



2020 taxonomic update for phylum *Negarnaviricota* (*Riboviria*: *Orthornavirae*), including the large orders *Bunyavirales* and *Mononegavirales*

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Abstract

In March 2020, following the annual International Committee on Taxonomy of Viruses (ICTV) ratification vote on newly proposed taxa, the phylum *Negarnaviricota* was amended and emended. At the genus rank, 20 new genera were added, two were deleted, one was moved, and three were renamed. At the species rank, 160 species were added, four were deleted, ten were moved and renamed, and 30 species were renamed. This article presents the updated taxonomy of *Negarnaviricota* as now accepted by the ICTV.

Introduction

Phylum *Negarnaviricota* was established in 2019 by the International Committee on Taxonomy of Viruses (ICTV) for negative-sense RNA viruses that can be connected evolutionarily through their encoded RNA-directed RNA polymerase (RdRp) core domains. The phylum includes two subphyla, *Haploviricotina* and *Polyploviricotina*, for negative-sense RNA viruses that encode large (L) proteins with or without mRNA capping activity, respectively. The two subphyla include four classes (*Chunquiviricetes*, *Milnevircetes*, *Monjivircetes*, and *Yunchangviricetes*) and two classes (*Ellioviricetes* and *Insthoviricetes*), respectively [56, 109, 136]. The vast majority of viruses that have been assigned to phylum *Negarnaviricota* belong to two orders: *Mononegavirales* (established in 1991 [92] and amended/emended in 1995 [16], 1997 [93], 2000 [94], 2005 [95], 2011 [32], 2016 [2], 2017 [7], March 2018 [8], October 2018 [66], and 2019 [9]) and *Bunyavirales* (established in 2017 and amended/emended in 2018 [64, 65] and 2019 [1]).

Here we present the changes that were proposed to the entire phylum *Negarnaviricota* via official ICTV taxonomic proposals (TaxoProps) in 2019 and that were accepted by the ICTV in March 2020 [128]. These changes are now part of the official ICTV taxonomy.

Taxonomic changes above the phylum rank

Until recently, *Negarnaviricota*, included in realm *Riboviria* (established in 2019 [127]), was the only established phylum in the ICTV framework. In 2020, virus taxonomy was amended to include *Negarnaviricota* in the new riboviriad kingdom *Orthornavirae* as one of five sister phyla [55] (TaxoProp 2019.006G.A.v1.Riboviria).

Taxonomic changes at the subphylum rank

No new subphyla were created.

Taxonomic changes at the class rank

No new classes were created.

Taxonomic changes at the order rank

No new orders were created.

Taxonomic changes within order *Goujianvirales* (*Haploviricotina*: *Yunchangviricetes*)

No changes were made.

Taxonomic changes within order *Jingchuvirales* (*Haploviricotina*: *Monjiviricetes*)

Family *Chuviridae*

One new species, *Taiyuan mivirus*, was added to genus *Mivirus* for *Taiyuán* leafhopper virus (TYLeV) first discovered by high-throughput sequencing (HTS) in a leafhopper (*Psammotettix alienus* (Dahlbom, 1850)) sampled in *Taiyuán* (太原), *Shānxī* Province (山西省), China [129] (TaxoProp 2019.018M.A.v2.1newsp_Taiyuan_mivirus).

Taxonomic changes within order *Mononegavirales* (*Haploviricotina*: *Monjiviricetes*)

Family *Artoviridae*

The family was expanded by one new genus, *Hexartovirus*, including one new species, *Caligid hexartovirus*, for *Lepeophtheirus salmonis* negative-stranded RNA virus 1 (LsNSRV-1) first discovered by HTS in salmon lice (*Lepeophtheirus salmonis* (Krøyer, 1837)) sampled on the west coast of Norway [81]. Species *Barnacle peropuvirus* was moved from genus *Peropuvirus* into genus *Hexartovirus* and renamed *Barnacle hexartovirus* (TaxoProp 2019.021M.A.v1.1newgenus_Hexartovirus).

Family *Bornaviridae*

No changes were made.

Family *Filoviridae*

The family was expanded by one genus, *Dianlovirus*, including a single new species, *Mengla dianlovirus*, for *Měnglā* virus (MLAV) discovered by HTS in a *Rousettus* sp. bat sampled in *Měnglā* County (勐腊县), *Yúnnán* Province (云南省), China [145, 146] (TaxoProp 2019.011M.A.v1. *Mengla_dianlovirus*).

One new species, *Bombali ebolavirus*, was created in genus *Ebolavirus*, for *Bombali* virus (BOMV) first discovered by consensus PCR and confirmed by HTS in little free-tailed bats (*Chaerephon pumilus* (Cretzschmar, 1830–1831)) and Angolan free-tailed bats (*Mops condylurus* (A. Smith, 1833)) sampled in *Bombali* District, Northern Province, Sierra Leone [37] (TaxoProp 2019.007M.A.v2. *Bombali_ebolavirus*).

Family *Lispiviridae*

No changes were made.

Family *Mymonaviridae*

A new genus, *Hubramonavirus*, was established for two new species: *Hubei hubramonavirus* for *Húběi* rhabdo-like virus 4 (HbRLV-4) discovered by HTS in an arthropod mix collected in *Húběi* Province (湖北省), China [106] and *Lentinula hubramonavirus* for *Lentinula edodes* negative-strand RNA virus 1 (LeNSRV-1) first detected by HTS in commercial shiitakes (*Lentinula edodes* (Berk.) Pegler (1976)) sampled in Japan [60] (TaxoProp 2019.001F.A.v1. *Hubramonavirus_1gen*).

Family *Nyamiviridae*

No changes were made.

Family *Paramyxoviridae*

The overlooked deletion of species *Bat mumps orthorubulavirus* and the overlooked renaming of species *Synodus paramyxovirus* to *Synodus synodonvirus* were corrected (TaxoProp 2019.016M.A.v1. Corrections).

The family was expanded by three new genera: genus *Cynoglossusvirus* for the already established species *Cynoglossus paramyxovirus* (now renamed *Cynoglossus cynoglossusvirus*); genus *Hoplichthysvirus* for the already established species *Hoplichthys paramyxovirus* (now renamed *Hoplichthys hoplichthysvirus*); and genus *Scoliodonvirus* for the already established species *Scoliodon paramyxovirus* (now renamed *Scoliodon scoliodonvirus*) (TaxoProp 2019.025M.A.v2. *Paramyxoviridae_3gen5sp4rensp*).

Genus *Aquaparamyxovirus* was expanded by one species, *Oncorhynchus aquaparamyxovirus*, for Pacific salmon paramyxovirus (PSPV) first isolated from Chinook salmon (*Oncorhynchus tshawytscha* (Walbaum, 1792)) in Oregon, USA [135]. Species *Salmo aquaparamyxovirus* was renamed *Salmo aquaparamyxovirus* (TaxoProp 2019.025M.A.v2. *Paramyxoviridae_3gen5sp4rensp*).

Genus *Jeilongvirus* was expanded by one species, *Miniopteran jeilongvirus*, for “bat paramyxovirus isolate Bat-ParaV/B16-40” (here renamed *Shaan virus* [ShaV]) first isolated from a Schreibers’s long-fingered bat (*Miniopterus schreibersii* (Kuhl, 1817)) feces sampled in *Danyang* County (丹阳郡), North Chungcheong Province (충청북도), South Korea [79] (TaxoProp 2019.025M.A.v2. *Paramyxoviridae_3gen5sp4rensp*).

Genus *Orthoavulavirus* was expanded erroneously by two species, *Avian orthoavulavirus 21* and *Avian orthovulavirus 21* [sic], for the same virus, “avian paramyxovirus 17” (here

renamed avian paramyxovirus 21 [APMV-21]) first isolated from bird feces collected in Seosan (서산시), South Chungcheong Province (충청남도), South Korea [48] (TaxoProps 2019.014M.A.v1.Avulavirus_1newsp and 2019.025M.A.v2.Paramyxoviridae_3gen5sp4rensp).

Genus *Orthorubulavirus* was expanded by one species, *Mammalian orthorubulavirus 6*, for Alston virus (AlsV) first isolated from pteropodid bat urine sampled in Alstonville, New South Wales, Australia [49] (TaxoProp 2019.025M.A.v2.Paramyxoviridae_3gen5sp4rensp).

Genus *Pararubulavirus* was expanded by one species, *Hervey pararubulavirus*, for Hervey virus (HerV) first isolated from pteropodid bat urine sampled in Hervey Bay, Queensland, Australia [11, 53]. (TaxoProp 2019.025M.A.v2.Paramyxoviridae_3gen5sp4rensp).

Genus *Respirovirus* was expanded by one species, *Squirrel respirovirus*, for giant squirrel virus (GSqV) first isolated from a Sri Lankan giant squirrel (*Ratufa macroura* (Pennant, 1769)) sampled in a German zoo [35] (TaxoProp 2019.019M.A.v2.1newsp_Squirrel_respirovirus).

Family *Rhabdoviridae*

Genus *Almendravirus* was expanded by one species, *Menghai almdravirus*, for Menghai rhabdovirus (MRV) first isolated from Asian tiger mosquitoes (*Aedes albopictus* (Skuse, 1894)) collected in Měnghǎi County (勐海县) in Yúnnán Province (云南省), China [113] (TaxoProp 2019.033M.N.v1.Menghai_almdravirus_1sp).

Genus *Nucleorhabdovirus* was split into three genera, *Alphanucleorhabdovirus*, *Betanucleorhabdovirus*, and *Gammanucleorhabdovirus* (TaxoProp 2019.031M.Ac.v1.Nucleorhabdovirus_splitgen). Established species *Eggplant mottled dwarf nucleorhabdovirus*, *Maize Iranian mosaic nucleorhabdovirus*, *Maize mosaic nucleorhabdovirus*, *Potato yellow dwarf nucleorhabdovirus*, *Rice yellow stunt nucleorhabdovirus*, and *Taro vein chlorosis nucleorhabdovirus* were assigned to genus *Alphanucleorhabdovirus* and renamed *Eggplant mottled dwarf alphanucleorhabdovirus*, *Maize Iranian mosaic alphanucleorhabdovirus*, *Maize mosaic alphanucleorhabdovirus*, *Potato yellow dwarf alphanucleorhabdovirus*, *Rice yellow stunt alphanucleorhabdovirus*, and *Taro vein chlorosis alphanucleorhabdovirus*, respectively. Established species *Datura yellow vein nucleorhabdovirus*, *Sonchus yellow net nucleorhabdovirus*, and *Sowthistle yellow vein nucleorhabdovirus* were assigned to genus *Betanucleorhabdovirus* and renamed *Datura yellow vein betanucleorhabdovirus*, *Sonchus yellow net betanucleorhabdovirus*, and *Sowthistle yellow vein betanucleorhabdovirus*, respectively. Established species *Maize fine streak nucleorhabdovirus* was assigned to genus *Gammanucleorhabdovirus* and renamed *Maize fine streak gammanucleorhabdovirus* (TaxoProp 2019.031M.Ac.v1.Nucleorhabdovirus_splitgen).

Three new species were established in genus *Alphanucleorhabdovirus*:

- *Morogoro maize-associated alphanucleorhabdovirus* for Morogoro maize-associated virus (MMAV) first detected by HTS in maize (*Zea mays* L.) sampled in Morogoro, Morogoro Region, Tanzania [97];
- *Physostegia chlorotic mottle alphanucleorhabdovirus* for Physostegia chlorotic mottle virus (PhCMoV) first isolated from lionhearts (*Physostegia* sp.) in Austria [76]; and
- *Wheat yellow striate alphanucleorhabdovirus* for wheat yellow striate virus (WYSV) first isolated from common wheat (*Triticum aestivum* L.) sampled in Hánchéng (韩城), Shǎnxī/Shaanxi Province (陕西省), China [61] (TaxoProp 2019.031M.Ac.v1.Nucleorhabdovirus_splitgen).

Three new species were established in genus *Betanucleorhabdovirus*:

- *Alfalfa betanucleorhabdovirus* for alfalfa-associated nucleorhabdovirus (AaNv) first discovered by HTS in alfalfa (*Medicago sativa* L.) sampled in Stadl-Paura, Upper Austria (Oberösterreich), Austria [36];
- *Blackcurrant betanucleorhabdovirus* for blackcurrant-associated rhabdovirus (BCaRV) first discovered by HTS in blackcurrant (*Ribes nigrum* L.) sampled in Russia [138]; and
- *Trefoil betanucleorhabdovirus* for birds-foot trefoil-associated virus (BFTV) first discovered by HTS in Bird's-foot trefoil (*Lotus corniculatus* L.) sampled in the Qínling Mountains (秦岭山), Shǎnxī/Shaanxi Province (陕西省), China [26, 131] (TaxoProp 2019.031M.Ac.v1.Nucleorhabdovirus_splitgen).

One new genus, *Arurhavirus*, was established to include four species:

- *Aruac arurhavirus* for Aruac virus (ARUV) first isolated from mosquitoes (*Trichoprosopon theobaldi* Lane and Cerqueira, 1942) collected in Melaju Forest, Trinidad, Trinidad and Tobago [110, 126];
- *Inhangapi arurhavirus* for Inhangapi virus (INHV) first isolated from sandflies (*Lutzomyia flaviscutellata* (Mangabeira, 1942)) collected in Catu Forest, Belém, Pará State, Brazil [3, 126];
- *Santabarbara arurhavirus* for Santa Barbara virus (SBAV) first in mice sampled in Santa Bárbara do Pará, Pará State, Brazil [unpublished]; and
- *Xiburema arurhavirus* for Xiburema virus (XIBV) first isolated from mosquitoes (*Sabethes intermedius* (Lutz, 1904)) sampled in Sena Madureira, Acre State, Brazil [51, 132] (2019.006M.A.v1.Arurhavirus_1gen4sp).

One new genus, *Barhavirus*, was established to include two new species:

- *Bahia barhavirus* for Bahia Grande virus (BGV) first isolated from mosquitoes (*Aedes*, *Culex*, *Anopheles*, *Psorophora* spp.) collected in Texas, Louisiana, New Mexico, and North Dakota, USA [52, 126] and also for Harlingen virus (HARV) isolated from salt marsh mosquitoes (*Culex salinarius* Coquillett, 1904) sampled in Harlingen, Texas, USA [126].
- *Muir barhavirus* for Muir Springs virus (MSV) first isolated from mosquitoes (*Aedes* sp.) collected in Fort Morgan, Colorado, USA [52, 126] (TaxoProp 2019.012M.A.v1.Rhabdoviridae_5gen8sp1reasp).

One new genus, *Lostrhavirus*, was established to include new species *Lonestar zarhavirus* [sic] for lone star tick rhabdovirus (LSTRV) first detected by HTS in lone star ticks (*Amblyomma americanum* (Linnaeus, 1758)) collected in the USA [unpublished] (TaxoProp 2019.012M.A.v1.Rhabdoviridae_5gen8sp1reasp).

One new genus, *Mousrhavirus*, was established to include the previously established species *Moussa virus* (now renamed *Moussa mousrhavirus*) (TaxoProp 2019.012M.A.v1.Rhabdoviridae_5gen8sp1reasp).

One new genus, *Ohlsrhavirus*, was established to include five new species:

- *Culex ohlsrhavirus* for *Culex* rhabdo-like virus (CRLV) first discovered by HTS in southern house mosquitoes (*Culex quinquefasciatus* Say, 1823) collected near Perth, Western Australia, Australia [107];
- *Northcreek ohlsrhavirus* for North Creek virus (NORCV) first discovered by HTS in mosquitoes (*Culex sitiens* Wiedemann, 1828) collected in Ballina, New South Wales, Australia [23];
- *Ohlsdorf ohlsrhavirus* for Ohlsdorf virus (OHLDV) first discovered by HTS in mosquitoes (*Ochlerotatus cantans* (Meigen, 1818)) collected in Hamburg, Germany [105];
- *Riverside ohlsrhavirus* for riverside virus (RISV) first discovered by HTS in mosquitoes (*Ochlerotatus* sp.) collected in Gemenc, Gyékényes, and Drávaszabolcs, Hungary [98]; and
- *Tongilchon ohlsrhavirus* for Tongilchon virus 1 (TCHV-1) first detected in mosquitoes (*Culex bitaeniorhynchus* Giles, 1901) collected in Tongil-chon (통일촌), Gyeonggi Province (경기도), South Korea [39] (TaxoProp 2019.032M.N.v1.Ohlsrhavirus_1gen5sp).

One new genus, *Sawgrhavirus*, was established to include four new species:

- *Connecticut sawgrhavirus* for Connecticut virus (CNTV) first isolated from ticks (*Ixodes dentatus* Marx, 1899) taken from an eastern cottontail (*Sylvilagus floridanus* (J. A. Allen, 1890)) captured in Lyme, Connecticut, USA [67, 126];
- *Island sawgrhavirus* for Long Island tick rhabdovirus (LITRV) first detected by HTS in lone star ticks (*Amblyomma americanum* (Linnaeus, 1758)) collected on Long Island, New York, USA [119];
- *Minto sawgrhavirus* for New Minto virus (NMV) first isolated from rabbit ticks (*Haemaphysalis leporispalustris* Packard, 1869) sampled in New Minto, Alaska, USA [99, 126]; and
- *Sawgrass sawgrhavirus* for Sawgrass virus (SAWV) isolated from American dog ticks (*Dermacentor variabilis* (Say, 1821)) sampled at Sawgrass Lake, Tampa Bay, Florida, USA [102, 126] (TaxoProp 2019.012M.A.v1.Rhabdoviridae_5gen8sp1reasp).

One new genus, *Sunrhavirus*, was established to accommodate six novel species:

- *Garba sunrhavirus* for Garba virus (GARV) first isolated from a malachite kingfisher (*Corythornis cristatus* (Pallas, 1764)) trapped in Bangui, Central African Republic [51, 126];
- *Harrison sunrhavirus* for Harrison Dam virus (HARDV) first isolated from common banded mosquitoes (*Culex annulirostris* Skuse, 1889) collected at Beatrice Hill, Northern Territory, Australia [71];
- *Kwatta sunrhavirus* for Kwatta virus (KWAV) first isolated from mosquitoes (*Culex* sp.) collected near Paramaribo, Suriname [25, 126];
- *Oakvale sunrhavirus* for Oak Vale virus (OVV) first isolated from mosquitoes (*Culex edwardsi* Barraud, 1923) sampled in Peachester, Queensland, Australia [77, 96];
- *Sunguru sunrhavirus* for Sunguru virus (SUNV) first isolated from a domestic chicken (*Gallus gallus domesticus* (Linnaeus, 1758)) in Arua District, Northern Region, Uganda [58]; and
- *Walkabout sunrhavirus* for Walkabout Creek virus (WACV) first isolated from biting midges (*Culicoides austropalpalis* Lee and Reye, 1955) collected near Samford, Queensland, Australia [71] (2019.004M.A.v2.Sunrhavirus).

