cell cultures (and other cell lines), which are commonly used to isolate viruses from clinical samples (Chanock et al. 1961; Hsiung 1972; Huddlestone et al. 1979; Wallen et al. 1979; Choppin 1981). Furthermore, antigenic cross-reactions occur between PIV5 (SV5) and known human paramyxoviruses, including *Human parainfluenza virus 2* (Randall and Young 1988; Tsurudome et al. 1989), making interpretation of the earlier seroepidemiological studies difficult (Hsiung 1972). No acute human disease has been linked reproducibly to infection with PIV5 (SV5), although it has been suggested that PIV5 (SV5) may be a possible cause of some cases of multiple sclerosis (Goswami et al. 1987; Russell et al. 1989). However, this contention has largely been dismissed, as its findings have not been supported by subsequent studies (McLean and Thompson 1989; Vandvik and Norrby 1989). However, it is accepted that PIV5 (SV5) is a natural cause of the respiratory illness kennel cough in dogs (Binn et al. 1967; Cornwell et al. 1976; McCandlish et al. 1978; Rosenberg et al. 1987; Azetaka and Konishi 1988) and for this reason it is usually referred to as canine parainfluenza virus in a veterinary context. In addition, an isolate of PIV5 (SV5), termed SER, was isolated recently from the lung of a fetus of a breeding sow with porcine respiratory and reproductive syndrome (Heinen et al. 1998; Tong et al. 2002). There is also evidence that cats, hamsters and guinea pigs may naturally be infected with PIV5 (SV5) or a very closely related virus (Hsiung 1972).

To counter the assumption that SV5 was a simian virus, new nomenclatures have crept into use, such as SER virus and cryptovirus. However, sequence analysis (Fig. 1 :see module 9) has revealed that all these viruses are very closely related to original W3A isolate - 0 - 3% amino

acid changes in the F and P/V proteins, compared to approximately 50-60% amino acid differences to PIV2 the most closely related virus to PIV5/SV5 (Chatziandreou et al. 2004). Due to this confusion and reluctance by some authors to use the term SV5, we believe that it would be better to officially rename the virus *Parainfluenza virus 5* (PIV5), a nomenclature that was attempted in the late 1960s and early 1970s (Hsiung 1972). At the time, this probably failed because it was suggested that SV5 should be classified as *Parainfluenza virus 2* (PIV2) of monkeys (Chanock et al. 1961). However, we now know from extensive antigenic and sequence analysis that PIV5 (SV5) and PIV2 are distinct viruses. The advantage of using the term PIV5 is that isolates can be prefixed with nomenclature that refers to the host species from which they were isolated with the strain name being given in parenthesis, e.g. canine PIV5 (H221) or porcine PIV5 (SER). Thus under list of species in the genus rubulovirus it would be listed as;

Parainfluenza virus 5 (formerly known as simian virus 5)
Parainfluenza virus 5 [AF052755] (PIV-5)

MODULE 9: **APPENDIX**: supporting material

additional material in support of this proposal

References:

Atoynatan T, Hsiung GD (1969) Epidemiologic studies of latent virus infections in captive monkeys and baboons. II. Serologic evidence of myxovirus infections with special reference to SV5. Am J Epidemiol 89(4): 472-479.

Azetaka M, Konishi S (1988) Kennel cough complex: confirmation and analysis of the outbreak in Japan. Nippon Juigaku Zasshi 50(4): 851-858.

Binn LN, Eddy GA, Lazar EC, Helms J, Murnane T (1967) Viruses recovered from laboratory dogs with respiratory disease. Proc Soc Exp Biol Med 126(1): 140-145.

Chanock RM, Johnson KM, Cook MK, Wong DC, Vargosko A (1961) The hemadsorption technique with a special reference to the problem of naturally occurring simain parainfluenza viruses. American Reviews of Respiratory Diseases 83: 125-129.

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Choppin PW (1981) Isolation of paramyxoviruses from patients with chronic neurologic diseases. J Infect Dis 143(3): 501-503.

Cornwell HJ, McCandlish IA, Thompson H, Laird HM, Wright NG (1976) Isolation of parainfluenza virus SV5 from dogs with respiratory disease. Vet Rec 98(15): 301-302.

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Hull RN, Minner JR, Smith JW (1956) New viral agents recovered from tissue cultures of monkey kidney cells. I. Origin and properties of cytopathogenic agents S.V.1, S.V.2, S.V.4, S.V.5, S.V.6, S.V.11, S.V.12 and S.V.15. Am J Hyg 63(2): 204-215.

