

The universal system of virus taxonomy of the International Committee on Virus Taxonomy (ICTV), including new proposals ratified since publication of the Sixth ICTV Report in 1995

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A number of new taxonomic proposals have been considered by the Executive Committee of the International Committee on Virus Taxonomy (ICTV) since publication of its Sixth Report in 1995 [2]. Several of these proposals were ratified subsequently at the Plenary Meeting of the ICTV during the Tenth International Congress of Virology in Jerusalem in August 1996. Others have been ratified by postal ballot of the full membership of the ICTV subsequent to a meeting of the Executive Committee of the ICTV in Strasbourg in May 1997. Table 1 presents the current version of the Universal System of Virus Taxonomy which includes the new taxonomic proposals which have been ratified by the ICTV up to the end of 1997 [1]. This is an abbreviated version of the up-dated taxonomy; it does not extend to the listing of approved virus species, a feature which is expanding rapidly. A major revision of virus taxonomy is being undertaken currently by the individual Study Groups of the ICTV, which is scheduled to be published as the Seventh Report of the ICTV prior to the Eleventh International Congress of Virology in Sydney in 1999.

The order of presentation of virus taxa follows that adopted in the Sixth Report. It is based on four criteria:

- (1) the nature of the viral genome,
- (2) the strandedness of the viral genome,
- (3) the facility for reverse transcription, and
- (4) the polarity of the virus genome.

The order of presentation does not imply any hierarchical or phylogenetic relationship. At present viruses are classified into 189 genera. Of these, 166 are classified into 55 families. The remaining 23 are "floating" genera which have yet to be assigned to a higher taxon. Two Orders have been established: the order *Mononegavirales* to include the four families *Bornaviridae*, *Filoviridae*, *Paramyxoviridae* and *Rhabdoviridae*, and the order *Nidovirales* to include the two families *Coronaviridae* and *Arteriviridae*.

It should be noted that the genus containing potato mop top virus is recorded here as *Pomovirus*, and not *Potamovirus* as recorded erroneously in the report of the Strasbourg Meeting, published in the August issue of Virology Division News [3].

Table 1. The current ICTV Universal System of Virus Nomenclature, including new proposals ratified since publication of the Sixth ICTV Report in 1995, arranged according to nucleic acid type

The DNA viruses			
The ssDNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Inoviridae</i>	<i>Inovirus</i> <i>Plectrovirus</i>	coliphage fd Acholeplasma phage L51
	<i>Microviridae</i>	<i>Microvirus</i> <i>Spiromicrovirus</i> <i>Bdellovirus</i> <i>Chlamydiamicrovirus</i>	coliphage φX174 Spiroplasma phage 4 Bdellovibrio phage MAC1 Chlamydia phage 1
	<i>Geminiviridae</i>	<i>Mastrevirus</i> <i>Curtovirus</i> <i>Begomovirus</i>	maize streak virus beet curly top virus bean golden mosaic virus
	<i>Circoviridae</i>	<i>Circovirus</i>	chicken anaemia virus
	<i>Parvoviridae</i> [<i>Parvovirinae</i>]	<i>Parvovirus</i> <i>Erythrovirus</i> <i>Dependovirus</i>	minute virus of mice B19 virus adeno-associated virus 2
	[<i>Densovirinae</i>]	<i>Densovirus</i> <i>Iteravirus</i> <i>Contravirus</i>	Junonia coenia densovirus Bombyx mori densovirus Aedes aegypti densovirus
The DNA Viruses			
The dsDNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Myoviridae</i>	“T4-like phages” “P1-like phages” “P2-like phages” “Mu-like phages” “SPO1-like phages” “φH-like phages”	coliphage T4 enterobacteria phage P1 enterobacteria phage P2 enterobacteria phage Mu Bacillus phage SPO1 Halobacterium virus φH
	<i>Siphoviridae</i>	“λ-like phages” “T1-like phages” “T5-like phages” “c2-like phages” “L5-like phages” “ΨM- like phages”	coliphage λ enterobacteria phage T1 enterobacteria phage T5 Lactococcus phage c2 Mycobacterium phage L5 Methanobacterium ΨM
	<i>Podoviridae</i>	“T7-like phages” “φ29-like” “P22-like”	coliphage T7 Bacillus phage φ29 enterobacteria phage P22

(continued)

Table 1 (continued)