One new genus, *Zarhavirus*, was created for one new species, *Zahedan zarhavirus*, for Zahedan rhabdovirus (ZARV) first isolated from ticks (*Hyalomma anatolicum anatolicum* (Koch, 1844)) collected in Zâhedân (زاهدان), Sistan and Baluchestan Province (استان سیستان و بلوچستان), Iran [28] (TaxoProp 2019.012M.A.v1.Rhabdoviridae_5gen8sp1reasp).

One new species, *Taiwan bat lyssavirus*, was added to genus *Lyssavirus* for Taiwan bat lyssavirus (TWBLV) first isolated from a Japanese pipistrelle (*Pipistrellus abramus* (Temminck, 1838)) sampled in Taiwan [45] (TaxoProp 2019.001M.A.v1.Lyssavirus).

Genus *Cytorhabdovirus* was expanded by 12 species:

- *Cabbage cytorhabdovirus* for cabbage cytorhabdovirus 1 (CCyV-1) first discovered by HTS in cabbage (*Brassica oleracea* L.) sampled in the UK [89];
- *Maize-associated cytorhabdovirus* for maize-associated cytorhabdovirus (MaCV) first discovered by HTS in maize (*Zea mays* L.) collected in Lima, Peru [133];
- *Maize yellow striate cytorhabdovirus* for maize yellow striate virus (MYSV) first discovered by HTS in maize (*Zea mays* L.) and common wheat (*Triticum aestivum* L.) collected in Sinsacate, Córdoba Province, Argentina [70];
- *Papaya cytorhabdovirus* for papaya virus E (PpVE) first discovered by HTS in papaya (*Carica papaya* L.) sampled in Los Ríos Province, Ecuador [73];
- *Persimmon cytorhabdovirus* for persimmon virus A (PeVA) first discovered by HTS in Japanese persimmon (*Diospyros kaki* L.f.) sampled in Japan [47];
- *Raspberry vein chlorosis cytorhabdovirus* for raspberry vein chlorosis virus (RVCV) first discovered by HTS in red raspberries (*Rubus idaeus* L.) sampled in Dundee, Scotland, UK [50];
- *Rice stripe mosaic cytorhabdovirus* for rice stripe mosaic virus (RSMV) first discovered by HTS in rice (*Oryza sativa* L.) sampled in Luódìng (罗定), Guǎngdōng Province (广东省), China [147];
- *Tomato yellow mottle-associated cytorhabdovirus* for tomato yellow mottle-associated virus (TYMaV) first discovered by HTS in tomato (*Solanum lycopersicum* L.) sampled in Chóngqìng (重庆), China [141];
- *Wuhan 4 insect cytorhabdovirus* for Wuhan insect virus 4 (WuIV-4) first discovered by HTS in mealy plum aphids (*Hyalopterus pruni* (Geoffroy, 1762)) sampled in Wǔhàn (武汉), Húběi Province (湖北省), China [59];
- *Wuhan 5 insect cytorhabdovirus* for Wuhan insect virus 5 (WuIV-5) first discovered by HTS in mealy plum aphids (*Hyalopterus pruni* (Geoffroy, 1762)) sampled in Wǔhàn (武汉), Húběi Province (湖北省), China [59];
- *Wuhan 6 insect cytorhabdovirus* for Wuhan insect virus 6 (WuIV-6) first discovered by HTS in mealy plum aphids (*Hyalopterus pruni* (Geoffroy, 1762)) sampled in Wǔhàn (武汉), Húběi Province (湖北省), China [59]; and

- *Yerba mate chlorosis-associated cytorhabdovirus* for yerba mate chlorosis-associated virus (YmCaV) [12] first discovered by HTS in yerba mate (*Ilex paraguariensis* A. St.-Hil.) sampled in Cerro Azul, Misiones Province, Argentina (TaxoProps 2019.002M.A.v3.Cytorhabdovirus and 2019.030M.A.v1.Cytorhabovirus_12newsp).

One new species, *Holmes hapavirus*, was added to genus *Hapavirus* for Holmes Jungle virus (HOJV) first isolated from common banded mosquitoes (*Culex annulirostris* Skuse, 1889) collected near Darwin, Northern Territory, Australia [38] (2019.003M.A.v3.Hapavirus).

Three new species were added to genus *Sripuvirus*:

- *Charleville sripuvirus* for Charleville virus (CHVV) first isolated from sandflies (*Phlebotomus* sp.) collected in Charleville, Queensland, Australia [29, 123];
- *Cuiaba sripuvirus* for Cuiaba virus (CUIV) isolated from a cane toad (*Rhinella marina* (Linnaeus, 1758)) captured in Pará State, Brazil [51, 123]; and
- *Hainan sripuvirus* for Hainan black-spectacled toad rhabdovirus (HnBSTRV) first detected by HTS in an Asian common toad (*Duttaphrynus melanostictus* (Schneider, 1799)) sampled in Hǎinán Province (海南省), China [108] (TaxoProp 2019.013M.A.v1.Sripuvirus_3newsp).

Taxonomic changes within order *Muvirales* (*Haploviricotina*: *Chunqiuviricetes*)

No changes were made.

Taxonomic changes within order *Serpentovirales* (*Haploviricotina*: *Milneviricetes*)

No changes were made.

Taxonomic changes within order *Articulavirales* (*Polyploviricotina*: *Insthoviricetes*)

No changes were made.

Taxonomic changes within order *Bunyavirales* (*Polyploviricotina*: *Ellioviricetes*)

Family *Arenaviridae*

Genus *Hartmanivirus* was expanded by three species: *Muikkunen hartmanivirus* for Dante Muikkunen virus 1 (DaMV-1), *Schoolhouse hartmanivirus* for old schoolhouse viruses 1 and 2 (OScV-1/2), and *Zurich hartmanivirus* for veterinary pathology Zurich viruses 1 and 2 (VPZV-1/2), all first detected by HTS in captive boid snakes [44] (TaxoProp 2019.008M.A.v2.Hartmanivirus_3new sp).

Genus *Mammarenavirus* was expanded by four species:

- *Alxa mammarenavirus* for RtDs-AreV/IM2014 virus (here renamed Alxa virus [ALXV]) (TaxoProp 2019.020M.A.v2.1newsp_Alxa_mammarenavirus) first discovered by HTS in a Northern three-toed jerboa (*Dipus sagitta* (Pallas, 1773)) sampled in Alxa Left Banner (阿拉善左旗), Inner Mongolia Autonomous Region (内蒙古自治区), China [139, 140];
- *Chevrier mammarenavirus* for Lijiāng virus (LIJV) first discovered by HTS in a Chevrier's field mouse (*Apodemus chevrieri* (Milne-Edwards, 1868)) sampled around Lijiāng (丽江), Yúnnán Province (云南省), China [unpublished] (TaxoProp 2019.009M.A.v2.Mammarenavirus_sp_LIJV);
- *Planalto mammarenavirus* for Aporé virus (APOV) first discovered by HTS in a Mato Grosso colilargo (*Oligoryzomys mottogrossae* (J. A. Allen, 1916)) sampled in Cassilândia, Mato Grosso do Sul State, Brazil (TaxoProp 2019.010M.A.v1.Mammarenavirus_sp_APOV) [34]; and
- *Xapuri mammarenavirus* for Xapuri virus (XAPV) first discovered by HTS in a Musser's neacomys (*Neacomys musseri* Patton, da Silva, and Malcolm, 2000) sampled in Xapuri, Acre State, Brazil [33] (TaxoProp 2019.005M.A.v1.Mammarenavirus_sp_XAPV).

Family *Fimoviridae*

Genus *Emaravirus* was expanded by two species: *Blackberry leaf mottle associated emaravirus* for blackberry leaf mottle-associated virus (BLMaV) first discovered in blackberries (*Rubus* spp.) collected in various US states (TaxoProp 2019.010P.A.v1.Emaravirus_1sp) [41] and *Pistacia emaravirus B* for pistacia virus B (PiVB) discovered by HTS in pistachios (*Pistacia vera* L.) sampled in Turkey [18] (TaxoProp 2019.011P.A.v1.Emaravirus_1sp).

Family *Hantaviridae*

Genus *Loanvirus* was expanded by one species, *Brno loanvirus*, for Brno virus (BRNV) first discovered by HTS in a noctule (*Nyctalus noctula* (Schreber, 1774)) sampled in Brno, South Moravia Region (Jihomoravský kraj), Czech Republic [112] (TaxoProp 2019.017M.A.v3.1newsp_Brno_virus).

Family *Peribunyaviridae*

Genus *Pacuvirus* was expanded by two species: new species *Caimito pacuvirus* for Caimito virus (CAIV) first isolated from sandflies (*Nyssomyia ylephiletor* (Fairchild and Hertig, 1952)) sampled in El Aguacate, Panamá Province, Panamá [46, 116] (TaxoProp 2019.022M.A.v2.2sp_Pacuvirus) and *Chilibre pacuvirus* (the former *Chilibre phlebovirus*,

renamed and moved from genus *Phlebovirus*) (TaxoProps 2019.022M.A.v2.2sp_Pacuvirus and 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Family *Phasmaviridae*

The previously established genus *Inshuvirus* and its included species *Insect inshuvirus* were both abolished due to insufficient member virus information (TaxoProp 2019.028M.A.v2.Phasmaviridae_1newsp_abol1gen3sp).

New species *Anopheles orthophasmavirus* was included in genus *Orthophasmavirus* for *Anopheles triannulatus orthophasmavirus* (AtOPV) first discovered by HTS in mosquitoes (*Anopheles triannulatus* (Neiva and Pinto, 1922)) sampled in Santa Bárbara Farm, Amapá State, Brazil [103]. Two species, *Nome phantom orthophasmavirus* and *Seattle orthophasmavirus*, were abolished (TaxoProp 2019.028M.A.v2. Phasmaviridae_1newsp_abol1gen3sp).

Family *Phenuiviridae*

The previously unassigned genus *Coguvirus* was included in family *Phenuiviridae* (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp). One new species, *Coguvirus eburi*, was created in the genus for citrus virus A (CiVA) first discovered by HTS in a sweet orange tree in Italy [78] (2019.004P.A.v1.Coguvirus_1sp).

Genus *Banyangvirus* and included species *Huaiyangshan banyangvirus*, *Guertu banyangvirus*, and *Heartland banyangvirus* were renamed *Bandavirus*, *Dabie bandavirus*, *Guertu bandavirus*, and *Heartland bandavirus*, respectively (TaxoProps 2019.015M.A.v1.Bandavirus and 2019.026M.A.v1. Phenuiviridae_4gen79sp). Four new bandavirus species were added to the genus:

- *Bhanja bandavirus* for Bhanja virus (BHAV) first isolated from flat-inner-spurred haemaphysalids (*Haemaphysalis intermedia* Warburton and Nuttall, 1909) sampled in Orissa State, India [27, 104];
- *Hunter Island bandavirus* for Hunter Island virus (HUIV) first isolated from ticks (*Ixodes eudyptidis* Maskell, 1885) sampled on Albatross Island, Tasmania, Australia [130];
- *Kismaayo bandavirus* for Kismaayo virus (KISV; name corrected from the previously circulating “Kismayo virus” and “Kisemayo virus”) first isolated from yellow back ticks (*Rhipicephalus pulchellus* (Gerstäcker, 1873)) sampled in Kismaayo, Lower Juba (Jubbada Hoose) Region, Somalia [149]; and
- *Lone Star bandavirus* [sic] for lone star virus (LSV) first isolated from lone star ticks (*Amblyomma americanum* (Linnaeus, 1758)) sampled in Kentucky, USA [54, 114] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Genus *Entovirus* was created for one new species, *Entoleuca entovirus*, for Entoleuca phenui-like virus 1 (EnPLV-1) first discovered by HTS in *Entoleuca* sp. fungi sampled in Málaga Province, Spain [124] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Genus *Kabutovirus* and included species *Kabuto mountain kabutovirus* and *Huangpi kabutovirus* were renamed *Uukuvirus*, *Kabuto mountain uukuvirus*, and *Huangpi uukuvirus*, respectively. The established species *Uukuniemi phlebovirus* was moved into genus *Uukuvirus* and renamed *Uukuniemi uukuvirus*. 14 new species were established in genus *Uukuvirus*:

- *American dog uukuvirus* for American dog tick virus (ADAV) first detected by HTS in American dog ticks (*Dermacentor variabilis* (Say, 1821)) sampled in Heckscher State Park, New York, USA [120];
- *Dabieshan uukuvirus* for Dàbiéshān tick virus (DbsTV) first discovered by HTS in Asian longhorned ticks (*Haemaphysalis longicornis* Neumann, 1901) collected in the Dàbié Mountains (大别山), China [59];
- *Grand Arbaud uukuvirus* for Grand Arbaud virus (GAV) first isolated from ticks (*Argas reflexus* (Fabricius, 1794)) sampled in Bouches-du-Rhône Department, France [40, 85];
- *Kaisodi uukuvirus* for Kaisodi virus (KASDV) first isolated from hard-bodied ticks (*Haemaphysalis spinigera* Neumann, 1897) sampled in Mysore State, India [14, 88, 144];
- *Lihan uukuvirus* for Lihán tick virus (LITV) first discovered by HTS in Asian blue ticks (*Rhipicephalus microplus* (Canestrini, 1888)) sampled in Lihán (李韩), Húběi Province (湖北省), China [59];
- *Murre uukuvirus* for murre virus (MURV) first isolated from common murre (*Uria aalge* (Pontoppidan, 1763)) sampled in Alaska, USA [85];
- *Pacific coast uukuvirus* for Pacific coast tick virus (PACTV) first discovered by HTS in Pacific coast ticks (*Dermacentor occidentalis* Marx, 1892) sampled in Mendocino County, California, USA [17];
- *Precarious Point uukuvirus* for Precarious Point virus (PPV) first isolated from seabird ticks (*Ixodes uriae* White, 1852) sampled on Macquarie Island, Tasmania, Australia [85, 111];
- *Rukutama uukuvirus* for Rukutama virus (RUKV) first isolated from seabird ticks (*Ixodes uriae* White, 1852) sampled on Tûlenij/Tyuleny Island (Остров Тюлений), Sakhalin Oblast (Сахалинская область), Russia [63, 150];
- *Schmidt uukuvirus* for EgAn 1825-61 virus (here renamed Nile warbler virus [NIWV]) first isolated from a willow warbler (*Phylloscopus trochilus* (Linnaeus, 1758)) sampled in Nile Delta, Egypt [85];
- *Silverwater uukuvirus* for Silverwater virus (SILV) first isolated from rabbit ticks (*Haemaphysalis leporispalustris* Packard, 1869) sampled near Powassan, Ontario, Canada [69, 72];
- *Tacheng uukuvirus* for Tǎchéng tick virus 2 (TcTV-2) first discovered by HTS in ticks (*Dermacentor marginatus* Sulzer, 1776) sampled in China [59];
- *Yongjia uukuvirus* for Yǒngjiǎ tick virus 1 (YjTV-1) first discovered by HTS in East Asian mountain haemaphysalids (*Haemaphysalis hystricis* Supino, 1897) in China [59]; and
- *Zaliv Terpeniya uukuvirus* for Zaliv Terpeniya virus (ZTV) first isolated from seabird ticks (*Ixodes uriae* White, 1852) sampled on Tyuleny Island (Тюлений остров) in the Gulf of Patience (Залив Терпения), Sakhalin Oblast (Сахалинская область) and Commander Islands (Командорские острова), Kamchatka Krai (Камчатский край), RSFSR, USSR [62, 151] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Genus *Ixovirus* was established for the three new species:

- *Blackleg ixovirus* for blacklegged tick phlebovirus 1, here renamed blacklegged tick virus 1 (BLTV-1), first discovered by HTS in deer ticks (*Ixodes scapularis* Say, 1821) sampled in Heckscher State Park, New York, USA [120];
- *Norway ixovirus* for Norway phlebovirus 1, here renamed Fairhair virus (FHAV), first discovered by HTS in castor bean ticks (*Ixodes ricinus* (Linnaeus, 1758)) sampled in Norway [91]; and
- *Scapularis ixovirus* for blacklegged tick phlebovirus 3, here renamed blacklegged tick virus 3 (BLTV-3), first discovered by HTS in deer ticks (*Ixodes scapularis* Say, 1821) sampled in Heckscher State Park, New York, USA [120] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Genus *Lentivirus* was created for one new species, *Lentinula lentivirus*, for *Lentinula edodes* negative-strand RNA virus 2 (LeNSRV-2) first discovered by HTS in shiitakes (*Lentinula edodes* (Berk.) Pegler (1976)) sampled in Japan [60] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

In genus *Phlebovirus*, established species *Sandfly fever Naples phlebovirus* was renamed *Naples phlebovirus*. The genus was expanded by 53 new species (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp):

