

Template for Taxonomic Proposal to the ICTV Executive Committee

Creating Species in an existing genus

Code[†] **FT2003.047V.01** To designate the following viruses as species in the genus:

Orthoreovirus

belonging to the family[°] : ***Reoviridae***

Reptilian orthoreovirus (RRV)


[†] Assigned by ICTV officers

[°] leave blank if inappropriate or in the case of an unassigned genus

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New Taxonomic Order

Order	
Family	<i>Reoviridae</i>
Genus	<i>Orthoreovirus</i>
Type Species	<i>Mammalian orthoreovirus</i>
List of Species in the genus	<i>Mammalian orthoreovirus</i> (MRV) <i>Avian orthoreovirus</i> (ARV) <i>Nelson Bay orthoreovirus</i> (NBV) <i>Baboon reovirus</i> (BRV)
List of Tentative Species in the Genus	<i>Reptilian orthoreovirus</i> (RRV) 
List of Unassigned Species in the Family	<i>none</i>

Argumentation to justify the designation of new species in the genus

Species demarcation criteria in the genus

- 1) The capacity to exchange genetic material by genome segment reassortment during mixed infections, thereby producing viable progeny virus strains;
- 2) Identification of conserved terminal genomic RNA sequences within a species (absolute conservation of the 5'- and 3'-terminal 4 - 8 bp);
- 3) Identification of extensive sequence identity between the proteins encoded by homologous genome segments (for conserved core proteins, greater than 85% amino acid identity within a species versus less than 65% identity between species; for the more divergent outer capsid proteins, >55% identity within a species and <35% between species);
- 4) Identification of extensive sequence identity between homologous genome segments (for most genome segments, greater than 75% nucleotide sequence identity within a species versus less than 60% between species);
- 5) Identification of virus serotype (based on cross neutralization) with a virus type already classified within a named Orthoreovirus species;
- 6) Demonstration of extensive antigenic similarity in the major structural proteins within a species, as determined by ELISA or immunoprecipitation.

Argumentation to justify the designation of new species in the genus

Reptilian orthoreovirus (RRV)

Nonenveloped, double capsid morphology with 10 segments of dsRNA grouped into three large, three medium, and four small class genome segments.

Induces syncytium formation in virus-infected cells, characteristic of the fusogenic subgroup of orthoreoviruses that includes the ARV, NBV, and BRV species.

Based on the complete cDNA sequence of two S-class genome segments obtained from a RRV isolate from a python, RRV contains the conserved 3'-terminal pentanucleotide sequence (TCATC-3', plus strand) characteristic of the Genus *Orthoreovirus*. However, the conserved 5'-terminal sequence (5'-GTTATTT, plus strand) is not characteristic of any of the existing species of orthoreoviruses.

RRV does not exhibit antigenic cross-reaction with the other species of orthoreoviruses based on immune precipitation of infected cell lysates.

RRV exhibits the retarded gel mobility of the polycistronic S1 genome segment characteristic of the ARV and NBV species. However, the RRV S1 genome segment is bicistronic, not tricistronic as in the case of ARV and NBV species.

As with other orthoreovirus species, the polycistronic S1 genome segment of RRV encodes a homolog of the sigma-class virus cell attachment protein. However, the protein product of the second RRV cistron exhibits no significant sequence identity with the protein products encoded by the additional cistrons contained in the polycistronic genome segments of other orthoreovirus species.

For the sigma-class major outer capsid protein, amino acid sequence identities between RRV and the homologous protein of other existing species of orthoreoviruses ranges from 16-25%. This contrasts with the 55-97% amino acid identities displayed by various isolates within a species, and is in line with the 16-36% identities exhibited between existing orthoreovirus species.

Additional reptilian reovirus isolates have been reported from rattlesnakes, rat snakes, and iouanas. Sequence information is required to determine whether these isolates represent

List of created Species in the genus

List of Existing Species in the genus

Mammalian orthoreovirus (MRV)

Avian orthoreovirus (ARV)

Nelson Bay orthoreovirus (NBV)

Baboon orthoreovirus (BRV)

List of Tentative Species in the Genus

Reptilian orthoreovirus (RRV)

References

Duncan, R. (1999). Extensive sequence divergence and phylogenetic relationships between the fusogenic and nonfusogenic orthoreoviruses: a species proposal. *Virology*, 260, 316-328.

Duncan, R., Corcoran, J., and Shou, J. (2003). Reptilian reovirus represents a new species in the fusogenic subgroup of orthoreoviruses. *Virology*, submitted.

Annexes:

Accession number AY238886 (RRV major sigma-class outer capsid protein, GenBank cDNA sequence submission)

Accession number AY238887 (RRV sigma-class virus cell attachment protein, S1 genome segment, GenBank cDNA sequence submission)