The DNA Viruses			
The dsDNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Rudiviridae</i>	<i>Rudivirus</i>	Sulfolobus virus SIRV1
	<i>Tectiviridae</i>	<i>Tectivirus</i>	enterobacteria phage PRD1
	<i>Corticoviridae</i>	<i>Corticovirus</i>	Alteromonas phage PM2
	<i>Lipothrixviridae</i>	<i>Lipothrixvirus</i>	Thermoproteus virus 1
	<i>Plasmaviridae</i>	<i>Plasmavirus</i>	Acholeplasma phage L2
	<i>Fuselloviridae</i>	<i>Fusellovirus</i>	Sulfolobus virus 1
	<i>Phycodnaviridae</i>	<i>Phycodnavirus</i>	Paramecium bursaria Chlorella virus
	<i>Poxviridae</i> [Chordopoxvirinae]	<i>Orthopoxvirus</i>	vaccinia virus
		<i>Parapoxvirus</i>	orf virus
		<i>Avipoxvirus</i>	fowlpox virus
		<i>Capripoxvirus</i>	sheeppox virus
		<i>Leporipoxvirus</i>	myxoma virus
		<i>Suipoxvirus</i>	swinepox virus
		<i>Molluscipoxvirus</i>	molluscum contagiosum virus
		<i>Yabapoxvirus</i>	Yaba monkey tumour virus
	[Entomopoxvirinae]	<i>Entomopoxvirus A</i>	Melolontha melolontha entomovirus
		<i>Entomopoxvirus B</i>	Amsacta moorei entomovirus
		<i>Entomopoxvirus C</i>	Chironomus luridus entomovirus
	<i>Iridoviridae</i>	<i>Iridovirus</i>	Chilo iridescent virus
		<i>Chloriridivirus</i>	mosquito iridescent virus
		<i>Ranavirus</i>	frog virus 3
		<i>Lymphocystivirus</i>	flounder virus
	<i>Polydnaviridae</i>	<i>Ichnovirus</i>	Camponotus sonorensis virus
		<i>Bracovirus</i>	Cotesia melanoscela virus
	<i>Herpesviridae</i> [Alphaherpesvirinae]	<i>Simplexvirus</i>	human herpesvirus 1
		<i>Varicellovirus</i>	human herpesvirus 3
	[Betaherpesvirinae]	<i>Cytomegalovirus</i>	human herpesvirus 5
		<i>Muromegalovirus</i>	murine cytomegalovirus 1
		<i>Roseolovirus</i>	human herpesvirus 6
	[Gammaherpesvirinae]	<i>Lymphocryptovirus</i>	human herpesvirus 4
		<i>Rhadinovirus</i>	ateline herpesvirus 2

(continued)

Table 1 (continued)

The DNA Viruses			
The dsDNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Papovaviridae</i>	<i>Polyomavirus</i> <i>Papillomavirus</i>	murine polyoma virus cottontail rabbit papilloma- virus (Shope)
	<i>Adenoviridae</i>	<i>Mastadenovirus</i> <i>Aviadenovirus</i>	human adenovirus 2 fowl adenovirus 1
	<i>Baculoviridae</i>	<i>Nucleopolyhedrovirus</i> <i>Granulovirus</i>	Autographa californica nucleopolyhedrovirus Cydia pomonella granulovirus
	–	“African swine fever- like viruses”	African swine fever virus
	–	<i>Rhizidiovirus</i>	Rhizidiomyces virus
The DNA and RNA Reverse Transcribing Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Hepadnaviridae</i>	<i>Orthohepadnavirus</i> <i>Avihepadnavirus</i>	hepatitis B virus duck hepatitis B virus
	<i>Caulimoviridae</i>	<i>Badnavirus</i> <i>Caulimovirus</i> “rice tungro bacilliform-like viruses” “legume-infecting viruses” “cassava vein mottle-like viruses”	Commelina yellow mottle virus cauliflower mosaic virus rice tungro bacilliform virus soybean chlorotic mottle virus cassava vein mottle virus
	<i>Retroviridae</i>	“Mammalian type B retroviruses” “Mammalian type C retroviruses” “Avian type C retroviruses” “Type D retroviruses” <i>Lentivirus</i> <i>Spumavirus</i>	mouse mammary tumour virus murine leukaemia virus avian leucosis virus Mason-Pfizer monkey virus bovine leukaemia virus human immunodeficiency virus 1 human spumavirus

(continued)

Table 1 (continued)

