

Template for Taxonomic Proposal to the ICTV Executive Committee To create a new Genus in an existing Family

Code [†]	2005.242V.04	To create a new genus in the family*	<i>Reoviridae</i>
Code [†]	2005.243V.04	To name the new genus*	<i>Cardoreovirus</i>
Code [†]	2005.244V.04	To designate the species As the type species of the new genus*	<i>Eriocheir sinensis reovirus</i>
Code [†]	2005.245V.04	To designate the following as species of the new genus*:	<i>Eriocheir sinensis reovirus</i> Eriocheir sinensis reovirus (ESRV) AY542965
Code [†]	2005.246V.04	To designate the following as tentative species in the new genus*:	Macropipus depurator P virus Carcinus mediterraneus w2 virus

[†] Assigned by ICTV officers

* repeat these lines and the corresponding arguments for each genus created in the family

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Old Taxonomic Order

Order
 Family *Reoviridae*
 Genus
 Type Species
 Species in the Genus
 Tentative Species in the Genus
 Unassigned Species in the family

New Taxonomic Order

Order
 Family *Reoviridae*
 Genus *Cardoreovirus*
 Type Species *Eriocheir sinensis reovirus*
 Species in the Genus *Eriocheir sinensis reovirus*
 Tentative Species in the Genus
 Macropipus depurator P virus
 Carcinus mediterraneus w2 virus

Unassigned Species in the family

ICTV-EC comments and response of the SG

Argumentation to choose the type species in the genus

The *Eriocheir sinensis reovirus* was isolated from the Chinese mitten crab. At present it is the only virus of its group to have been partially sequenced. Therefore for phylogenetic purposes, this virus was chosen as the type species.

Species demarcation criteria in the genus

The genome is composed of 12 segments of dsRNA. Viruses were isolated from marine crabs including the Mediterranean crab *Carcinus mediterraneus*, the Chinese mitten crab *Eriocheir sinensis* and the Mediterranean crab *Macropipus depurator*.

List of Species in the created genus

Eriocheir sinensis reovirus

List of Tentative Species in the created genus

Macropipus depurator P virus

Carcinus mediterraneus w2 virus

Argumentation to create a new genus:

At present, the crab reoviruses have been isolated from three different crab species which are *Eriocheir sinensis*, *Macropipus depurator* and *Carcinus mediterraneus*.

All three viruses (*Eriocheir sinensis reovirus*, *Macropipus depurator P virus* and *Carcinus mediterraneus w2 virus*) have multi-segmented dsRNA genomes made of 12 segments of linear dsRNA. Their genome electrophoretic profiles are distinct from the other members of family *Reoviridae* with 12 segmented genomes, namely the phytoreoviruses (plant viruses) and seadornaviruses (insect-borne arboviruses).

The *Eriocheir sinensis reovirus* (ESRV) is the only among the three viruses for which a sequence was obtained. The full-length RNA-dependent RNA polymerase (RdRp) gene was sequenced and deposited in GenBank under accession number [AY542965](#) (Zhang et al., 2004). The sequence analysis of this genome segment have shown that it is 3722 nt-long and encodes a single protein.

A full-length comparison of the ESRV RdRps to other reoviruses, only identified similarities with the seadornaviruses (aa identity as low as 27%). This value is that found between members of distinct genera of family *Reoviridae* (Attoui et al., 2002) and supports the classification of ESRV within a new and separate genus, which could potentially include two other crustacean reoviruses (also 12-segmented). These are *Macropipus depurator P virus* and *Carcinus mediterraneus w2 virus* (Marie and Bonamie, 1988). This genus could be designated *Cardoreovirus*.

Interestingly, the phylogenetic analysis of ESRV polymerase (annex 1) shows that it has a common, but distant, origin with the seadornaviruses.