- *Adana phlebovirus* for Adana virus (ADAV) first isolated from *Phlebotomus* spp. sandflies sampled in Adana, Adana Province (Adana ili), Turkey [4];
- *Aguacate phlebovirus* for Aguacate virus (AGUV) first isolated from *Lutzomyia* spp. sandflies sampled in El Aguacate, Panamá Province, Panamá [82, 116];
- *Alcubé phlebovirus* for Alcubé virus (ACBV) first isolated from sandflies (*Phlebotomus perniciosus* Newstead, 1911) sampled around Arrábida, Portugal [10];
- *Alenquer phlebovirus* for Alenquer virus (ALEV) first isolated from a human in Ramal das Pias, Alenquer, Pará State, Brazil [83, 122];
- *Ambe phlebovirus* for Ambe virus (ABEV) first isolated from psychodid sandflies sampled near Altamira, Pará State, Brazil [80, 118];
- *Anhangá phlebovirus* for Anhangá virus (ANHV) first isolated from a Linnaeus's two-toed sloth (*Choloepus didactylus* (Linnaeus, 1758)) sampled in Castanhil Forest, Pará State, Brazil [80];
- *Arumowot phlebovirus* for Arumowot virus (AMTV) first isolated from mosquitoes (*Culex antennatus* (Becker, 1903)) sampled in Sudan [13, 84];
- *Buenaventura phlebovirus* for Buenaventura virus (BUEV) first isolated in 1984 from *Lutzomyia* sp. sandflies sampled in Rio Raposo, Valle del Cauca Department, Colombia [87, 116];
- *Cacao phlebovirus* for Cacao virus (CACV) first isolated from sandflies (*Nyssomyia trapidoi* (Fairchild and Hertig, 1952)) sampled in El Aguacate, Panamá Province, Panamá [87, 116];
- *Campana phlebovirus* for Campana virus (CMAV) first isolated from phlebotomine sandflies sampled in El Aguacate, Panamá Province, Panamá [87];
- *Chagres phlebovirus* for Chagres virus (CHGV) first isolated from a human sampled at Fort Sherman, Canal Zone/Cólon Province, Panamá [90];
- *Cocle phlebovirus* for Coclé virus (CCLV) first isolated from a human sampled in Penonomé, Coclé Province, Panamá [87];
- *Dashli phlebovirus* for Dāshlī virus (DASV) first isolated from *Sergentomyia* sp. sandflies sampled in Dāshlīborun (داشلی برون), Golestān Province (استان گلستان), Iran [6];
- *Durania phlebovirus* for Durania virus (DRNV) first isolated from sandflies sampled in 1986 near Durania, North Santander Department, Colombia [82, 118];
- *Echarate phlebovirus* for Echarate virus (ECHV) first isolated from a human sampled in Cusco, Peru [83];
- *Gabek phlebovirus* for Gabek Forest virus (GFV) first isolated from a northeast African spiny mouse (*Acomys cahirinus* (É. Geoffroy, 1803)) sampled in Gabek Forest, near Paloich, Sudan [86];
- *Gordil phlebovirus* for Gordil virus (GORV) first isolated from a typical lemmiscomys (*Lemmiscomys striatus* (Linnaeus, 1758)) sampled in Gordil, Vakaga Prefecture, Central African Republic [86];
- *Icoaraci phlebovirus* for Icoaraci virus (ICOV) first isolated from an unidentified forest rat sampled in Belém, Pará State, Brazil [19, 142];
- *Itaituba phlebovirus* for Itaituba virus (ITAV) first isolated from a common opossum (*Didelphis marsupialis* Linnaeus, 1758) trapped at the Tapacurazinho stream, Itaituba, Pará State, Brazil [83, 122];
- *Itaporanga phlebovirus* for Itaporanga virus (ITPV) first isolated from a sentinel Swiss mouse collected in Itaporanga, São Paulo State, Brazil [46, 121];
- *Ixcanal phlebovirus* for Ixcanal virus (IXCV) first isolated from *Lutzomyia* sp. sandflies sampled in Aldea Ixcanal and Aldea Puerta, El Progreso Department, Guatemala [82, 118];
- *Karimabad phlebovirus* for Karimabad virus (KARV) first isolated from *Phlebotomus* sp. sandflies in Karīmābād (کریم آباد), Khūzestān Province (استان خوزستان), Iran [86];
- *La Gloria phlebovirus* for La Gloria virus (LAGV) first discovered by HTS in phlebotomine sandflies sampled near La Gloria village, Panamá Canal area, central Panamá [68];
- *Lara phlebovirus* for GGP-2011a virus (here renamed Rio Claro virus [RICV]) first isolated from a sentinel hamster sampled in Venezuela [unpublished];
- *Leticia phlebovirus* for Leticia virus (LETV) first isolated from sandflies sampled in Leticia, Amazonas Department, Colombia [87];

- *Maldonado phlebovirus* for Maldonado virus (MLOV) first isolated from a human sampled in Puerto Maldonado, Madre de Dios Region, Peru [83];
- *Massilia phlebovirus* for Massilia virus (MASV) first isolated from sandflies (*Phlebotomus perniciosus* Newstead, 1911) sampled in Marseille and Nice, Provence-Alpes-Côte d'Azur, France [20, 86];
- *Medjerda phlebovirus* for Medjerda Valley virus (MVV) first isolated from phlebotomine sandflies sampled at an archaeological site in Bizerte Governorate, Tunisia [15];
- *Mona Grita phlebovirus* for Mona Grita virus (MOGV) first discovered by HTS in sandflies (*Nyssomyia trapi-doi* (Fairchild and Hertig, 1952)) sampled on Isla Mona Grita, Panama Canal, central Panama [68];
- *Munguba phlebovirus* for Munguba virus (MUNV) first isolated from sandflies (*Nyssomyia umbratilis* (Ward and Fraiha, 1977)) sampled in Monte Dourado, Pará State, Brazil [80, 122];
- *Nique phlebovirus* for Nique virus (NIQV) first isolated from sandflies (*Lutzomyia panamensis* (Shannon, 1926)) sampled in Cerro Nique, Darién Province, Panama [83, 117];
- *Ntepes phlebovirus* for Ntepes virus (NTPV) first isolated from *Sergentomyia* sp. sandflies sampled near Ntepes vil-lage, Marigat District, Baringo County, Kenya [115];
- *Odrénisrou phlebovirus* for Odrénisrou virus (ODRV) first isolated from mosquitoes (*Culex albiventris* Edwards, 1922) collected in the forest of Tai National Park, Côte d'Ivoire [84];
- *Oriximina phlebovirus* for Oriximiná virus (ORXV) first isolated from *Lutzomyia* sp. sandflies sampled in Saracazinho, Pará State, Brazil [83, 122];
- *Pena Blanca phlebovirus* for Peña Blanca virus (PEBV) first discovered by HTS in sandflies sampled on Peña Blanca peninsula, Panama Canal, central Panama [68];
- *Punique phlebovirus* for Punique virus (PUNV) first isolated from sandflies (*Phlebotomus perniciosus* Newstead, 1911 and *Phlebotomus longicuspis* Nitzulescu, 1930) sampled in Tunis, Tunisia [86];
- *Rio Grande phlebovirus* for Rio Grande virus (RGV) first isolated from a Southern Plains woodrat (*Neotoma micropus* Baird, 1855) sampled in Texas, USA [46];
- *Saint Floris phlebovirus* for Saint-Floris virus (SAFV) first isolated from a gerbil sampled in Gordil, Vakaga Prefecture, Central African Republic [86];
- *Salanga phlebovirus* for Salanga virus (SLGV) first isolated from a Hinde's aethomys (*Aethomys hindei* (Thomas, 1902)) collected in Salanga, Ombella-M'Poko Prefecture, Central African Republic [51, 148];
- *Salobo phlebovirus* [sic] for Salobo virus (SLBOV) first isolated from a Guyenne spiny-rat (*Proechimys guyan-nensis* (E. Geoffroy, 1803)) in Pará State, Brazil [142];
- *Sicilian phlebovirus* for sandfly fever Sicilian virus (SFSV) first isolated from a human sampled in Palermo Province, Sicily Region, Italy [101, 137];
- *Tapara phlebovirus* for Tapará virus (TPRV) first isolated from phlebotomine sandflies in Altamira, Pará State, Brazil [80];
- *Tehran phlebovirus* for Tehran virus (THEV) first iso-lated from sandflies (*Phlebotomus papatasi* (Scopoli, 1786)) sampled in Tehran, Iran [86];
- *Tico phlebovirus* [sic] for Tico virus (TICV) discovered by HTS in sandflies sampled in Panama Canal area, cen-tral Panama [68];
- *Toros phlebovirus* for Toros virus (TORV) first discov-ered by HTS in sandflies sampled in Damyeri, Adana Province (Adana ili), Turkey [5];
- *Toscana phlebovirus* for Toscana virus (TOSV) first iso-lated from sandflies (*Phlebotomus perniciosus* Newstead, 1911) in Tuscany, Italy [86, 125];
- *Tres Almendras phlebovirus* for Tres Almendras virus (TRAV) first discovered by HTS in sandflies (*Psycho-dopygus panamensis* (Shannon, 1926)) sampled on Tres Almendras Islands, Panama Canal area, central Panama [68];
- *Turuna phlebovirus* for Turuna virus (TUAV) first iso-lated from *Lutzomyia* sp. sandflies sampled in Cachoeira Porteira, Pará State, Brazil [83, 122];
- *Uriurana phlebovirus* for Uriurana virus (URIV) first isolated from phlebotomine sandflies in Tucuruí, Pará State, Brazil [80];
- *Urucuri phlebovirus* for Urucuri virus (URUV) first iso-lated from a Guyenne spiny-rat (*Proechimys guyannensis* (E. Geoffroy, 1803)) in Utinga Forest, Belém, Pará State, Brazil [80, 122];
- *Viola phlebovirus* for viola virus (VIOV) first discovered by HTS in sandflies (*Lutzomyia longipalpis* (Lutz and Neiva, 1912)) sampled in Pirizal, Mato Grosso State, Brazil [24]; and

- *Zerdali phlebovirus* for Zerdali virus (ZERV) first discovered by HTS in sandflies sampled in Zerdali, Adana Province (Adana ili), Turkey [5].

Genus *Rubodvirus* was created for the two new species *Apple rubodvirus 1* and *2* to accommodate apple rubbery wood viruses 1 and 2 (ARWV-1/2), respectively, first discovered using HTS in apple trees (*Malus* sp.) sampled in Germany and USA [100] (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

One new species, *Melon tenuivirus*, was added to genus *Tenuivirus* for melon chlorotic spot virus (MeCSV) first isolated from muskmelon (*Cucumis melo* L.) sampled in Provence-Alpes-Côte d'Azur Region, France [57].

Genus *Wubeivirus* was abolished and its two species, *Fly wubeivirus* and *Dipteran wubeivirus*, were moved into genus *Phasivirus* and renamed *Fly phasivirus* and *Dipteran phasivirus*, respectively (TaxoProp 2019.026M.A.v1. Phenuiviridae_4gen79sp).

Family *Tospoviridae*

The overlooked adjustment of 12 tospovirid species names to correct non-Latinized binomials was implemented (TaxoProp 2019.016M.A.v1. Corrections).

Eight new species were created in genus *Orthotospovirus*:

- *Alstroemeria necrotic streak orthotospovirus* for Alstroemeria necrotic streak virus (ANSV) first isolated from ornamental crops (*Alstroemeria* sp.) sampled in Colombia [42];
- *Alstroemeria yellow spot orthotospovirus* for Alstroemeria yellow spot virus (AYSV) first isolated from ornamental crops (*Alstroemeria* sp.) imported to and sampled in the Netherlands [43];

- *Groundnut chlorotic fan spot orthotospovirus* for groundnut chlorotic fan-spot virus (GCFSV) first isolated from peanut (*Arachis hypogaea* L.) sampled in Taiwan [21];
- *Hippeastrum chlorotic ring spot orthotospovirus* for Hippeastrum chlorotic spot virus (HCRV) first isolated from amaryllis (*Hippeastrum* sp.) and spider lily (*Hymenocallis littoralis* (Jacq.) Salisb.) sampled in southwestern China [31, 143];
- *Mulberry vein banding associated orthotospovirus* for mulberry vein banding-associated virus (MVBaV) discovered first by HTS in mulberry (*Morus alba* L.) sampled in Guǎngxī Zhuàng Autonomous Region (广西壮族自治区), China in 2011 [74, 75];
- *Pepper chlorotic spot orthotospovirus* for pepper chlorotic spot virus (PCSV) first isolated from sweet pepper (*Capsicum annuum* L.) in Taiwan [22];
- *Tomato yellow ring orthotospovirus* for tomato yellow ring virus (TYRV) first isolated from tomato (*Solanum lycopersicum* L.) in Iran [134]; and
- *Tomato zonate spot orthotospovirus* for tomato zonate spot virus (TZSV) first isolated from tomato (*Solanum lycopersicum* L.) and chili pepper (*Capsicum annuum* L.) sampled in Yúnnán Province (云南省), China [30] (TaxoProp 2019.006P.A.v1. Orthotospovirus_8sp).

SUMMARY

A summary of the current, ICTV-accepted taxonomy of the phylum *Negarnaviricota* is presented in Table 1 (*Goujianvirales*), Table 2 (*Jingchuvirales*), Table 3 (*Mononegavirales*), Table 4 (*Muvirales*), Table 5 (*Serpentovirales*), Table 6 (*Articulavirales*), and Table 7 (*Bunyavirales*).

Table 1 ICTV-accepted taxonomy of the order *Goujianvirales* (*Negarnaviricota*: *Haploviricotina*: *Yunchangviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family <i>Yueviridae</i>		
<i>Yuyuevirus</i>	<i>Beihai yuyuevirus</i> *	Běihǎi sesarmid crab virus 3 (BhSCV-3)
	<i>Shahe yuyuevirus</i>	Shāhé yuèvirus-like virus 1 (ShYLV-1)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, families, and orders are taxa

*Type species

¶Taxon names are always italicized and always begin with a capital letter

&Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

Table 2 ICTV-accepted taxonomy of the order *Jingchuvirales* (*Negarnaviricota*: *Haploviricotina*: *Monjiviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family Chuviridae		
<i>Mivirus</i>	<i>Argas mivirus</i>	Tǎchéng tick virus 4 (TcTV-4)
	<i>Barnacle mivirus</i> *	Běihǎi barnacle virus 9 (BhBV-9)
	<i>Beetle mivirus</i>	Húběi coleoptera virus 3 (HbCV-3)
	<i>Bole mivirus</i>	Bólè tick virus 3 (BTV-3)
	<i>Brunnich mivirus</i>	Wēnlǐng crustacean virus 14 (WICV-14)
	<i>Changping mivirus</i>	Chāngpíng tick virus 2 (CpTV-2)
	<i>Charybdis mivirus</i>	Wēnzhōu crab virus 3 (WzCV-3)
	<i>Cockroach mivirus</i>	Wúchāng cockroach virus 3 (WcLFV-3)
	<i>Crab mivirus</i>	Wēnzhōu crab virus 2 (WzCV-2)
	<i>Crustacean mivirus</i>	Wēnlǐng crustacean virus 13 (WICV-13)
	<i>Dermacentor mivirus</i>	Chāngpíng tick virus 3 (CpTV-3) Tǎchéng tick virus 5 (TcTV-5)
	<i>Hermit mivirus</i>	Běihǎi hermit crab virus 3 (BhHCV-3)
	<i>Hippoboscid mivirus</i>	Wúhàn louse fly virus 7 (WhLFV-7)
	<i>Hubei mivirus</i>	Húběi chǔvirus-like virus 1 (HbCLV-1)
	<i>Hubei odonate mivirus</i>	Húběi chǔvirus-like virus 3 (HbCLV-3)
	<i>Imjin mivirus</i>	Imjin River virus 1 (IjRV-1)
	<i>Lacewing mivirus</i>	Shuāngào insect virus 5 (SgIV-5)
	<i>Lishi mivirus</i>	Líshí spider virus 1 (LsSV-1)
	<i>Lonestar mivirus</i>	lone star tick chǔvirus 1 (LSTCV-1)
	<i>Louse fly mivirus</i>	Wúhàn louse fly virus 6 (WhLFV-6)
	<i>Mosquito mivirus</i>	Wúhàn mosquito virus 8 (WhMV-8)
	<i>Myriapod mivirus</i>	Húběi myriapoda virus 8 (HbMV-8)
	<i>Odonate mivirus</i>	Húběi odonate virus 11 (HbOV-11)
	<i>Sanxia mivirus</i>	Sānxiá atyid shrimp virus 4 (SxASC-4)
	<i>Shayang mivirus</i>	Shāyáng fly virus 1 (SyFV-1)
	<i>Suffolk mivirus</i>	Suffolk virus (SFKV)
	<i>Taiyuan mivirus</i>	Tàiyuán leafhopper virus (TYLeV)
	<i>Wenling mivirus</i>	Wēnlǐng crustacean virus 15 (WICV-15)
	<i>Wuhan mivirus</i>	Wúhàn tick virus 2 (WhTV-2)
	<i>Xinzhou mivirus</i>	Xīnzhōu nematode virus 5 (XzNV-5)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, families, and orders are taxa