McCandlish IA, Thompson H, Cornwell HJ, Wright NG (1978) A study of dogs with kennel cough. Vet Rec 102(14): 293-301.

McLean BN, Thompson EJ (1989) Antibodies against the paramyxovirus SV5 are not specific for cerebrospinal fluid from multiple sclerosis patients. J Neurol Sci 92(2-3): 261-266.

Randall RE, Young DF (1988) Comparison between parainfluenza virus type 2 and simian virus 5: monoclonal antibodies reveal major antigenic differences. J Gen Virol 69 (Pt 8): 2051-2060.

Rosenberg AH, Lade BN, Chui DS, Lin SW, Dunn JJ et al. (1987) Vectors for selective expression of cloned DNAs by T7 RNA polymerase. Gene 56(1): 125-135.

References:

Russell WC, Randall RE, Goswami KK (1989) Multiple sclerosis and paramyxovirus. Nature 340(6229): 104.
Tong S, Li M, Vincent A, Compans RW, Fritsch E et al. (2002) Regulation of fusion activity by the cytoplasmic domain of a paramyxovirus F protein. Virology 301(2): 322-333.
Tribe GW (1966) An investigation of the incidence, epidemiology and control of Simian virus 5. Br J Exp Pathol 47(5): 472-479.
Tsurudome M, Nishio M, Komada H, Bando H, Ito Y (1989) Extensive antigenic diversity among human parainfluenza type 2 virus isolates and immunological relationships among paramyxoviruses revealed by monoclonal antibodies. Virology 171(1): 38-48.
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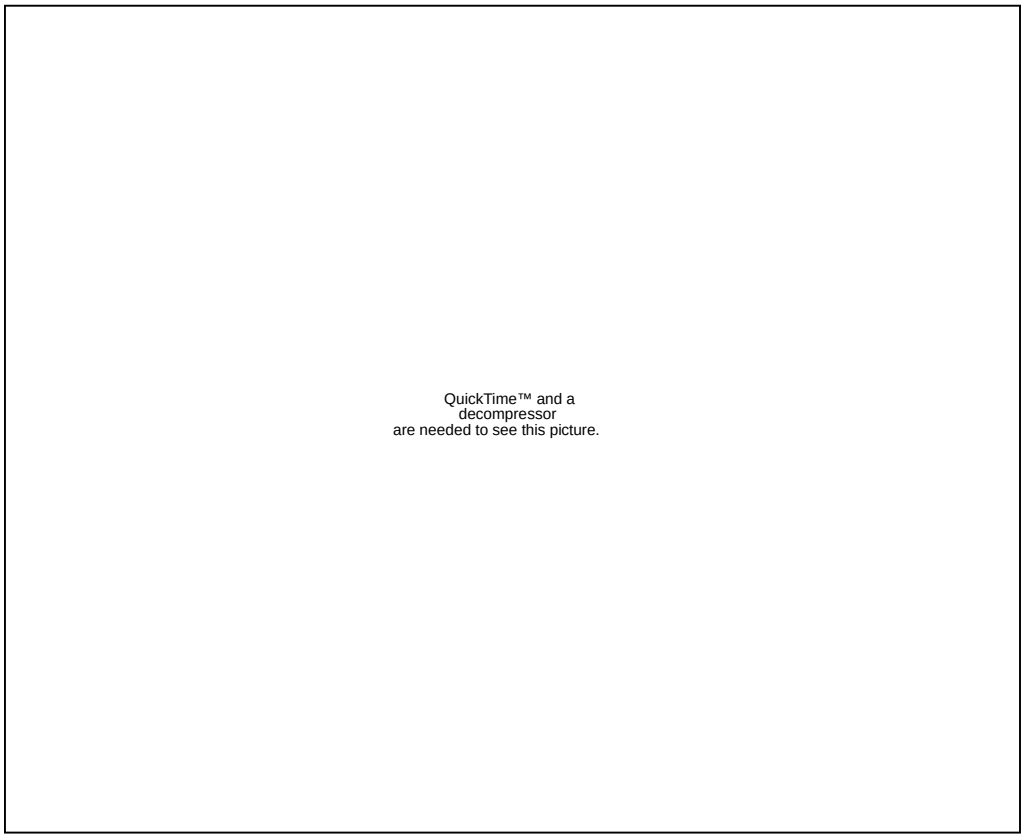
Wallen WC, Sever JL, McFarlin DE, McFarland HF, Traub RG et al. (1979) Attempt to isolate infectious agent from bone-marrow of patients with multiple sclerosis. Lancet 2(8139): 414-415.a

Annex:

Include as much information as necessary to support the proposal, including diagrams comparing the old and new taxonomic orders.
The use of Figures and Tables is strongly recommended.