Origin of the proposed genus name

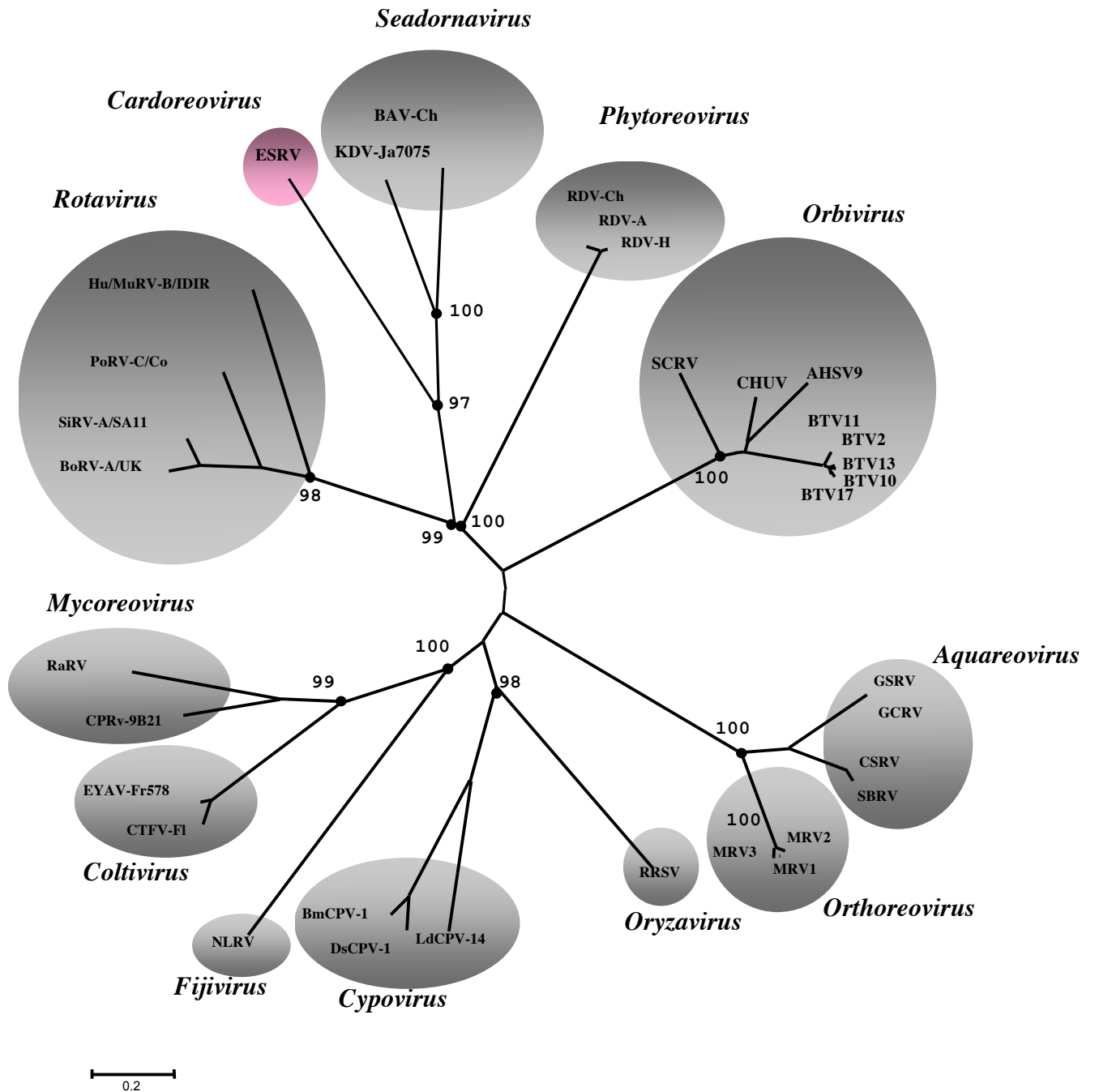
Cardoreovirus (from Carcinus – Crab, dodeca, RNA reovirus)

References

- Attoui, H., Fang, Q., Mohd Jaafar, F., Cantaloube, J.F., Biagini, P., de Micco, P., de Lamballerie, X. (2002). Common evolutionary origin of aquareoviruses and orthoreoviruses revealed by genome characterization of Golden shiner reovirus, Grass carp reovirus, Striped bass reovirus and golden ide reovirus (genus Aquareovirus, family Reoviridae). *Journal of General Virology*. 83, 1941-1951.
- Mari, J. Bonami, J.R. (1998). W2 virus infection of the crustacean *Carcinus mediterraneus* : a reovirus disease. *Journal of General Virology*. 69, 561-571.
- Zhang, S., Shi, Z., Zhang, J., Bonami, J.R. (2004). Purification and characterization of a new reovirus from the Chinese mitten crab, *Eriocheir sinensis*. *Journal of Fish Diseases*. 27, 687-692.