The RNA Viruses			
The dsDNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Cystoviridae</i>	<i>Cystovirus</i>	<i>Pseudomonas</i> phage ϕ 6
	<i>Reoviridae</i>	<i>Orthoreovirus</i>	reovirus 3
		<i>Orbivirus</i>	bluetongue virus 1
		<i>Rotavirus</i>	simian rotavirus SA11
		<i>Coltivirus</i>	Colorado tick fever virus
		<i>Aquareovirus</i>	golden shiner virus
		<i>Cypovirus</i>	<i>Bombyx mori</i> cypovirus 1
		<i>Fijivirus</i>	Fiji disease virus
		<i>Phytoreovirus</i>	wound tumour virus
		<i>Oryzavirus</i>	rice ragged stunt virus
	<i>Birnaviridae</i>	<i>Aquabirnavirus</i>	infectious pancreatic necrosis virus
		<i>Avibirnavirus</i>	infectious bursal disease virus
		<i>Entombirnavirus</i>	<i>Drosophila</i> X virus
	<i>Totiviridae</i>	<i>Totivirus</i>	<i>Saccharomyces cerevisiae</i> virus LA
		<i>Giardiavirus</i>	<i>Giardia lamblia</i> virus
		<i>Leishmanivirus</i>	<i>Leishmania</i> RNA virus 1-1
	<i>Partitiviridae</i>	<i>Partivirus</i>	<i>Gaeumannomyces graminis</i> virus 019/6-A
		<i>Chrysovirus</i>	<i>Penicillium chrysogenum</i> virus
		<i>Alphacryptovirus</i>	white clover cryptic virus 1
		<i>Betacryptovirus</i>	white clover cryptic virus 2
	<i>Hypoviridae</i>	<i>Hypovirus</i>	<i>Cryphonectria hypovirus</i> 1-EP713
The RNA Viruses			
The Negative-stranded ssRNA Viruses			
Order	Family [Sub-family]	Genus	Type species
<i>Mononegavirales</i>	<i>Paramyxoviridae</i> [<i>Paramyxovirinae</i>]	<i>Paramyxovirus</i>	human parainfluenza virus 1
		<i>Morbillivirus</i>	measles virus
		<i>Rubulavirus</i>	mumps virus
	[<i>Pneumovirinae</i>]	<i>Pneumovirus</i>	human respiratory syncytial virus
		(Unnamed genus)	turkey rhinotracheitis virus

(continued)

Table 1 (continued)

The RNA Viruses			
The Negative stranded ssRNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Rhabdoviridae</i>	<i>Vesiculovirus</i> <i>Lyssavirus</i> <i>Ephemerovirus</i> <i>Cytorhabdovirus</i> <i>Nucleorhabdovirus</i>	vesicular stomatitis Indiana virus rabies virus bovine ephemeral fever virus lettuce necrotic yellows virus potato yellow dwarf virus
	<i>Filoviridae</i>	<i>Filovirus</i>	Marburg virus
	<i>Bornaviridae</i>	<i>Bornavirus</i>	Borna disease virus
	<i>Orthomyxoviridae</i>	<i>Influenzavirus A</i> <i>Influenzavirus B</i> <i>Influenzavirus C</i> <i>Thogotovirus</i>	Influenza A virus Influenza B virus Influenza C virus Thogoto virus
	<i>Bunyaviridae</i>	<i>Bunyavirus</i> <i>Hantavirus</i> <i>Nairovirus</i> <i>Phlebovirus</i> <i>Tospovirus</i>	Bunyamwera virus Hantaan virus Nairobi sheep disease virus Sicilian sandfly fever virus tomato spotted wilt virus
	<i>Arenaviridae</i>	<i>Arenavirus</i>	Lymphocytic choriomeningitis virus
	–	<i>Tenuivirus</i>	rice stripe virus
The RNA Viruses			
The Positive-stranded RNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Leviviridae</i>	<i>Levivirus</i> <i>Allolevivirus</i>	enterobacteria phage MS2 enterobacteria phage Q β
	<i>Picornaviridae</i>	<i>Enterovirus</i> <i>Rhinovirus</i> <i>Hepatovirus</i> <i>Cardiovirus</i> <i>Aphthovirus</i> <i>Parechovirus</i>	poliovirus 1 human rhinovirus 1A hepatitis A virus encephalomyocarditis virus foot-and-mouth disease virus human echovirus 22
	<i>Sequiviridae</i>	<i>Sequivirus</i> <i>Waikavirus</i>	parsnip yellow fleck virus rice tungro spherical virus
	<i>Comoviridae</i>	<i>Comovirus</i> <i>Fabavirus</i> <i>Nepovirus</i>	cowpea mosaic virus broad bean wilt virus 1 tobacco ringspot virus