*Type species

[¶]Taxon names are always italicized and always begin with a capital letter

[&]Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

Table 3 ICTV-accepted taxonomy of the order *Mononegavirales* (*Negarnaviricota*: *Haploviricotina*: *Monjiviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}	
Family Artoviridae			
<i>Hexartovirus</i>	<i>Barnacle hexartovirus</i>	Běihǎi barnacle virus 8 (BhBV-8)	
	<i>Caligid hexartovirus</i> *	Lepeophtheirus salmonis negative-stranded RNA virus 1 (LsNSRV-1)	
<i>Peropuvirus</i>	<i>Beihai peropuvirus</i>	Běihǎi rhabdo-like virus 1 (BhRLV-1)	
	<i>Hubei peropuvirus</i>	Húběi rhabdo-like virus 6 (HbRLV-6)	
	<i>Odonate peropuvirus</i>	Húběi rhabdo-like virus 8 (HbRLV-8)	
	<i>Pillworm peropuvirus</i>	Húběi rhabdo-like virus 5 (HbRLV-5)	
	<i>Pteromalus puparum peropuvirus</i> *	Pteromalus puparum negative-strand RNA virus 1 (PpN-SRV-1)	
	<i>Woodlouse peropuvirus</i>	Běihǎi rhabdo-like virus 2 (BhRLV-2)	
Family Bornaviridae			
<i>Carbovirus</i>	<i>Queensland carbovirus</i> *	jungle carpet python virus (JCPV)	
	<i>Southwest carbovirus</i>	southwest carpet python virus (SWCPV)	
<i>Cultervirus</i>	<i>Sharpbelly cultervirus</i> *	Wūhàn sharpbelly bornavirus (WhSBV)	
<i>Orthobornavirus</i>	<i>Elapid 1 orthobornavirus</i>	Loveridge's garter snake virus 1 (LGSV-1)	
	<i>Mammalian 1 orthobornavirus</i> *		Borna disease virus 1 (BoDV-1)
			Borna disease virus 2 (BoDV-2)
	<i>Mammalian 2 orthobornavirus</i>	variegated squirrel bornavirus 1 (VSBV-1)	
	<i>Passeriform 1 orthobornavirus</i>		canary bornavirus 1 (CnBV-1)
			canary bornavirus 2 (CnBV-2)
			canary bornavirus 3 (CnBV-3)
	<i>Passeriform 2 orthobornavirus</i>	estrildid finch bornavirus 1 (EsBV-1)	
	<i>Psittaciform 1 orthobornavirus</i>		parrot bornavirus 1 (PaBV-1)
			parrot bornavirus 2 (PaBV-2)
		parrot bornavirus 3 (PaBV-3)	
	parrot bornavirus 4 (PaBV-4)		
	parrot bornavirus 7 (PaBV-7)		
<i>Psittaciform 2 orthobornavirus</i>	parrot bornavirus 5 (PaBV-5)		
<i>Waterbird 1 orthobornavirus</i>		aquatic bird bornavirus 1 (ABBV-1)	
		aquatic bird bornavirus 2 (ABBV-2)	
Family Filoviridae			
<i>Cuevavirus</i>	<i>Lloviu cuevavirus</i> *	Lloviu virus (LLOV)	
<i>Dianlovirus</i>	<i>Mengla dianlovirus</i> *	Měnglà virus (MLAV)	
<i>Ebolavirus</i>	<i>Bombali ebolavirus</i>	Bombali virus (BOMV)	
	<i>Bundibugyo ebolavirus</i>	Bundibugyo virus (BDBV)	
	<i>Reston ebolavirus</i>	Reston virus (RESTV)	
	<i>Sudan ebolavirus</i>	Sudan virus (SUDV)	
	<i>Tai Forest ebolavirus</i>	Tāi Forest virus (TAFV)	
	<i>Zaire ebolavirus</i> *	Ebola virus (EBOV)	
<i>Marburgvirus</i>	<i>Marburg marburgvirus</i> *	Marburg virus (MARV)	
		Ravn virus (RAVV)	
<i>Striavirus</i>	<i>Xilang striavirus</i> *	Xīlǎng virus (XILV)	
<i>Thamnovirus</i>	<i>Huangjiao thamnovirus</i> *	Huángjiāo virus (HUJV)	
Family Lispiviridae			
<i>Arlivirus</i>	<i>Gerrid arlivirus</i>	Sānxiá water strider virus 4 (SxWSV-4)	
	<i>Hubei arlivirus</i>	Húběi rhabdo-like virus 3 (HbRLV-3)	
	<i>Lishi arlivirus</i> *	Líshí spider virus 2 (LsSV-2)	
	<i>Odonate arlivirus</i>	Húběi odonate virus 10 (HbOV-10)	
	<i>Tacheng arlivirus</i>	Tāchéng tick virus 6 (TcTV-6)	

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Wuchang arlivirus</i>	Wūchāng romanomermis nematode virus 2 (WcRNV-2)
Family Mymonaviridae		
<i>Hubramonavirus</i>	<i>Hubei hubramonavirus</i> *	Húběi rhabdo-like virus 4 (HbRLV-4)
	<i>Lentinula hubramonavirus</i>	Lentinula edodes negative-strand RNA virus 1 (LeNSRV-1)
<i>Sclerotimonavirus</i>	<i>Dadou sclerotimonavirus</i>	soybean leaf-associated negative-stranded RNA virus 3 (SLaNSRV-3)
	<i>Drop sclerotimonavirus</i>	Sclerotinia sclerotiorum negative-stranded RNA virus 2 (SsNSRV-2)
		Sclerotinia sclerotiorum negative-stranded RNA virus 4 (SsNSRV-4)
	<i>Glycine sclerotimonavirus</i>	Fusarium graminearum negative-stranded RNA virus 1 (FgNSRV-1)
		soybean leaf-associated negative-stranded RNA virus 1 (SLaNSRV-1)
	<i>Hubei sclerotimonavirus</i> [sic] ¹	
	<i>Illinois sclerotimonavirus</i>	soybean leaf-associated negative-stranded RNA virus 2 (SLaNSRV-2)
	<i>Phyllosphere sclerotimonavirus</i>	soybean leaf-associated negative-stranded RNA virus 4 (SLaNSRV-4)
	<i>Sclerotinia sclerotimonavirus</i> *	Sclerotinia sclerotiorum negative-stranded RNA virus 1 (SsNSRV-1)
		Sclerotinia sclerotiorum negative-stranded RNA virus 3 (SsNSRV-3)
Family Nyamiviridae		
<i>Berhavirus</i>	<i>Beihai berhavirus</i>	Běihǎi rhabdo-like virus 4 (BhRLV-4)
	<i>Echinoderm berhavirus</i>	Běihǎi rhabdo-like virus 5 (BhRLV-5)
	<i>Sipunculid berhavirus</i> *	Běihǎi rhabdo-like virus 3 (BhRLV-3)
<i>Crustavirus</i>	<i>Beihai crustavirus</i>	Běihǎi rhabdo-like virus 6 (BhRLV-6)
	<i>Wenling crustavirus</i>	Wēnlíng crustacean virus 12 (WICV-12)
	<i>Wenzhou crustavirus</i> *	Wēnzhōu crab virus 1 (WzCV-1)
<i>Nyavirus</i>	<i>Midway nyavirus</i>	Midway virus (MIDWV)
	<i>Nyamanini nyavirus</i> *	Nyamanini virus (NYMV)
	<i>Sierra Nevada nyavirus</i>	Sierra Nevada virus (SNVV)
<i>Orinivirus</i>	<i>Orinoco orinivirus</i> *	Orinoco virus (ONCV)
<i>Socycivirus</i>	<i>Soybean cyst nematode socycivirus</i> *	soybean cyst nematode virus 1 (SbCNV-1)
<i>Tapwovirus</i>	<i>Tapeworm tapwovirus</i> *	Wēnzhōu tapeworm virus 1 (WzTWV-1)
Family Paramyxoviridae		
Subfamily Avulavirinae		
<i>Metaavulavirus</i>	<i>Avian metaavulavirus 2</i> *	avian paramyxovirus 2 (APMV-2)
	<i>Avian metaavulavirus 5</i>	avian paramyxovirus 5 (APMV-5)
	<i>Avian metaavulavirus 6</i>	avian paramyxovirus 6 (APMV-6)
	<i>Avian metaavulavirus 7</i>	avian paramyxovirus 7 (APMV-7)
	<i>Avian metaavulavirus 8</i>	avian paramyxovirus 8 (APMV-8)
	<i>Avian metaavulavirus 10</i>	avian paramyxovirus 10 (APMV-10)
	<i>Avian metaavulavirus 11</i>	avian paramyxovirus 11 (APMV-11)
	<i>Avian metaavulavirus 14</i>	avian paramyxovirus 14 (APMV-14)
	<i>Avian metaavulavirus 15</i>	avian paramyxovirus 15 (APMV-15)
	<i>Avian metaavulavirus 20</i>	avian paramyxovirus 20 (APMV-20)
<i>Orthoavulavirus</i>	<i>Avian orthoavulavirus 1</i> *	avian paramyxovirus 1 (APMV-1) ²
	<i>Avian orthoavulavirus 9</i>	avian paramyxovirus 9 (APMV-9)
	<i>Avian orthoavulavirus 12</i>	avian paramyxovirus 12 (APMV-12)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Avian orthoavulavirus 13</i>	avian paramyxovirus 13 (APMV-13)
	<i>Avian orthoavulavirus 16</i>	avian paramyxovirus 16 (APMV-16)
	<i>Avian orthoavulavirus 17</i>	Antarctic penguin virus A (APV-A)
	<i>Avian orthoavulavirus 18</i>	Antarctic penguin virus B (APV-B)
	<i>Avian orthoavulavirus 19</i>	Antarctic penguin virus C (APV-C)
	<i>Avian orthoavulavirus 21</i>	avian paramyxovirus 21 (APMV-21)
	<i>Avian orthovulavirus 21</i> [sic] ³	
<i>Paraavulavirus</i>	<i>Avian paraavulavirus 3</i> *	avian paramyxovirus 3 (APMV-3)
	<i>Avian paraavulavirus 4</i>	avian paramyxovirus 4 (APMV-4)
Subfamily <i>Metaparamyxovirinae</i>		
<i>Synodonvirus</i>	<i>Synodus synodonvirus</i> *	Wēnlǐng triplecross lizardfish paramyxovirus (WTLPV)
Subfamily <i>Orthoparamyxovirinae</i>		
<i>Aquaparamyxovirus</i>	<i>Oncorhynchus aquaparamyxovirus</i>	Pacific salmon paramyxovirus (PSPV)
	<i>Salmo aquaparamyxovirus</i> *	Atlantic salmon paramyxovirus (AsaPV)
<i>Ferlavirus</i>	<i>Reptilian ferlavirus</i> *	fer-de-lance virus (FDLV)
<i>Henipavirus</i>	<i>Cedar henipavirus</i>	Cedar virus (CedV)
	<i>Ghanaian bat henipavirus</i>	Ghana virus (GhV)
	<i>Hendra henipavirus</i> *	Hendra virus (HeV)
	<i>Mojiang henipavirus</i>	Mòjiāng virus (MojV)
	<i>Nipah henipavirus</i>	Nipah virus (NiV)
<i>Jeilongvirus</i>	<i>Beilong jeilongvirus</i> *	Beilong virus (BeiV)
	<i>Jun jeilongvirus</i>	J virus (JV)
	<i>Lophuromys jeilongvirus 1</i>	Mount Mabu Lophuromys virus 1 (MMLV-1)
	<i>Lophuromys jeilongvirus 2</i>	Mount Mabu Lophuromys virus 2 (MMLV-2)
	<i>Miniopteran jeilongvirus</i>	Shaan virus (ShaV)
	<i>Myodes jeilongvirus</i>	Pohorje Myodes paramyxovirus 1 (PMPV-1)
	<i>Tailam jeilongvirus</i>	Tailam virus (TaiV)
<i>Morbillivirus</i>	<i>Canine morbillivirus</i>	canine distemper virus (CDV)
	<i>Cetacean morbillivirus</i>	cetacean morbillivirus (CeMV)
	<i>Feline morbillivirus</i>	feline morbillivirus (FeMV)
	<i>Measles morbillivirus</i> *	measles virus (MeV)
	<i>Phocine morbillivirus</i>	phocine distemper virus (PDV)
	<i>Rinderpest morbillivirus</i>	rinderpest virus (RPV)
	<i>Small ruminant morbillivirus</i>	peste-des-petits-ruminants virus (PPRV)
<i>Narmovirus</i>	<i>Mossman narmovirus</i>	Mossman virus (MossV)
	<i>Myodes narmovirus</i>	bank vole virus 1 (BaV-1)
	<i>Nariva narmovirus</i> *	Nariva virus (NarV)
	<i>Tupaia narmovirus</i>	Tupaia paramyxovirus (TupV)
<i>Respirovirus</i>	<i>Bovine respirovirus 3</i>	bovine parainfluenza virus 3 (BPIV-3)
	<i>Caprine respirovirus 3</i>	caprine parainfluenzavirus 3 (CPIV-3)
	<i>Human respirovirus 1</i>	human parainfluenza virus 1 (HPIV-1)
	<i>Human respirovirus 3</i>	human parainfluenza virus 3 (HPIV-3)
	<i>Murine respirovirus</i> *	Sendai virus (SeV)
	<i>Porcine respirovirus 1</i>	porcine parainfluenza virus 1 (PPIV-1)
	<i>Squirrel respirovirus</i>	giant squirrel virus (GSqV)
<i>Salemvirus</i>	<i>Salem salemvirus</i> *	Salem virus (SalV)
Subfamily <i>Rubulavirinae</i>		
<i>Orthorubulavirus</i>	<i>Human orthorubulavirus 2</i>	human parainfluenza virus 2 (HPIV-2)
	<i>Human orthorubulavirus 4</i>	human parainfluenza virus 4a (HPIV-4a) human parainfluenza virus 4b (HPIV-4b)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Mammalian orthorubulavirus 5</i>	parainfluenza virus 5 (PIV-5)
	<i>Mammalian orthorubulavirus 6</i>	Alston virus (AlsV)
	<i>Mapuera orthorubulavirus</i>	Mapuera virus (MapV)
	<i>Mumps orthorubulavirus*</i>	mumps virus (MuV)
	<i>Porcine orthorubulavirus</i>	La Piedad Michoacán Mexico virus (LPMV)
	<i>Simian orthorubulavirus</i>	simian virus 41 (SV-41)
<i>Pararubulavirus</i>	<i>Achimota pararubulavirus 1</i>	Achimota virus 1 (AchPV-1)
	<i>Achimota pararubulavirus 2</i>	Achimota virus 2 (AchPV-2)
	<i>Hervey pararubulavirus</i>	Hervey virus (HerV)
	<i>Menangle pararubulavirus*</i>	Menangle virus (MenPV)
	<i>Sosuga pararubulavirus</i>	Sosuga virus (SOSV)
	<i>Teviot pararubulavirus</i>	Teviot virus (TevPV)
	<i>Tioman pararubulavirus</i>	Tioman virus (TioPV)
	<i>Tuhoko pararubulavirus 1</i>	Tuhoko virus 1 (ThkPV-1)
	<i>Tuhoko pararubulavirus 2</i>	Tuhoko virus 2 (ThkPV-2)
	<i>Tuhoko pararubulavirus 3</i>	Tuhoko virus 3 (ThkPV-3)
Unassigned (to subfamilies)		
<i>Cynoglossusvirus</i>	<i>Cynoglossus cynoglossusvirus*</i>	Wēnlíng tonguesole paramyxovirus (WTSPV)
<i>Hoplichthysvirus</i>	<i>Hoplichthys hoplichthysvirus*</i>	Wēnlíng hoplichthys paramyxovirus (WHPV)
<i>Scoliodonvirus</i>	<i>Scoliodon scoliodonvirus*</i>	Wēnzhōu pacific spadenose shark paramyxovirus (WPSSPV)
Family Pneumoviridae		
<i>Metapneumovirus</i>	<i>Avian metapneumovirus*</i>	avian metapneumovirus (AMPV)
	<i>Human metapneumovirus</i>	human metapneumovirus (HMPV)
<i>Orthopneumovirus</i>	<i>Bovine orthopneumovirus</i>	bovine respiratory syncytial virus (BRSV)
	<i>Human orthopneumovirus*</i>	human respiratory syncytial virus (HRSV)
	<i>Murine orthopneumovirus</i>	murine pneumonia virus (MPV)
Family Rhabdoviridae		
<i>Almendravirus</i>	<i>Arboretum almendravirus</i>	Arboretum virus (ABTV)
	<i>Balsa almendravirus</i>	Balsa virus (BALV)
	<i>Coot Bay almendravirus</i>	Coot Bay virus (CBV)
	<i>Menghai almendravirus</i>	Menghai virus (MRV)
	<i>Puerto Almendras almendravirus*</i>	Puerto Almendras virus (PTAMV)
	<i>Rio Chico almendravirus</i>	Rio Chico virus (RCHV)
<i>Alphanemrhavirus</i>	<i>Xingshan alphanemrhavirus*</i>	Xingshan nematode virus 4 (XsNV-4)
	<i>Xinzhou alphanemrhavirus</i>	Xinzhou nematode virus 4 (XzNV-4)
<i>Alphanucleorhabdovirus</i>	<i>Eggplant mottled dwarf alphanucleorhabdovirus</i>	eggplant mottled dwarf virus (EMDV)
	<i>Maize Iranian mosaic alphanucleorhabdovirus</i>	maize Iranian mosaic virus (MIMV)
	<i>Maize mosaic alphanucleorhabdovirus</i>	maize mosaic virus (MMV)
	<i>Morogoro maize-associated alphanucleorhabdovirus</i>	Morogoro maize-associated virus (MMAV)
	<i>Physostegia chlorotic mottle alphanucleorhabdovirus</i>	Physostegia chlorotic mottle virus (PhCMoV)
	<i>Potato yellow dwarf alphanucleorhabdovirus*</i>	potato yellow dwarf virus (PYDV)
	<i>Rice yellow stunt alphanucleorhabdovirus</i>	rice yellow stunt virus (RYSV)
		rice transitory yellowing virus (RTYV)
	<i>Taro vein chlorosis alphanucleorhabdovirus</i>	taro vein chlorosis virus (TaVVCV)
	<i>Wheat yellow striate alphanucleorhabdovirus</i>	wheat yellow striate virus (WYSV)
<i>Arurhavirus</i>	<i>Aruac arurhavirus*</i>	Aruac virus (ARUV)
	<i>Inhangapi arurhavirus</i>	Inhangapi virus (INHV)
	<i>Santabarbara arurhavirus</i>	Santa Barbara virus (SBAV)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Xiburema aruhavirus</i>	Xiburema virus (XIBV)
<i>Barhavirus</i>	<i>Bahia barhavirus</i> *	Bahia Grande virus (BGV)
	<i>Muir barhavirus</i>	Harlingen virus (HARV)
	<i>Muir barhavirus</i>	Muir Springs virus (MSV)
<i>Betanucleorhabdovirus</i>	<i>Alfalfa betanucleorhabdovirus</i>	alfalfa-associated nucleorhabdovirus (AaNv)
	<i>Blackcurrant betanucleorhabdovirus</i>	blackcurrant-associated rhabdovirus (BCaRV)
	<i>Datura yellow vein betanucleorhabdovirus</i>	datura yellow vein virus (DYVV)
	<i>Sonchus yellow net betanucleorhabdovirus</i> *	Sonchus yellow net virus (SYNV)
	<i>Sowthistle yellow vein betanucleorhabdovirus</i>	sowthistle yellow vein virus (SYVV)
	<i>Trefoil betanucleorhabdovirus</i>	birds-foot trefoil-associated virus (BFTV)
<i>Calighavirus</i>	<i>Caligus calighavirus</i>	Caligus rogercresseyi rhabdovirus (CRogRV)
	<i>Lepeophtheirus calighavirus</i> *	Lepeophtheirus salmonis rhabdovirus 127 (LSaRV-127)
	<i>Salmonlouse calighavirus</i>	Lepeophtheirus salmonis rhabdovirus 9 (LSaRV-9)
<i>Curiovirus</i>	<i>Curionopolis curiovirus</i> *	Curionopolis virus (CURV)
	<i>Irii curiovirus</i>	Irii virus (IRIV)
	<i>Itacaiunas curiovirus</i>	Itacaiunas virus (ITAV)
	<i>Rochambeau curiovirus</i>	Rochambeau virus (RBUV)
<i>Cytorhabdovirus</i>	<i>Alfalfa dwarf cytorhabdovirus</i>	alfalfa dwarf virus (ADV)
	<i>Barley yellow striate mosaic cytorhabdovirus</i>	barley yellow striate mosaic virus (BYSMV)
	<i>Broccoli necrotic yellows cytorhabdovirus</i>	broccoli necrotic yellows virus (BNYV)
	<i>Cabbage cytorhabdovirus</i>	cabbage cytorhabdovirus 1 (CCyV-1)
	<i>Colocasia bobone disease-associated cytorhabdovirus</i>	Colocasia bobone disease-associated virus (CBDaV)
	<i>Festuca leaf streak cytorhabdovirus</i>	Festuca leaf streak virus (FLSV)
	<i>Lettuce necrotic yellows cytorhabdovirus</i> *	lettuce necrotic yellows virus (LNYV)
	<i>Lettuce yellow mottle cytorhabdovirus</i>	lettuce yellow mottle virus (LYMoV)
	<i>Maize-associated cytorhabdovirus</i>	maize-associated cytorhabdovirus (MaCV)
	<i>Maize yellow striate cytorhabdovirus</i>	maize yellow striate virus (MYSV)
	<i>Northern cereal mosaic cytorhabdovirus</i>	northern cereal mosaic virus (NCMV)
	<i>Papaya cytorhabdovirus</i>	papaya virus E (PpVE)
	<i>Persimmon cytorhabdovirus</i>	persimmon virus A (PeVA)
	<i>Raspberry vein chlorosis cytorhabdovirus</i>	raspberry vein chlorosis virus (RVCV)
	<i>Rice stripe mosaic cytorhabdovirus</i>	rice stripe mosaic virus (RSMV)
	<i>Sonchus cytorhabdovirus 1</i>	Sonchus virus (SonV)
	<i>Strawberry crinkle cytorhabdovirus</i>	strawberry crinkle virus (SCV)
	<i>Tomato yellow mottle-associated cytorhabdovirus</i>	tomato yellow mottle-associated virus (TYMaV)
	<i>Wheat American striate mosaic cytorhabdovirus</i>	wheat American striate mosaic virus (WASMV)
	<i>Wuhan 4 insect cytorhabdovirus</i>	Wuhan insect virus 4 (WuIV-4)
	<i>Wuhan 5 insect cytorhabdovirus</i>	Wuhan insect virus 5 (WuIV-5)
	<i>Wuhan 6 insect cytorhabdovirus</i>	Wuhan insect virus 6 (WuIV-6)
	<i>Yerba mate chlorosis-associated cytorhabdovirus</i>	yerba mate chlorosis-associated virus (YmCaV)
<i>Dichorhavirus</i>	<i>Citrus chlorotic spot dichorhavirus</i>	citrus chlorotic spot virus (CiCSV)
	<i>Citrus leprosis N dichorhavirus</i>	citrus leprosis virus N (CiLV-N)
	<i>Clerodendrum chlorotic spot dichorhavirus</i>	clerodendrum chlorotic spot virus (CICSV)
	<i>Coffee ringspot dichorhavirus</i>	coffee ringspot virus (CoRSV)
	<i>Orchid fleck dichorhavirus</i> *	orchid fleck virus (OFV)
<i>Ephemerovirus</i>	<i>Adelaide River ephemerovirus</i>	Adelaide River virus (ARV)
	<i>Berrimah ephemerovirus</i>	Berrimah virus (BRMV)
	<i>Bovine fever ephemerovirus</i> *	bovine ephemeral fever virus (BEFV)
	<i>Kimberley ephemerovirus</i>	Kimberley virus (KIMV)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
		Malakal virus (MALV)
	<i>Koolpinyah ephemerovirus</i>	Koolpinyah virus (KOOLV)
	<i>Kotonkan ephemerovirus</i>	kotonkan virus (KOTV)
	<i>Obodhiang ephemerovirus</i>	Obodhiang virus (OBOV)
	<i>Yata ephemerovirus</i>	Yata virus (YATV)
<i>Gammanucleorhabdovirus</i>	<i>Maize fine streak gammanucleorhabdovirus</i>	maize fine streak virus (MFSV)
<i>Hapavirus</i>	<i>Flanders hapavirus</i> *	Flanders virus (FLAV)
	<i>Gray Lodge hapavirus</i>	Gray Lodge virus (GLOV)
	<i>Hart Park hapavirus</i>	Hart Park virus (HPV)
	<i>Holmes hapavirus</i>	Holmes Jungle virus (HOJV)
	<i>Joinjakaka hapavirus</i>	Joinjakaka virus (JOIV)
	<i>Kamese hapavirus</i>	Kamese virus (KAMV)
	<i>La Joya hapavirus</i>	La Joya virus (LJV)
	<i>Landjia hapavirus</i>	Landjia virus (LANV = LJAV)
	<i>Manitoba hapavirus</i>	Manitoba virus (MANV = MNTBV)
	<i>Marco hapavirus</i>	Marco virus (MCOV)
	<i>Mosqueiro hapavirus</i>	Mosqueiro virus (MQOV)
	<i>Mossuril hapavirus</i>	Mossuril virus (MOSV)
	<i>Ngaingan hapavirus</i>	Ngaingan virus (NGAV)
	<i>Ord River hapavirus</i>	Ord River virus (ORV)
	<i>Parry Creek hapavirus</i>	Parry Creek virus (PCV)
	<i>Wongabel hapavirus</i>	Wongabel virus (WONV)
<i>Ledantevirus</i>	<i>Barur ledantevirus</i>	Barur virus (BARV)
	<i>Fikirini ledantevirus</i>	Fikirini virus (FKRV)
	<i>Fukuoka ledantevirus</i>	Fukuoka virus (FUKV)
	<i>Kanyawara ledantevirus</i>	Kanyawara virus (KYAV)
	<i>Kern Canyon ledantevirus</i>	Kern Canyon virus (KCV)
	<i>Keuraliba ledantevirus</i>	Keuraliba virus (KEUV)
	<i>Kolente ledantevirus</i>	Kolente virus (KOLEV)
	<i>Kumasi ledantevirus</i>	Kumasi rhabdovirus (KRV)
	<i>Le Dantec ledantevirus</i> *	Le Dantec virus (LDV)
	<i>Mount Elgon bat ledantevirus</i>	Mount Elgon bat virus (MEBV)
	<i>Nishimuro ledantevirus</i>	Nishimuro virus (NISV)
	<i>Nkolbisson ledantevirus</i>	Nkolbisson virus (NKOV)
	<i>Oita ledantevirus</i>	Oita virus (OITAV)
	<i>Vaprio ledantevirus</i>	Vaprio virus (VAPV)
	<i>Wuhan ledantevirus</i>	Wuhan louse fly virus 5 (WLFV-5)
	<i>Yongjia ledantevirus</i>	Yongjia tick virus 2 (YTV-2)
<i>Lostrhavirus</i>	<i>Lonestar zarhavirus</i> *:4	lone star tick rhabdovirus (LITRV)
<i>Lyssavirus</i>	<i>Aravan lyssavirus</i>	Aravan virus (ARAV)
	<i>Australian bat lyssavirus</i>	Australian bat lyssavirus (ABLV)
	<i>Bokeloh bat lyssavirus</i>	Bokeloh bat lyssavirus (BBLV)
	<i>Duvenhage lyssavirus</i>	Duvenhage virus (DUVV)
	<i>European bat 1 lyssavirus</i>	European bat lyssavirus 1 (EBLV-1)
	<i>European bat 2 lyssavirus</i>	European bat lyssavirus 2 (EBLV-2)
	<i>Gannoruwa bat lyssavirus</i>	Gannoruwa bat lyssavirus (GBLV)
	<i>Ikoma lyssavirus</i>	Ikoma lyssavirus (IKOV)
	<i>Irkut lyssavirus</i>	Irkut virus (IRKV)
	<i>Khujand lyssavirus</i>	Khujand virus (KHUV)
	<i>Lagos bat lyssavirus</i>	Lagos bat virus (LBV)
	<i>Lleida bat lyssavirus</i>	Lleida bat lyssavirus (LLEBV)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Mokola lyssavirus</i>	Mokola virus (MOKV)
	<i>Rabies lyssavirus</i> *	rabies virus (RABV)
	<i>Shimoni bat lyssavirus</i>	Shimoni bat virus (SHIBV)
	<i>Taiwan bat lyssavirus</i>	Taiwan bat lyssavirus (TWBLV)
	<i>West Caucasian bat lyssavirus</i>	West Caucasian bat virus (WCBV)
<i>Mousrhavirus</i>	<i>Moussa mousrhavirus</i> *	Moussa virus (MOUV)
<i>Novirhabdovirus</i>	<i>Hirame novirhabdovirus</i>	hirame rhabdovirus (HIRRV = HIRV)
	<i>Piscine novirhabdovirus</i>	viral hemorrhagic septicemia virus (VHSV)
	<i>Salmonid novirhabdovirus</i> *	infectious hematopoietic necrosis virus (IHNV)
	<i>Snakehead novirhabdovirus</i>	snakehead rhabdovirus (SHRV)
<i>Ohlshavirus</i>	<i>Ohlsdorf ohlshavirus</i>	Ohlsdorf virus (OHLDV)
	<i>Tongilchon ohlshavirus</i>	Tongilchon virus 1 (TCHV-1)
	<i>Riverside ohlshavirus</i>	Riverside virus (RISV)
	<i>Culex ohlsharhavirus</i>	Culex rhabdo-like virus (CRLV)
	<i>Northcreek ohlshavirus</i>	North Creek virus (NORCV)
<i>Perhabdovirus</i>	<i>Anguillid perhabdovirus</i>	eel virus European X (EVEX)
	<i>Perch perhabdovirus</i> *	perch rhabdovirus (PRV)
	<i>Sea trout perhabdovirus</i>	lake trout rhabdovirus (LTRV)
<i>Sawgrhavirus</i>	<i>Connecticut sawgrhavirus</i>	Connecticut virus (CNTV)
	<i>Island sawgrhavirus</i>	Long Island tick rhabdovirus (LITRV)
	<i>Minto sawgrhavirus</i>	New Minto virus (NMV)
	<i>Sawgrass sawgrhavirus</i> *	Sawgrass virus (SAWV)
<i>Sigmavirus</i>	<i>Drosophila affinis sigmavirus</i>	<i>Drosophila affinis</i> sigmavirus (DAffSV)
	<i>Drosophila ananassae sigmavirus</i>	<i>Drosophila ananassae</i> sigmavirus (DAnaSV)
	<i>Drosophila immigrans sigmavirus</i>	<i>Drosophila immigrans</i> sigmavirus (DImmSV)
	<i>Drosophila melanogaster sigmavirus</i> *	<i>Drosophila melanogaster</i> sigmavirus (DMelSV)
	<i>Drosophila obscura sigmavirus</i>	<i>Drosophila obscura</i> sigmavirus (DObsSV)
	<i>Drosophila tristis sigmavirus</i>	<i>Drosophila tristis</i> sigmavirus (DTriSV)
	<i>Muscina stabulans sigmavirus</i>	<i>Muscina stabulans</i> sigmavirus (MStaSV)
<i>Sprivivirus</i>	<i>Carp sprivivirus</i> *	spring viremia of carp virus (SVCV)
	<i>Pike fry sprivivirus</i>	grass carp rhabdovirus (GrCRV)
		pike fry rhabdovirus (PFRV)
		tench rhabdovirus (TenRV)
<i>Sripuvirus</i>	<i>Almpiwar sripuvirus</i>	Almpiwar virus (ALMV)
	<i>Chaco sripuvirus</i>	Chaco virus (CHOV)
	<i>Charleville sripuvirus</i>	Charleville virus (CHVV)
	<i>Cuiaba sripuvirus</i>	Cuiaba virus (CUIV)
	<i>Hainan sripuvirus</i>	Hainan black-spectacled toad rhabdovirus (HnBSTRV)
	<i>Niakha sripuvirus</i> *	Niakha virus (NIAV)
	<i>Sena Madureira sripuvirus</i>	Sena Madureira virus (SMV)
	<i>Sripur sripuvirus</i>	Sripur virus (SRIV)
<i>Sunrhavirus</i>	<i>Garba sunrhavirus</i>	Garba virus (GARV)
	<i>Harrison sunrhavirus</i>	Harrison Dam virus (HARDV)
	<i>Kwatta sunrhavirus</i>	Kwatta virus (KWAIV)
	<i>Oakvale sunrhavirus</i>	Oak Vale virus (OVV)
	<i>Sunguru sunrhavirus</i> *	Sunguru virus (SUNV)
	<i>Walkabout sunrhavirus</i>	Walkabout Creek virus (WAKV)
<i>Tibrovirus</i>	<i>Bas Congo tibrovirus</i>	Bas-Congo virus (BASV)
	<i>Beatrice Hill tibrovirus</i>	Beatrice Hill virus (BHV)
	<i>Coastal Plains tibrovirus</i>	Coastal Plains virus (CPV)