Annexes:

Annexe 1: neighbour-joining tree built with the available sequences of RdRps of representative members of family *Reoviridae*.



Bootstrap values of 500 replications are indicated at the nodes (●) with each genus.

The sequences used in RdRps phylogenetic analysis of ESRV: the abbreviations listed are those used in the figure above.

Species	Isolate	Abbreviation	Accession number
Genus Seadornavirus (12 segments)			
<i>Banna virus</i>	Ch	BAV-Ch	AF168005
<i>Kadipiro virus</i>	Java-7075	KDV-Ja7075	AF133429
Genus Coltivirus (12 segments)			
<i>Colorado tick fever virus</i>	Florio	CTFV-FI	AF134529
<i>Eyach virus</i>	Fr578	EYAV-Fr578	AF282467
Genus Orthoreovirus (10 segments)			
<i>Mammalian orthoreovirus</i>	Lang strain	MRV-1	M24734
	Jones strain	MRV-2	M31057
	Dearing strain	MRV-3	M31058
Genus Orbivirus (10 segments)			
<i>African horse sickness virus</i>	serotype 9	AHSV-9	U94887
<i>Bluetongue virus</i>	serotype 2	BTV-2	L20508
	serotype 10	BTV-10	X12819
	serotype 11	BTV-11	L20445
	serotype 13	BTV-13	L20446
	serotype 17	BTV-17	L20447
<i>Palyam virus</i>	Chuzan	CHUV	Baa76549
<i>St Croix river virus</i>	SCRV	SCRV	AF133431
Genus Rotavirus (11 segments)			
<i>Rotavirus A</i>	bovine strain UK	BoRV-A/UK	X55444
	simian strain SA11	SiRV-A/SA11	AF015955
<i>Rotavirus B</i>	human/murine strain IDIR	Hu/MuRV-B/IDIR	M97203
<i>Rotavirus C</i>	porcine Cowden strain	PoRV-C/Co	M74216
Genus Aquareovirus (11 segments)			
<i>Golden shiner reovirus</i>	GSRV	GSRV	AF403399
<i>Grass Carp reovirus</i>	GCRV-873	GCRV	AF260511
<i>Chum salmon reovirus</i>	CSRV	CSRV	AF418295
<i>Striped bass reovirus</i>	SBRV	SBRV	AF450318
Genus Fijivirus (10 segments)			
<i>Nilaparvata lugens reovirus</i>	Izumo strain	NLRV-Iz	D49693
Genus Phytoreovirus (10 segments)			
<i>Rice dwarf virus</i>	isolate China	RDV-Ch	U73201
	isolate H	RDV-H	D10222
	isolate A	RDV-A	D90198
Genus Oryzavirus (10 segments)			
<i>Rice ragged stunt virus</i>	Thai strain	RRSV-Th	U66714
Genus Cypovirus (10 segments)			
<i>Bombyx mori cytoplasmic polyhedrosis virus 1</i>	Strain I	BmCPV-1	AF323782
<i>Dendrymus punctatus cytoplasmic polyhedrosis 1</i>	DsCPV-1	DsCPV-1	AAN46860
<i>Lymantria dispar cytoplasmic polyhedrosis 14</i>	LdCPV-14	LdCPV-14	AAK73087
Genus Mycoreovirus (11 or 12 segments)			
<i>Rosellinia anti-rot virus</i>	W370	RaRV	AB102674
<i>Cryphonectria parasitica reovirus</i>	9B21	CPRV	AY277888