(continued)

Table 1 (continued)

The RNA Viruses			
The Positive-stranded RNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	<i>Potyviridae</i>	<i>Potyvirus</i> <i>Rymovirus</i> <i>Bymovirus</i>	potato virus Y ryegrass mosaic virus barley yellow mosaic virus
	<i>Caliciviridae</i>	<i>Calicivirus</i>	vesicular exanthema of swine virus
	<i>Astroviridae</i>	<i>Astrovirus</i>	human astrovirus 1
	<i>Nodaviridae</i>	<i>Alphanodavirus</i> <i>Betanodavirus</i>	Nodamura virus striped jack nervous necrosis virus
	<i>Tetraviridae</i>	<i>Betatetravirus</i> <i>Omeгатetravirus</i>	Nudaurelia capensis β virus Nudaurelia capensis ω virus
	<i>Tombusviridae</i>	<i>Tombusvirus</i> <i>Carmovirus</i> <i>Necrovirus</i> <i>Dianthovirus</i> <i>Machlomovirus</i>	tomato bushy stunt virus carnation mottle virus tomato necrosis virus carnation ringspot virus maize chlorotic mottle virus
<i>Nidovirales</i>	<i>Coronaviridae</i>	<i>Coronavirus</i> <i>Torovirus</i>	avian infectious bronchitis virus Berne virus
	<i>Arteriviridae</i>	<i>Arterivirus</i>	equine arteritis virus
	<i>Togaviridae</i>	<i>Alphavirus</i> <i>Rubivirus</i>	Sindbis virus rubella virus
	<i>Flaviviridae</i>	<i>Flavivirus</i> <i>Pestivirus</i> <i>Hepacivirus</i>	yellow fever virus bovine diarrhoea virus hepatitis C virus
	<i>Bromoviridae</i>	<i>Alfamovirus</i> <i>Illaravirus</i> <i>Bromovirus</i> <i>Cucumovirus</i> <i>Oleavirus</i>	alfalfa mosaic virus tobacco streak virus brome mosaic virus cucumber mosaic virus olive latent virus
	<i>Closteroviridae</i>	<i>Closterovirus</i> <i>Crinivirus</i>	beet yellows virus lettuce infectious yellows virus
	<i>Barnaviridae</i>	<i>Barnavirus</i>	mushroom bacilliform virus
	–	<i>Tobamovirus</i>	tobacco mosaic virus
	–	<i>Tobravirus</i>	tobacco rattle virus
	–	<i>Hordeivirus</i>	barley stripe mosaic virus

(continued)

Table 1 (continued)

The RNA Viruses			
The Positive-stranded RNA Viruses			
Order	Family [Sub-family]	Genus	Type species
	–	<i>Furovirus</i>	soil-borne wheat mosaic virus
	–	<i>Pomovirus</i>	potato mop top virus
	–	<i>Pecluvirus</i>	peanut clump virus
	–	<i>Benyvirus</i>	beet necrotic yellow virus
	–	<i>Idaeovirus</i>	raspberry bushy dwrf virus
	–	<i>Capillovirus</i>	apple stem grooving virus
	–	<i>Trichovirus</i>	apple chlorotic leaf spot virus
	–	<i>Sobemovirus</i>	Southern bean mosaic virus
	–	<i>Luteovirus</i>	barley yellow dwarf virus
	–	<i>Enamovirus</i>	pea enation mosaic virus
	–	<i>Umbravirus</i>	carrot mottle virus
	–	<i>Tymovirus</i>	turnip yellow mosaic virus
	–	<i>Carlavirus</i>	carnation latent virus
	–	<i>Potexvirus</i>	potato virus X
	–	<i>Marafivirus</i>	maize rayado fino virus
	–	<i>Vitivirus</i>	grapevine virus A
Subviral Agents			
Satellites, Viroids, and Prions			
Agents		Genus	Example
Satellites		–	tobacco necrosis virus satellite
		<i>Deltavirus</i>	hepatitis delta virus
Viroids		–	potato spindle tuber viroid
Prions		–	scrapie agent

References

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