Table 3 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Ekpoma 1 tibrovirus</i>	Ekpoma virus 1 (EKV-1)
	<i>Ekpoma 2 tibrovirus</i>	Ekpoma virus 2 (EKV-2)
	<i>Sweetwater Branch tibrovirus</i>	Sweetwater Branch virus (SWBV)
	<i>Tibrogargan tibrovirus</i> *	Bivens Arm virus (BAV)
		Tibrogargan virus (TIBV)
<i>Tupavirus</i>	<i>Durham tupavirus</i> *	Durham virus (DURV)
	<i>Klamath tupavirus</i>	Klamath virus (KLAV)
	<i>Tupaia tupavirus</i>	tupaia rhabdovirus (TUPV)
<i>Varicosavirus</i>	<i>Lettuce big-vein associated varicosavirus</i> *	lettuce big-vein associated virus (LBVaV)
<i>Vesiculovirus</i>	<i>Alagoas vesiculovirus</i>	vesicular stomatitis Alagoas virus (VSAV)
	<i>American bat vesiculovirus</i>	American bat vesiculovirus (ABVV)
	<i>Carajas vesiculovirus</i>	Carajas virus (CJSV)
	<i>Chandipura vesiculovirus</i>	Chandipura virus (CHPV)
	<i>Cocal vesiculovirus</i>	Cocal virus (COCV)
	<i>Indiana vesiculovirus</i> *	vesicular stomatitis Indiana virus (VSIV)
	<i>Isfahan vesiculovirus</i>	Isfahan virus (ISFV)
	<i>Jurona vesiculovirus</i>	Jurona virus (JURV)
	<i>Malpais Spring vesiculovirus</i>	Malpais Spring virus (MSPV)
	<i>Maraba vesiculovirus</i>	Maraba virus (MARAV)
	<i>Morreton vesiculovirus</i>	Morreton virus (MORV)
	<i>New Jersey vesiculovirus</i>	vesicular stomatitis New Jersey virus (VSNJV)
	<i>Perinet vesiculovirus</i>	Perinet virus (PERV)
	<i>Piry vesiculovirus</i>	Piry virus (PIRYV)
	<i>Radi vesiculovirus</i>	Radi virus (RADV)
	<i>Yug Bogdanovac vesiculovirus</i>	Yug Bogdanovac virus (YBV)
<i>Zarhavirus</i>	<i>Zahedan zarhavirus</i> *	Zahedan rhabdovirus (ZARV)
Family Sunviridae		
<i>Sunshinevirus</i>	<i>Reptile sunshinevirus 1</i> *	Sunshine Coast virus (SunCV)
Family Ximoviridae		
<i>Anphevirus</i>	<i>Bolahun anphevirus</i>	Bolahun virus (BLHV)
		Gambie virus (GAMV)
	<i>Dipteran anphevirus</i>	Húběi diptera virus 11 (HbDV-11)
	<i>Drosophilid anphevirus</i>	Drosophila unispina virus 1 (DuniV-1)
	<i>Odonate anphevirus</i>	Húběi rhabdo-like virus 7 (HbRLV-7)
	<i>Orthopteran anphevirus</i>	Húběi orthoptera virus 5 (HbOV-5)
	<i>Shuangao anphevirus</i>	Shuāngào fly virus 2 (SgFV-2)
	<i>Xincheng anphevirus</i> *	Xīnchéng mosquito virus (XcMV)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, subfamilies, families, and orders are taxa

*Type species

¹Due to a formal classification mistake this species was not deleted. A proposal to delete this species has been submitted

²Includes: Newcastle disease virus (NDV)

³Due to a formal classification mistake, this species was incorrectly named *Avian orthovulavirus 21* in TaxoProp 2019.014M.A.v1. *Avulavirus_1newsp* but correctly named *Avian orthoavulavirus 21* in TaxoProp 2019.025M.A.v2.Paramyxoviridae_3gen5sp4rensp. Hence as of now, both species names are official. A proposal to correct this mistake has been submitted

⁴Due to a formal classification mistake this species was named *Lonestar zarhavirus* instead of *Lonestar lostrhavirus*. A proposal to correct this mistake has been submitted

[¶]Taxon names are always italicized and always begin with a capital letter

[&]Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

Table 4 ICTV-accepted taxonomy of the order *Muvirales* (*Negarnaviricota: Haploviricotina: Chunqiuviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family <i>Qinviridae</i>		
<i>Yingvirus</i>	<i>Beihai yingvirus</i>	Běihǎi sesarmid crab virus 4 (BhSCV-4)
	<i>Charybdis yingvirus</i>	Wēnzhōu qínvirus-like virus 2 (WzQLV-2)
	<i>Hubei yingvirus</i>	Húběi qínvirus-like virus 1 (HbQLV-1)
	<i>Sanxia yingvirus</i>	Sānxiá qínvirus-like virus 1 (SxQLV-1)
	<i>Shahe yingvirus</i>	Shāhé qínvirus-like virus 1 (ShQLV-1)
	<i>Wenzhou yingvirus</i>	Wēnzhōu qínvirus-like virus 1 (WzQLV-1)
	<i>Wuhan yingvirus</i> *	Wūhàn insect virus 15 (WhIV-15)
	<i>Xinzhou yingvirus</i>	Xīnzhōu nematode virus 3 (XzNV-3)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, families, and orders are taxa