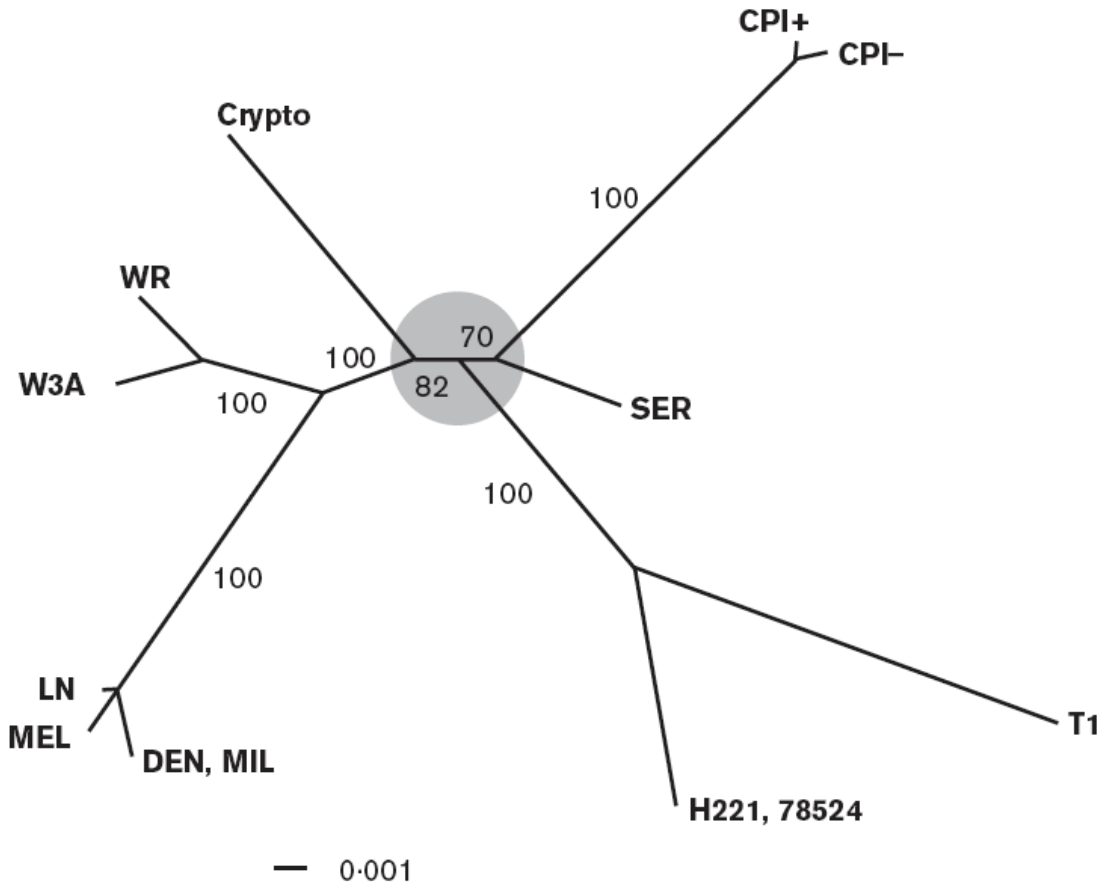


Fig. 1. Gene tree based on F gene sequences of PIV5 (SV5) isolates. The alignment of F gene sequences (1656 nt, 11 distinct sequences) was analysed by using the program MrBayes 3 to produce the consensus tree shown. Credibility values (%) for partitions of the isolates into two groups areindicated at appropriate branches. The two low values in the central part of the tree indicate that branching order in the region marked with a shaded circle could not be inferred with confidence. Bar, 0.001 substitutions per site. W3A and WR are monkey isolates, LN, Mel, Den, Mil, Crypto are reported human isolates, Ser is a porcine isolate and T1, CPI+, CPI-, H221 and 78524 are canine isolates (from Chatziandreou et al. 2004)