*Type species

[¶]Taxon names are always italicized and always begin with a capital letter

[&]Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

Table 5 ICTV-accepted taxonomy of the order *Serpentovirales* (*Negarnaviricota: Haploviricotina: Milneviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family <i>Aspiviridae</i>		
<i>Ophiovirus</i>	<i>Blueberry mosaic associated ophiovirus</i>	blueberry mosaic associated virus (BIMaV)
	<i>Citrus psorosis ophiovirus</i> *	citrus psorosis virus (CPsV)
	<i>Freesia sneak ophiovirus</i>	freesia sneak virus (FreSV)
	<i>Lettuce ring necrosis ophiovirus</i>	lettuce ring necrosis virus (LRNV)
	<i>Mirafiori lettuce big-vein ophiovirus</i>	Mirafiori lettuce big-vein virus (MLBVV)
	<i>Ranunculus white mottle ophiovirus</i>	ranunculus white mottle virus (RWMV)
	<i>Tulip mild mottle mosaic ophiovirus</i>	tulip mild mottle mosaic virus (TMMMV)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, families, and orders are taxa

*Type species

[¶]Taxon names are always italicized and always begin with a capital letter

[&]Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

Table 6 ICTV-accepted taxonomy of the order *Articulavirales* (*Negarnaviricota: Polyploviricotina: Insthoviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family <i>Annoonaviridae</i>		
<i>Tilapinevirus</i>	<i>Tilapia tilapinevirus</i> *	tilapia lake virus (TiLV)
Family <i>Orthomyxoviridae</i>		
<i>Alphainfluenzavirus</i>	<i>Influenza A virus</i> *	influenza A virus (FLUAV)
<i>Betainfluenzavirus</i>	<i>Influenza B virus</i> *	influenza B virus (FLUBV)
<i>Deltainfluenzavirus</i>	<i>Influenza D virus</i> *	influenza D virus (FLUDV)
<i>Gammainfluenzavirus</i>	<i>Influenza C virus</i> *	influenza C virus (FLUCV)
<i>Isavirus</i>	<i>Salmon isavirus</i> *	infectious salmon anemia virus (ISAV)
<i>Quaranjavirus</i>	<i>Johnston Atoll quaranjavirus</i>	Johnston Atoll virus (JAV)
	<i>Quaranfil quaranjavirus</i> *	Quaranfil virus (QRFV)
<i>Thogotovirus</i>	<i>Dhori thogotovirus</i>	Dhori virus (DHOV)
	<i>Thogoto thogotovirus</i> *	Thogoto virus (THOV)

*Type species

[¶]Taxon names are always italicized and always begin with a capital letter

Table 7 ICTV-accepted taxonomy of the order *Bunyvirales* (*Negarnaviricota*: *Polyploviricotina*: *Ellioviricetes*) as of March 2020

Genus	Species [¶]	Virus (Abbreviation) ^{&}
Family Arenaviridae		
<i>Antennavirus</i>	<i>Hairy antennavirus</i>	Wēnlíng frogfish arenavirus 2 (WIFAV-2)
	<i>Striated antennavirus</i> *	Wēnlíng frogfish arenavirus 1 (WIFAV-1)
<i>Hartmanivirus</i>	<i>Haartman hartmanivirus</i> *	Haartman Institute snake virus 1 (HISV-1)
	<i>Muikkunen hartmanivirus</i>	Dante Muikkunen virus 1 (DaMV-1)
	<i>Schoolhouse hartmanivirus</i>	old schoolhouse virus 1 (OScV-1)
	<i>Zurich hartmanivirus</i>	old schoolhouse virus 2 (OScV-2) veterinary pathology Zurich virus 1 (VPZV-1) veterinary pathology Zurich virus 2 (VPZV-2)
<i>Mammarenavirus</i>	<i>Allpahuayo mammarenavirus</i>	Allpahuayo virus (ALLV)
	<i>Alxa mammarenavirus</i>	Alxa virus (ALXV)
	<i>Argentinian mammarenavirus</i>	Junín virus (JUNV)
	<i>Bear Canyon mammarenavirus</i>	Bear Canyon virus (BCNV)
	<i>Brazilian mammarenavirus</i>	Sabiá virus (SBAV)
	<i>Cali mammarenavirus</i>	Pichindé virus (PICHV)
	<i>Chapare mammarenavirus</i>	Chapare virus (CHAPV)
	<i>Chevrier mammarenavirus</i>	Lǐjiāng virus (LIJV)
	<i>Cupixi mammarenavirus</i>	Cupixi virus (CUPXV)
	<i>Flexal mammarenavirus</i>	Flexal virus (FLEV)
	<i>Gairo mammarenavirus</i>	Gairo virus (GAIV)
	<i>Guanarito mammarenavirus</i>	Guanarito virus (GTOV)
	<i>Ippy mammarenavirus</i>	Ippy virus (IPPYV)
	<i>Lassa mammarenavirus</i>	Lassa virus (LASV)
	<i>Latino mammarenavirus</i>	Latino virus (LATV)
	<i>Loei River mammarenavirus</i>	Loei River virus (LORV)
	<i>Lujo mammarenavirus</i>	Lujo virus (LUJV)
	<i>Luna mammarenavirus</i>	Luli virus (LULV) Luna virus (LUAV)
	<i>Lunk mammarenavirus</i>	Lunk virus (LNKV)
	<i>Lymphocytic choriomeningitis mammarenavirus</i> *	Dandenong virus (DANV) lymphocytic choriomeningitis virus (LCMV)
	<i>Machupo mammarenavirus</i>	Machupo virus (MACV)
	<i>Mariental mammarenavirus</i>	Mariental virus (MRLV)
	<i>Merino Walk mammarenavirus</i>	Merino Walk virus (MRWV)
	<i>Mobala mammarenavirus</i>	mobala virus (MOBV)
	<i>Mopeia mammarenavirus</i>	Mopeia virus (MPOV) Morogoro virus (MORV)
	<i>Okahandja mammarenavirus</i>	Okahandja virus (OKAV)
	<i>Oliveros mammarenavirus</i>	Oliveros virus (OLVV)
	<i>Paraguayan mammarenavirus</i>	Paraná virus (PRAV)
	<i>Planalto mammarenavirus</i>	Aporé virus (APOV)
	<i>Piritital mammarenavirus</i>	Piritital virus (PIRV)
	<i>Ryukyu mammarenavirus</i>	Ryukyu virus (RYKV)
	<i>Serra do Navio mammarenavirus</i>	Amaparí virus (AMAV)
	<i>Solwezi mammarenavirus</i>	Solwezi virus (SOLV)
	<i>Souris mammarenavirus</i>	souris virus (SOUV)
	<i>Tacaribe mammarenavirus</i>	Tacaribe virus (TCRV)
	<i>Tamiami mammarenavirus</i>	Tamiami virus (TMMV)
	<i>Wenzhou mammarenavirus</i>	Wēnzhōu virus (WENV)
	<i>Whitewater Arroyo mammarenavirus</i>	Big Brushy Tank virus (BBRTV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
		Catarina virus (CTNV)
		Skinner Tank virus (SKTV)
		Tonto Creek virus (TTCV)
		Whitewater Arroyo virus (WWAV)
<i>Reptarenavirus</i>	<i>Xapuri mammarenavirus</i>	Xapuri virus (XAPV)
	<i>California reptarenavirus</i>	CAS virus (CASV)
	<i>Giessen reptarenavirus</i>	University of Giessen virus 1 (UGV-1)
		University of Giessen virus 2 (UGV-2)
		University of Giessen virus 3 (UGV-3)
	<i>Golden reptarenavirus</i> *	Golden Gate virus (GOGV)
	<i>Ordinary reptarenavirus</i>	tavallinen suomalainen mies virus 2 (TSMV-2)
	<i>Rotterdam reptarenavirus</i>	ROUT virus (ROUTV)
		University of Helsinki virus 1 (UHV-1)
Family Cruliviridae		
<i>Lincrovirus</i>	<i>Crustacean lincrovirus</i> *	Wēnlíng crustacean virus 9 (WICV-9)
Family Fimoviridae		
<i>Emaravirus</i>	<i>Actinidia chlorotic ringspot-associated emaravirus</i>	Actinidia chlorotic ringspot-associated virus (AcCRaV)
	<i>Blackberry leaf mottle associated emaravirus</i>	blackberry leaf mottle-associated virus (BLMaV)
	<i>European mountain ash ringspot-associated emaravirus</i> *	European mountain ash ringspot-associated virus (EMARaV)
	<i>Fig mosaic emaravirus</i>	fig mosaic virus (FMV)
	<i>High Plains wheat mosaic emaravirus</i>	High Plains wheat mosaic virus (HPWMoV)
	<i>Pigeonpea sterility mosaic emaravirus 1</i>	pigeonpea sterility mosaic virus 1 (PPSMV-1)
	<i>Pigeonpea sterility mosaic emaravirus 2</i>	pigeonpea sterility mosaic virus 2 (PPSMV-2)
	<i>Pistacia emaravirus B</i>	pistacia virus B (PiVB)
	<i>Raspberry leaf blotch emaravirus</i>	raspberry leaf blotch virus (RLBV)
	<i>Redbud yellow ringspot-associated emaravirus</i>	redbud yellow ringspot-associated virus (RYRaV)
	<i>Rose rosette emaravirus</i>	rose rosette virus (RRV)
Family Hantaviridae		
Subfamily Actantavirinae		
<i>Actinivirus</i>	<i>Batfish actinivirus</i> *	Wēnlíng minipizza batfish virus (WEMBV)
	<i>Goosefish actinivirus</i>	Wēnlíng yellow goosefish virus (WEYGV)
	<i>Spikefish actinivirus</i>	Wēnlíng red spikefish virus (WERSV)
Subfamily Agantavirinae		
<i>Agnathovirus</i>	<i>Hagfish agnathovirus</i> *	Wēnlíng hagfish virus (WEHV)
Subfamily Mammantavirinae		
<i>Loanvirus</i>	<i>Brno loanvirus</i>	Brno virus (BRNV)
	<i>Longquan loanvirus</i> *	Lóngquán virus (LQUV)
<i>Mobatvirus</i>	<i>Laibin mobatvirus</i>	Láibīn virus (LAIV)
	<i>Nova mobatvirus</i> *	Nova virus (NVAV)
	<i>Quezon mobatvirus</i>	Quezon virus (QZNV)
<i>Orthohantavirus</i>	<i>Andes orthohantavirus</i>	Andes virus (ANDV)
		Castelo dos Sonhos virus (CASV)
		Lechiguana virus (LECV = LECHV)
		Orán virus (ORNV)
	<i>Asama orthohantavirus</i>	Asama virus (ASAV)
	<i>Asikkala orthohantavirus</i>	Asikkala virus (ASIV)
	<i>Bayou orthohantavirus</i>	bayou virus (BAYV)
		Catacamas virus (CATV)
	<i>Black Creek Canal orthohantavirus</i>	Black Creek Canal virus (BCCV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Bowe orthohantavirus</i>	Bowé virus (BOWV)
	<i>Bruges orthohantavirus</i>	Bruges virus (BRGV)
	<i>Cano Delgadito orthohantavirus</i>	Caño Delgadito virus (CADV)
	<i>Cao Bang orthohantavirus</i>	Cao Bằng virus (CBNV)
		Liánghé virus (LHEV)
	<i>Choclo orthohantavirus</i>	Choclo virus (CHOV)
	<i>Dabiéshān orthohantavirus</i>	Dàbiéshān virus (DBSV)
	<i>Dobrava-Belgrade orthohantavirus</i>	Dobrava virus (DOBV)
		Kurkino virus (KURV)
		Saaremaa virus (SAAV)
		Sochi virus (SOCV)
	<i>El Moro Canyon orthohantavirus</i>	Carrizal virus (CARV)
		El Moro Canyon virus (ELMCV)
		Huitzilac virus (HUIV)
	<i>Fugong orthohantavirus</i>	Fúgòng virus (FUGV)
	<i>Fusong orthohantavirus</i>	Fǔsōng virus (FUSV)
	<i>Hantaan orthohantavirus*</i>	Amur virus (AMRV)
		Hantaan virus (HTNV)
		Soochong virus (SOOV)
	<i>Jeju orthohantavirus</i>	Jeju virus (JJUV)
	<i>Kenkeme orthohantavirus</i>	Kenkeme virus (KKMV)
	<i>Khabarovsk orthohantavirus</i>	Khabarovsk virus (KHAV)
		Topografov virus (TOPV)
	<i>Laguna Negra orthohantavirus</i>	Laguna Negra virus (LANV)
		Maripa virus (MARV)
		Rio Mamoré virus (RIOMV)
	<i>Luxi orthohantavirus</i>	Lúxī virus (LUXV)
	<i>Maporal orthohantavirus</i>	Maporal virus (MAPV)
	<i>Montano orthohantavirus</i>	Montaño virus (MTNV)
	<i>Necocli orthohantavirus</i>	Necocli virus (NECV)
	<i>Oxbow orthohantavirus</i>	Oxbow virus (OXBV)
	<i>Prospect Hill orthohantavirus</i>	Prospect Hill virus (PHV)
	<i>Puumala orthohantavirus</i>	Hokkaido virus (HOKV)
		Muju virus (MUJV)
		Puumala virus (PUUV)
	<i>Rockport orthohantavirus</i>	Rockport virus (RKPV)
	<i>Sangassou orthohantavirus</i>	Sangassou virus (SANGV)
	<i>Seewis orthohantavirus</i>	Seewis virus (SWSV)
	<i>Seoul orthohantavirus</i>	gōu virus (GOUV)
		Seoul virus (SEOV)
	<i>Sin Nombre orthohantavirus</i>	New York virus (NYV)
		Sin Nombre virus (SNV)
	<i>Thailand orthohantavirus</i>	Anjzorobe virus (ANJZV)
		Serang virus (SERV)
		Thailand virus (THAIV)
	<i>Tigray orthohantavirus</i>	Tigray virus (TIGV)
	<i>Tula orthohantavirus</i>	Adler virus (ADLV)
		Tula virus (TULV)
	<i>Yakeshi orthohantavirus</i>	Yákèshí virus (YKSV)
<i>Thottimvirus</i>	<i>Imjin thottimvirus</i>	Imjin virus (MJNV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Thottapalayam thottimvirus</i> *	Thottapalayam virus (TPMV)
Subfamily <i>Repantavirinae</i>		
<i>Reptillovirus</i>	<i>Gecko reptillovirus</i> *	Hainán oriental leaf-toed gecko virus (HOLGV)
Family <i>Leishbuviridae</i>		
<i>Shilevirus</i>	<i>Leptomonas shilevirus</i> *	Leptomonas moramango virus (LEPMV)
Family <i>Mypoviridae</i>		
<i>Hubavirus</i>	<i>Myriapod hubavirus</i> *	Húběi myriapoda virus 5 (HbMV-5)
Family <i>Nairoviridae</i>		
<i>Orthonairovirus</i>	<i>Artashat orthonairovirus</i>	Artashat virus (ARTSV)
	<i>Chim orthonairovirus</i>	Chim virus (CHIMV)
	<i>Crimean-Congo hemorrhagic fever orthonairovirus</i>	Crimean-Congo hemorrhagic fever virus (CCHFV)
	<i>Dera Ghazi Khan orthonairovirus</i>	Abu Hammad virus (AHV)
		Abu Mina virus (AMV)
		Dera Ghazi Khan virus (DGKV)
		Sapphire II virus (SAPV)
	<i>Dugbe orthonairovirus</i> *	Dugbe virus (DUGV)
		kupe virus (KUPEV)
	<i>Estero Real orthonairovirus</i>	Estero Real virus (ERV)
	<i>Hazara orthonairovirus</i>	Hazara virus (HAZV)
		Tofla virus (TFLV)
	<i>Hughes orthonairovirus</i>	Caspiy virus (CASV)
		Farallon virus (FARV)
		Great Saltee virus (GRSV)
		Hughes virus (HUGV)
		Punta Salinas virus (PSV)
		Raza virus (RAZAV)
		Soldado virus (SOLV)
		Zirqa virus (ZIRV)
	<i>Kasokero orthonairovirus</i>	Kasokero virus (KASV = KASOV)
		Leopards Hill virus (LPHV)
		Yogue virus (YOGV)
	<i>Keterah orthonairovirus</i>	Gossas virus (GOSV)
		Issyk-kul virus (ISKV)
		Keterah virus (KTRV)
		Uzun-Agach virus (UZAV)
	<i>Nairobi sheep disease orthonairovirus</i>	Nairobi sheep disease virus (NSDV)
	<i>Qalyub orthonairovirus</i>	Bandia virus (BDV)
		Geran virus (GERV)
		Qalyub virus (QYBV)
	<i>Sakhalin orthonairovirus</i>	Avalon virus (AVAV)
		Clo Mor virus (CMV = CLMV)
		Sakhalin virus (SAKV)
		Taggart virus (TAGV)
		Tillamook virus (TILLV)
	<i>Tamdy orthonairovirus</i>	Burana virus (BURV)
		Huángpí tick virus 1 (HpTV-1)
		Táchéng tick virus 1 (TcTV-1)
		Tamdy virus (TAMV)
		Wēnzhōu tick virus (WzTV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Thiafora orthonairovirus</i>	Erve virus (ERVEV) Thiafora virus (TFAV)
<i>Shaspivirus</i>	<i>Spider shaspivirus</i> *	Shāyáng spider virus 1 (SySV-1)
<i>Striavirus</i>	<i>Strider striavirus</i> *	Sānxiá water strider virus 1 (SxWSV-1)
Family Peribunyaviridae		
<i>Herbevirus</i>	<i>Herbert herbevirus</i> *	Herbert virus (HEBV)
	<i>Kibale herbevirus</i>	Kibale virus (KIBV)
	<i>Tai herbevirus</i>	Tai virus (TAIV)
<i>Orthobunyavirus</i>	<i>Acara orthobunyavirus</i>	Acará virus (ACAV) Moriche virus (MORV)
	<i>Aino orthobunyavirus</i>	Aino virus (AINOV)
	<i>Akabane orthobunyavirus</i>	Akabane virus (AKAV) Tinaroo virus (TINV) Yaba-7 virus (Y7V)
	<i>Alajuela orthobunyavirus</i>	Alajuela virus (ALJV) San Juan virus (SJV)
	<i>Anadyr orthobunyavirus</i>	Anadyr virus (ANADV)
	<i>Anhemi orthobunyavirus</i>	Anhemi virus (AMBV)
	<i>Anopheles A orthobunyavirus</i>	Anopheles A virus (ANAV) Arumateua virus (ARTV = ARMTV) Caraipé virus (CPEV = CRPV) Las Maloyas virus (LMV) Lukuni virus (LUKV) Trombetas virus (TRMV) Tucuruí virus (TUCV = TUCRV)
	<i>Anopheles B orthobunyavirus</i>	Anopheles B virus (ANBV) Boracéia virus (BORV)
	<i>Bakau orthobunyavirus</i>	Bakau virus (BAKV) Ketapang virus (KETV) Nola virus (NOLAV) Tanjong Rabok virus (TRV) Telok Forest virus (TFV)
	<i>Batai orthobunyavirus</i>	Batai virus (BATV)
	<i>Batama orthobunyavirus</i>	Batama virus (BMAV)
	<i>Bellavista orthobunyavirus</i>	Bellavista virus (BELLV)
	<i>Benevides orthobunyavirus</i>	Benevides virus (BVSV = BENV)
	<i>Bertioga orthobunyavirus</i>	Bertioga virus (BERV) Cananéia virus (CNAV) Guaratuba virus (GTBV) Itimirim virus (ITIV) Mirim virus (MIRV)
	<i>Bimiti orthobunyavirus</i>	bimiti virus (BIMV)
	<i>Birao orthobunyavirus</i>	Birao virus (BIRV)
	<i>Botambi orthobunyavirus</i>	Botambi virus (BOTV)
	<i>Bozo orthobunyavirus</i>	Bozo virus (BOZOV)
	<i>Bunyamwera orthobunyavirus</i> *	Bunyamwera virus (BUNV) Germiston virus (GERV) Lokern virus (LOKV) Mboké virus (MBOV) Ngari virus (NRIV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
		Northway virus (NORV)
		Santa Rosa virus (SARV)
		Shokwe virus (SHOV)
		Stanfield virus (STAV)
		Xingu virus (XINV)
	<i>Bushbush orthobunyavirus</i>	Benfica virus (BENV = BNFV)
		Bushbush virus (BSBV)
		Juan Díaz virus (JDV)
	<i>Buttonwillow orthobunyavirus</i>	Buttonwillow virus (BUTV)
	<i>Bwamba orthobunyavirus</i>	Bwamba virus (BWAV)
		Pongola virus (PGAV)
	<i>Cache Valley orthobunyavirus</i>	Cache Valley virus (CVV)
		Cholul virus (CHLV)
		Tlacotalpan virus (TLAV)
	<i>Cachoeira Porteira orthobunyavirus</i>	Cachoeira Porteira virus (CPOV)
	<i>California encephalitis orthobunyavirus</i>	California encephalitis virus (CEV)
		Morro Bay virus (MBV)
	<i>Capim orthobunyavirus</i>	Capim virus (CAPV)
	<i>Caraparu orthobunyavirus</i>	Apeú virus (APEUV)
		Bruconha virus (BRUV)
		Caraparú virus (CARV)
		El Huayo virus (EHUV)
		Itaya virus (ITYV)
		Ossa virus (OSSAV)
		Vinces virus (VINV)
	<i>Cat Que orthobunyavirus</i>	Cát Qué virus (CQV)
		Oya virus (OYAV)
	<i>Catu orthobunyavirus</i>	Catú virus (CATUV)
	<i>Enseada orthobunyavirus</i>	Enseada virus (ENSV)
	<i>Faceys paddock orthobunyavirus</i>	Facey's paddock virus (FPV)
	<i>Fort Sherman orthobunyavirus</i>	Fort Sherman virus (FSV)
	<i>Gamboa orthobunyavirus</i>	Brus Laguna virus (BLAV)
		Calchaquí virus (CQIV)
		Gamboa virus (GAMV)
		Pueblo Viejo virus (PVV)
		Soberanía virus (SOBV)
	<i>Guajara orthobunyavirus</i>	Guajará virus (GJAV)
	<i>Guama orthobunyavirus</i>	Ananindeua virus (ANUV)
		Guamá virus (GMAV)
		Mahogany Hammock virus (MHV)
		Moju virus (MOJUV)
	<i>Guaroa orthobunyavirus</i>	Guaroa virus (GROV)
	<i>Iaco orthobunyavirus</i>	Iaco virus (IACOV)
	<i>Ilesha orthobunyavirus</i>	Ilesha virus (ILEV)
	<i>Ingwavuma orthobunyavirus</i>	Ingwavuma virus (INGV)
	<i>Jamestown Canyon orthobunyavirus</i>	Inkoo virus (INKV)
		Jamestown Canyon virus (JCV)
		Jerry Slough virus (JSV)
		South River virus (SORV)
	<i>Jatobal orthobunyavirus</i>	Jatobal virus (JATV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Kaeng Khoi orthobunyavirus</i>	Kaeng Khoi virus (KKV)
	<i>Kairi orthobunyavirus</i>	Kairi virus (KRIV)
	<i>Keystone orthobunyavirus</i>	Keystone virus (KEYV)
	<i>Koongol orthobunyavirus</i>	koongol virus (KOOV)
		wongal virus (WONV)
	<i>La Crosse orthobunyavirus</i>	La Crosse virus (LACV)
	<i>Leanyer orthobunyavirus</i>	Leanyer virus (LEAV)
	<i>Lumbo orthobunyavirus</i>	Lumbo virus (LUMV)
	<i>Macaua orthobunyavirus</i>	Macauã virus (MCAV)
	<i>Madrid orthobunyavirus</i>	Madrid virus (MADV)
	<i>Maguari orthobunyavirus</i>	Maguari virus (MAGV)
		Playas virus (PLAV)
	<i>Main Drain orthobunyavirus</i>	Main Drain virus (MDV)
	<i>Manzanilla orthobunyavirus</i>	Manzanilla virus (MANV)
		Inini virus (INIV)
	<i>Marituba orthobunyavirus</i>	Gumbo Limbo virus (GLV)
		Marituba virus (MTBV)
		Murutucú virus (MURV)
		Nepuyo virus (NEPV)
		Restan virus (RESV)
		Zungarococha virus (ZUNV)
	<i>Melao orthobunyavirus</i>	Melao virus (MELV)
	<i>Mermet orthobunyavirus</i>	Mermet virus (MERV)
	<i>Minatitlán orthobunyavirus</i>	Minatitlán virus (MNTV)
		Palestina virus (PLSV)
	<i>MPoko orthobunyavirus</i>	M'Poko virus (MPOV)
		Yaba-1 virus (Y1V)
	<i>Nyando orthobunyavirus</i>	Eretmapodites virus (ERETV)
		Mojuí dos Campos virus (MDCV)
		Nyando virus (NDV)
	<i>Olifantsvlei orthobunyavirus</i>	Bobia virus (BIAV)
		Dabakala virus (DABV)
		Olifantsvlei virus (OLIV)
		Oubi virus (OUBIV)
	<i>Oriboca orthobunyavirus</i>	Itaquí virus (ITQV)
		Oriboca virus (ORIV)
	<i>Oropouche orthobunyavirus</i>	Iquitos virus (IQTV) ^d
		Madre de Dios virus (MDDV)
		Oropouche virus (OROV)
		Perdões virus (PDEV)
		Pintupo virus (PINTV)
	<i>Patois orthobunyavirus</i>	Abras virus (ABRV)
		Babahoya virus (BABV)
		Pahayokee virus (PAHV)
		Patois virus (PATV)
		Shark River virus (SRV)
	<i>Peaton orthobunyavirus</i>	Peaton virus (PEAV)
	<i>Potosi orthobunyavirus</i>	Potosi virus (POTV)
	<i>Sabo orthobunyavirus</i>	Sabo virus (SABOV)
	<i>San Angelo orthobunyavirus</i>	San Angelo virus (SAV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Sango orthobunyavirus</i>	Sango virus (SANV)
	<i>Schmallenberg orthobunyavirus</i>	Douglas virus (DOUV) Sathuperi virus (SATV) Schmallenberg virus (SBV) Shamonda virus (SHAV)
	<i>Serra do Navio orthobunyavirus</i>	Serra do Navio virus (SDNV)
	<i>Shuni orthobunyavirus</i>	Kaikalur virus (KAIV) Shuni virus (SHUV)
	<i>Simbu orthobunyavirus</i>	Para virus (PARAV) Simbu virus (SIMV)
	<i>Snowshoe hare orthobunyavirus</i>	Khatanga virus (KHATV) ⁹ snowshoe hare virus (SSHV)
	<i>Sororoca orthobunyavirus</i>	Sororoca virus (SORV)
	<i>Tacaiuma orthobunyavirus</i>	CoAr 1071 virus (CA1071V) CoAr 3627 virus (CA3626V) Tacaiuma virus (TCMV) Virgin River virus (VRV)
	<i>Tahyna orthobunyavirus</i>	Ťahyňa virus (TAHV)
	<i>Tataguine orthobunyavirus</i>	Tataguine virus (TATV)
	<i>Tensaw orthobunyavirus</i>	Tensaw virus (TENV)
	<i>Tete orthobunyavirus</i>	Bahig virus (BAHV) Matruh virus (MTRV) Tete virus (TETEV) Tsuruse virus (TSUV) Weldona virus (WELV)
	<i>Thimiri orthobunyavirus</i>	Thimiri virus (THIV)
	<i>Timboteua orthobunyavirus</i>	Timboteua virus (TBTV)
	<i>Trivittatus orthobunyavirus</i>	Achiote virus (ACHOV) Trivittatus virus (TVTIV)
	<i>Turlock orthobunyavirus</i>	Lednice virus (LEDV) Turlock virus (TURV) Umbre virus (UMBV)
	<i>Utinga orthobunyavirus</i>	Utinga virus (UTIV)
	<i>Witwatersrand orthobunyavirus</i>	Witwatersrand virus (WITV)
	<i>Wolkberg orthobunyavirus</i>	Wolkberg virus (WBV)
	<i>Wyeomyia orthobunyavirus</i>	Rio Pracupi virus Taiassui virus (TAIAV) Tucunduba virus (TUCV) Wyeomyia virus (WYOV)
	<i>Zegla orthobunyavirus</i>	Zegla virus (ZEGV)
<i>Pacuvirus</i>	<i>Caimito pacuvirus</i>	Caimito virus (CAIV)
	<i>Chilibre pacuvirus</i>	Chilibre virus (CHIV)
	<i>Pacui pacuvirus</i> *	Pacui virus (PACV)
	<i>Rio Preto da Eva pacuvirus</i>	Rio Preto da Eva virus (RPEV)
	<i>Tapirape pacuvirus</i>	Tapirapé virus (TAPV)
<i>Shangavirus</i>	<i>Insect shangavirus</i> *	Shuāngào insect virus 1 (SgIV-1)
Family Phasmaviridae		
<i>Feravirus</i>	<i>Ferak feravirus</i> *	Ferak virus (FRKV)
<i>Jonvirus</i>	<i>Jonchet jonvirus</i> *	jonchet virus (JONV)
<i>Orthophasmavirus</i>	<i>Anopheles orthophasmavirus</i>	Anopheles triannulatus orthophasmavirus (AtOPV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Culex orthophasmavirus</i>	Culex orthophasmavirus (CPLV)
	<i>Ganda orthophasmavirus</i>	Ganda orthophasmavirus (GBEEV)
	<i>Kigluaik phantom orthophasmavirus</i> *	Kigluaik phantom virus (KIGV)
	<i>Odonate orthophasmavirus</i>	Odonate orthophasmavirus (HbOV-8)
	<i>Qingling orthophasmavirus</i>	Qingling orthophasmavirus (HbOV-9)
	<i>Wuchang cockroach orthophasmavirus 1</i>	Wūchāng cockroach virus 1 (WcCV-1)
	<i>Wuhan mosquito orthophasmavirus 1</i>	Wūhàn mosquito virus 1 (WhMV-1)
	<i>Wuhan mosquito orthophasmavirus 2</i>	Wūhàn mosquito virus 2 (WhMV-2)
<i>Sawastrivirus</i>	<i>Sanxia sawastrivirus</i> *	Sānxiá water strider virus 2 (SxWSV-2)
<i>Wuhivirus</i>	<i>Insect wuhivirus</i> *	Wūhàn insect virus 2 (WhIV-2)
Family Phenuiviridae		
<i>Bandavirus</i>	<i>Bhanja bandavirus</i>	Bhanja virus (BHAV)
	<i>Dabie bandavirus</i> *	severe fever with thrombocytopenia syndrome virus (SFTSV)
	<i>Guertu bandavirus</i>	Guertu virus (GTV)
	<i>Heartland bandavirus</i>	Heartland virus (HRTV)
	<i>Hunter Island bandavirus</i>	Hunter Island virus (HUIV)
	<i>Kismaayo bandavirus</i>	Kismaayo virus (KISV)
	<i>Lone Star bandavirus</i> ¹	lone star virus (LSV)
<i>Beidivirus</i>	<i>Dipteran beidivirus</i> *	Húběi diptera virus 3 (HbDV-3)
<i>Coguvirus</i>	<i>Citrus coguvirus</i> *	citrus concave gum-associated virus (CCGaV)
	<i>Coguvirus eburi</i>	citrus virus A (CiV-A)
<i>Entovirus</i>	<i>Entoleuca entovirus</i> *	Entoleuca phenui-like virus 1 (EnPLV-1)
<i>Goukovirus</i>	<i>Cumuto goukovirus</i>	Cumuto virus (CUMV)
	<i>Gouleako goukovirus</i> *	Gouléako virus (GOLV)
	<i>Yichang insect goukovirus</i>	Yíchāng insect virus (YcIV)
<i>Horwuvirus</i>	<i>Horsefly horwuvirus</i> *	Wūhàn horsefly virus (WhHV)
<i>Hudivirus</i>	<i>Dipteran hudivirus</i> *	Húběi diptera virus 4 (HbDV-4)
<i>Hudovirus</i>	<i>Lepidopteran hudovirus</i> *	Húběi lepidoptera virus 1 (HbLV-1)
<i>Ixovirus</i>	<i>Blackleg ixovirus</i> *	blacklegged tick virus 1 (BLTV-1)
	<i>Norway ixovirus</i>	Fairhair virus (FHAV)
	<i>Scapularis ixovirus</i>	blacklegged tick virus 3 (BLTV-3)
<i>Laulavirus</i>	<i>Laurel Lake laulavirus</i> *	Laurel Lake virus (LLV)
<i>Lentinivirus</i>	<i>Lentinula lentinivirus</i> *	Lentinula edodes negative-strand RNA virus 2 (LeN-SRV-2)
<i>Mobuvirus</i>	<i>Mothra mobuvirus</i> *	Mothra virus (MTHV)
<i>Phasivirus</i>	<i>Badu phasivirus</i> *	Badu virus (BADUV)
	<i>Dipteran phasivirus</i>	Húběi diptera virus 5 (HbDV-5)
	<i>Fly phasivirus</i>	Wūhàn fly virus 1 (WhFV-1)
	<i>Phasi Charoen-like phasivirus</i>	Phasi Chaeron-like virus (PCLV)
	<i>Wutai mosquito phasivirus</i>	Wūtái mosquito virus (WtMV)
<i>Phlebovirus</i>	<i>Adana phlebovirus</i>	Adana virus (ADAV)
	<i>Aguacate phlebovirus</i>	Aguacate virus (AGUV)
	<i>Alcube phlebovirus</i>	Alcube virus (ACBV)
	<i>Alenquer phlebovirus</i>	Alenquer virus (ALEV)
	<i>Ambe phlebovirus</i>	Ambe virus (ABEV)
	<i>Anhanga phlebovirus</i>	Anhangá virus (ANHV)
	<i>Arumowot phlebovirus</i>	Arumowot virus (AMTV)
	<i>Buenaventura phlebovirus</i>	Buenaventura virus (BUEV)
	<i>Bujaru phlebovirus</i>	Bujaru virus (BUJV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Cacao phlebovirus</i>	Cacao virus (CACV)
	<i>Campana phlebovirus</i>	Campana virus (CMAV)
	<i>Candiru phlebovirus</i>	Ariquemés virus (ARQV)
		Candirú virus (CDUV)
		Jacundá virus (JCNV)
		Morumbi virus (MR(M)BV)
		Mucura virus (MCRV/MRAV)
		Serra Norte virus (SRNV)
	<i>Chagres phlebovirus</i>	Chagres virus (CHGV)
	<i>Cocle phlebovirus</i>	Coclé virus (CCLV)
	<i>Dashli phlebovirus</i>	Dāshlī virus (DASV)
	<i>Durania phlebovirus</i>	Durania virus (DRNV)
	<i>Echarate phlebovirus</i>	Echarate virus (ECHV)
	<i>Gabek phlebovirus</i>	Gabek forest virus (GFV)
	<i>Gordil phlebovirus</i>	Gordil virus (GORV)
	<i>Icoaraci phlebovirus</i>	Icoaraci virus (ICOV)
	<i>Itaituba phlebovirus</i>	Itaituba virus (ITAV)
	<i>Itaporanga phlebovirus</i>	Itaporanga virus (ITPV)
	<i>Ixcanal phlebovirus</i>	Ixcanal virus (IXCV)
	<i>Karimabad phlebovirus</i>	Karimabad virus (KARV)
	<i>La Gloria phlebovirus</i>	La Gloria virus (LAGV)
	<i>Lara phlebovirus</i>	Rio Claro virus (RICV)
	<i>Leticia phlebovirus</i>	Leticia virus (LTCV)
	<i>Maldonado phlebovirus</i>	Maldonado virus (MLOV)
	<i>Mariquita phlebovirus</i>	Mariquita virus (MRQV)
	<i>Massilia phlebovirus</i>	Massilia virus (MASV)
	<i>Medjerda phlebovirus</i>	Medjerda Valley virus (MVV)
	<i>Mona Grita phlebovirus</i>	Mona Grita virus (MOGV)
	<i>Mukawa phlebovirus</i>	Mukawa virus (MKWV)
	<i>Munguba phlebovirus</i>	Munguba virus (MUNV)
	<i>Naples phlebovirus</i>	Arrábida virus (ARRV)
		Balkan virus (BALKV)
		Fermo virus (FERV)
		Granada virus (GRV = GRAV)
		Saddaguia virus (SADV)
		sandfly fever Naples virus (SFNV)
	<i>Nique phlebovirus</i>	Nique virus (NIQV)
	<i>Ntepes phlebovirus</i>	Ntepes virus (NTPV)
	<i>Odrenisrou phlebovirus</i>	Odrénisrou virus (ODRV)
	<i>Oriximina phlebovirus</i>	Oriximiná virus (ORXV)
	<i>Pena Blanca phlebovirus</i>	Peña Blanca virus (PEBV)
	<i>Punique phlebovirus</i>	Punique virus (PUNV)
	<i>Punta Toro phlebovirus</i>	Buenaventura virus (BUEV)
		Capira virus (CAPIV)
		Punta Toro virus (PTV)
	<i>Rift Valley fever phlebovirus*</i>	Rift Valley fever virus (RVFV)
	<i>Rio Grande phlebovirus</i>	Rio Grande virus (RGV)
	<i>Saint Floris phlebovirus</i>	Saint-Floris virus (SAFV)
	<i>Salanga phlebovirus</i>	Salanga virus (SLGV)
	<i>Salehabad phlebovirus</i>	Adria virus (ADRV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
		Arbia virus (ARBV)
		Bregalaka virus (BREV)
		Olbia virus (OLBV)
		Salehabad virus (SALV)
		Zaba virus (ZABAV)
	<i>Salobo phlebovirus</i> [sic] ²	Salobo virus (SLBOV)
	<i>Sicilian phlebovirus</i>	sandfly fever Sicilian virus (SFSV)
	<i>Tapara phlebovirus</i>	Tapará virus (TPRV)
	<i>Tehran phlebovirus</i>	Tehran virus (THEV)
	<i>Tico phebovirus</i> [sic] ³	Tico virus (TICV)
	<i>Toros phlebovirus</i>	Toros virus (TORV)
	<i>Toscana phlebovirus</i>	Toscana virus (TOSV)
	<i>Tres Almendras phlebovirus</i>	Tres Almendras virus (TRAV)
	<i>Turuna phlebovirus</i>	Turuna virus (TUAV)
	<i>Uriurana phlebovirus</i>	Uriurana virus (URIV)
	<i>Urucuri phlebovirus</i>	Urucuri virus (URUV)
	<i>Viola phlebovirus</i>	viola virus (VIOV)
	<i>Zerdali phlebovirus</i>	Zerdali virus (ZERV)
<i>Pidchovirus</i>	<i>Pidgey pidchovirus</i> *	Pidgey virus (PGYV)
<i>Rubodvirus</i>	<i>Apple rubodvirus 1</i> *	apple rubbery wood virus 1 (ARWV-1)
	<i>Apple rubodvirus 2</i>	apple rubbery wood virus 2 (ARWV-2)
<i>Tenuivirus</i>	<i>Echinochloa hoja blanca tenuivirus</i>	Echinochloa hoja blanca virus (EHBV)
	<i>Iranian wheat stripe tenuivirus</i>	Iranian wheat stripe virus (IWSV)
	<i>Maize stripe tenuivirus</i>	maize stripe virus (MStV = MSpV)
	<i>Melon tenuivirus</i>	melon chlorotic spot virus (MeCSV)
	<i>Rice grassy stunt tenuivirus</i>	rice grassy stunt virus (RGSV)
	<i>Rice hoja blanca tenuivirus</i>	rice hoja blanca virus (RHBV)
	<i>Rice stripe tenuivirus</i> *	rice stripe virus (RSV = RStV)
	<i>Urochloa hoja blanca tenuivirus</i>	Urochloa hoja blanca virus (UHBV)
<i>Uukuvirus</i>	<i>American dog uukuvirus</i>	American dog tick virus (ADAV)
	<i>Dabiéshān uukuvirus</i>	Dàbiéshān tick virus (DBSH)
	<i>Grand Arbaud uukuvirus</i>	Grand Arbaud virus (GAV)
	<i>Huangpi uukuvirus</i>	Huángpí tick virus 2 (HpTV-2)
	<i>Kabuto mountain uukuvirus</i>	Kabuto mountain virus (KAMV)
	<i>Kaisodi uukuvirus</i>	Kaisodi virus (KASDV)
	<i>Lihan uukuvirus</i>	Lìhán tick virus (LITV)
	<i>Manawa uukuvirus</i>	Manawa virus (MWAV)
	<i>Murre uukuvirus</i>	murre virus (MURV)
	<i>Pacific coast uukuvirus</i>	Pacific coast tick virus (PACV)
	<i>Precarious Point uukuvirus</i>	Precarious Point virus (PPV)
	<i>Rukutama uukuvirus</i>	Rukutama virus (RUKV)
	<i>Schmid uukuvirus</i>	Nile Warbler virus (NIWV)
	<i>Silverwater uukuvirus</i>	Silverwater virus (SILV)
	<i>Tacheng uukuvirus</i>	Tāchéng tick virus 2 (TCGV)
	<i>Uukuniemi uukuvirus</i> *	Chizé virus (CHZV)
		Fin V 707 virus (FINV)
		Oceanside virus (OCV = OCEV)
		Pontevès virus (PTVV)
		St. Abbs Head virus (SAHV)
		Uukuniemi virus (UUKV)

Table 7 (continued)

Genus	Species [¶]	Virus (Abbreviation) ^{&}
	<i>Yongjia uukuvirus</i>	Yǒngjiā tick virus (YONV)
	<i>Zaliv Terpeniya uukuvirus</i>	Zaliv Terpeniya virus (ZTV)
<i>Wenrivirus</i>	<i>Shrimp wenrivirus</i> *	Wēnzhōu shrimp virus 1 (WzSV-1)
Family <i>Tospoviridae</i>		
<i>Orthotospovirus</i>	<i>Alstroemeria necrotic streak orthotospovirus</i>	Alstroemeria necrotic streak virus (ANSV)
	<i>Alstroemeria yellow spot orthotospovirus</i>	Alstroemeria yellow spot virus (AYSV)
	<i>Bean necrotic mosaic orthotospovirus</i>	bean necrotic mosaic virus (BeNMV)
	<i>Calla lily chlorotic spot orthotospovirus</i>	calla lily chlorotic spot virus (CCSV)
	<i>Capsicum chlorosis orthotospovirus</i>	Capsicum chlorosis virus (CaCV)
	<i>Chrysanthemum stem necrosis orthotospovirus</i>	Chrysanthemum stem necrosis virus (CSNV)
	<i>Groundnut bud necrosis orthotospovirus</i>	groundnut bud necrosis virus (GBNV)
	<i>Groundnut chlorotic fan spot orthotospovirus</i>	groundnut chlorotic fan-spot virus (GCFSV)
	<i>Groundnut ringspot orthotospovirus</i>	groundnut ringspot virus (GRSV)
	<i>Groundnut yellow spot orthotospovirus</i>	groundnut yellow spot virus (GYSV)
	<i>Hippeastrum chlorotic ringspot orthotospovirus</i>	Hippeastrum chlorotic spot virus (HCRV)
	<i>Impatiens necrotic spot orthotospovirus</i>	impatiens necrotic spot virus (INSV)
	<i>Iris yellow spot orthotospovirus</i>	iris yellow spot virus (IYSV)
	<i>Melon severe mosaic orthotospovirus</i>	melon severe mosaic virus (MSMV)
	<i>Melon yellow spot orthotospovirus</i>	melon yellow spot virus (MYSV)
	<i>Mulberry vein banding associated orthotospovirus</i>	mulberry vein banding-associated virus (MVBaV)
	<i>Pepper chlorotic spot orthotospovirus</i>	pepper chlorotic spot virus (PCSV)
	<i>Polygonum ringspot orthotospovirus</i>	Polygonum ringspot virus (PoRSV)
	<i>Soybean vein necrosis orthotospovirus</i>	soybean vein necrosis virus (SVNV)
	<i>Tomato chlorotic spot orthotospovirus</i>	tomato chlorotic spot virus (TCSV)
	<i>Tomato spotted wilt orthotospovirus</i> *	tomato spotted wilt virus (TSWV)
	<i>Tomato yellow ring orthotospovirus</i>	tomato yellow ring virus (TYRV)
	<i>Tomato zonate spot orthotospovirus</i>	tomato zonate spot virus (TZSV)
	<i>Watermelon bud necrosis orthotospovirus</i>	watermelon bud necrosis virus (WBNV)
	<i>Watermelon silver mottle orthotospovirus</i>	watermelon silver mottle virus (WSMoV)
	<i>Zucchini lethal chlorosis orthotospovirus</i>	zucchini lethal chlorosis virus (ZLCV)
Family <i>Wupedeviridae</i>		
<i>Wumivirus</i>	<i>Millipede wumivirus</i> *	Wūhàn millipede virus 2 (WhMV-2)

Note that viruses are real objects that are assigned to concepts that are called taxa. Species, genera, subfamilies, families, and orders are taxa

*Type species

¹Due to a formal classification mistake this species was named *Lone Star bandavirus* instead of *Lone star bandavirus*. A proposal to correct the spelling of this species name has been submitted

²Due to a formal classification mistake this species was named *Salobo phlabovirus* instead of *Salobo phlebovirus*. A proposal to correct the spelling of this species name has been submitted

³Due to a formal classification mistake this species was named *Tico phebovirus* instead of *Tico phlebovirus*. A proposal to correct the spelling of this species name has been submitted

[¶]Taxon names are always italicized and always begin with a capital letter

[&]Virus names are not italicized and are not capitalized, except if the name or a name component is a proper noun. This column lists the virus names with their correct (lack of) capitalization. Lists of viruses within a given species are provisional at this point and will likely be amended in the near future

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Compliance with ethical standards

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References

1. Abudurexiti A, Adkins S, Alioto D, Alkhovsky SV, Avšič-Županc T, Ballinger MJ, Bente DA, Beer M, Bergeron É, Blair CD, Briese T, Buchmeier MJ, Burt FJ, Calisher CH, Cháng C, Charrel RN, Choi IR, Clegg JCS, de la Torre JC, de Lamballerie X, Dèng F, Di Serio F, Digiario M, Drebot MA, Duàn X, Ebihara H, Elbeaino T, Ergünay K, Fulhorst CF, Garrison AR, Gão GF, Gonzalez J-PJ, Groschup MH, Günther S, Haenni A-L, Hall RA, Hepojoki J, Hewson R, Hú Z, Hughes HR, Jonson MG, Junglen

- S, Klempa B, Klingström J, Kòu C, Laenen L, Lambert AJ, Langevin SA, Liu D, Lukasevich IS, Luò T, Lǚ C, Maes P, de Souza WM, Marklewitz M, Martelli GP, Matsuno K, Mielke-Ehret N, Minutolo M, Mirazimi A, Moming A, Mühlbach H-P, Naidu R, Navarro B, Nunes MRT, Palacios G, Papa A, Pauvolid-Corrêa A, Pawęska JT, Qiáo J, Radoshitzky SR, Resende RO, Romanowski V, Sall AA, Salvato MS, Sasaya T, Shěn S, Shí X, Shirako Y, Simmonds P, Sironi M, Song J-W, Spengler JR, Stenglein MD, Sū Z, Sūn S, Táng S, Turina M, Wáng B, Wáng C, Wáng H, Wáng J, Wèi T, Whitfield AE, Zerbini FM, Zhāng J, Zhāng L, Zhāng Y, Zhang Y-Z, Zhāng Y, Zhou X, Zhū L, Kuhn JH (2019) Taxonomy of the order *Bunyavirales*: update 2019. *Arch Virol* 164:1949–1965
2. Afonso CL, Amarasinghe GK, Bányai K, Bào Y, Basler CF, Bavari S, Bejerman N, Blasdel KR, Briand F-X, Briese T, Bukreyev A, Calisher CH, Chandran K, Chéng J, Clawson AN, Collins PL, Dietzgen RG, Dolnik O, Domier LL, Dürrwald R, Dye JM, Easton AJ, Ebihara H, Farkas SL, Freitas-Astúa J, Formenty P, Fouchier RA, Fù Y, Ghedin E, Goodin MM, Hewson R, Horie M, Hyndman TH, Jiāng D, Kitajima EW, Kobinger GP, Kondo H, Kurath G, Lamb RA, Lenardon S, Leroy EM, Li C-X, Lin X-D, Liú L, Longdon B, Marton S, Maisner A, Mühlberger E, Netesov SV, Nowotny N, Patterson JL, Payne SL, Paweska JT, Randall RE, Rima BK, Rota P, Rubbenstroth D, Schwemmler M, Shi M, Smither SJ, Stenglein MD, Stone DM, Takada A, Terregino C, Tesh RB, Tian J-H, Tomonaga K, Tordo N, Towner JS, Vasilakis N, Verbeek M, Volchkov VE, Wahl-Jensen V, Walsh JA, Walker PJ, Wang D, Wang L-F, Wetzel T, Whitfield AE, Xiè JT, Yuen K-Y, Zhang Y-Z, Kuhn JH (2016) Taxonomy of the order *Mononegavirales*: update 2016. *Arch Virol* 161:2351–2360
 3. Aitken TH, Woodall JP, De Andrade AHP, Bensabath G, Shope RE (1975) Pacui virus, phlebotomine flies, and small mammals in Brazil: an epidemiological study. *Am J Trop Med Hyg* 24:358–368
 4. Alkan C, Alwassouf S, Piorkowski G, Bichaud L, Tezcan S, Dincer E, Ergunay K, Ozbel Y, Alten B, de Lamballerie X, Charrel RN (2015) Isolation, genetic characterization, and seroprevalence of Adana virus, a novel phlebovirus belonging to the Salehabad virus complex, in Turkey. *J Virol* 89:4080–4091
 5. Alkan C, Erisoz Kasap O, Alten B, de Lamballerie X, Charrel RN (2016) Sandfly-borne phlebovirus isolations from Turkey: new insight into the *Sandfly fever Sicilian* and *Sandfly fever Naples* species. *PLoS Negl Trop Dis* 10:e0004519
 6. Alkan C, Moin Vaziri V, Ayhan N, Badakhshan M, Bichaud L, Rahbarian N, Javadian E-A, Alten B, de Lamballerie X, Charrel RN (2017) Isolation and sequencing of Dashli virus, a novel Sicilian-like virus in sandflies from Iran; genetic and phylogenetic evidence for the creation of one novel species within the *Phlebovirus* genus in the *Phenuiviridae* family. *PLoS Negl Trop Dis* 11:e0005978
 7. Amarasinghe GK, Bào Y, Basler CF, Bavari S, Beer M, Bejerman N, Blasdel KR, Bochnowski A, Briese T, Bukreyev A, Calisher CH, Chandran K, Collins PL, Dietzgen RG, Dolnik O, Dürrwald R, Dye JM, Easton AJ, Ebihara H, Fang Q, Formenty P, Fouchier RAM, Ghedin E, Harding RM, Hewson R, Higgins CM, Hong J, Horie M, James AP, Jiāng D, Kobinger GP, Kondo H, Kurath G, Lamb RA, Lee B, Leroy EM, Li M, Maisner A, Mühlberger E, Netesov SV, Nowotny N, Patterson JL, Payne SL, Paweska JT, Pearson MN, Randall RE, Revill PA, Rima BK, Rota P, Rubbenstroth D, Schwemmler M, Smither SJ, Song Q, Stone DM, Takada A, Terregino C, Tesh RB, Tomonaga K, Tordo N, Towner JS, Vasilakis N, Volchkov VE, Wahl-Jensen V, Walker PJ, Wang B, Wang D, Wang F, Wang L-F, Werren JH, Whitfield AE, Yan Z, Ye G, Kuhn JH (2017) Taxonomy of the order *Mononegavirales*: update 2017. *Arch Virol* 162:2493–2504
 8. Amarasinghe GK, Ceballos NGA, Banyard AC, Basler CF, Bavari S, Bennett AJ, Blasdel KR, Briese T, Bukreyev A, Cai Y, Calisher CH, Lawson CC, Chandran K, Chapman CA, Chiu CY, Choi K-S, Collins PL, Dietzgen RG, Dolja VV, Dolnik O, Domier LL, Dürrwald R, Dye JM, Easton AJ, Ebihara H, Echevarría JE, Fooks AR, Formenty PBH, Fouchier RAM, Freuling CM, Ghedin E, Goldberg TL, Hewson R, Horie M, Hyndman TH, Jiāng D, Kityo R, Kobinger GP, Kondō H, Koonin EV, Krupovic M, Kurath G, Lamb RA, Lee B, Leroy EM, Maes P, Maisner A, Marston DA, Mor SK, Müller T, Mühlberger E, Ramírez VMN, Netesov SV, Ng TFF, Nowotny N, Palacios G, Patterson JL, Pawęska JT, Payne SL, Prieto K, Rima BK, Rota P, Rubbenstroth D, Schwemmler M, Siddell S, Smither SJ, Song Q, Song T, Stenglein MD, Stone DM, Takada A, Tesh RB, Thomazelli LM, Tomonaga K, Tordo N, Towner JS, Vasilakis N, Vázquez-Morón S, Verdugo C, Volchkov VE, Wahl V, Walker PJ, Wang D, Wang L-F, Wellehan JFX, Wiley MR, Whitfield AE, Wolf YI, Yè G, Zhāng Y-Z, Kuhn JH (2018) Taxonomy of the order *Mononegavirales*: update 2018. *Arch Virol* 163:2283–2294
 9. Amarasinghe GK, Ayllón MA, Bào Y, Basler CF, Bavari S, Blasdel KR, Briese T, Brown PA, Bukreyev A, Balkema-Buschmann A, Buchholz UJ, Chabi-Jesus C, Chandran K, Chiapponi C, Crozier I, de Swart RL, Dietzgen RG, Dolnik O, Drexler JF, Dürrwald R, Dundon WG, Duprex WP, Dye JM, Easton AJ, Fooks AR, Formenty PBH, Fouchier RAM, Freitas-Astúa J, Griffiths A, Hewson R, Horie M, Hyndman TH, Jiāng D, Kitajima EW, Kobinger GP, Kondō H, Kurath G, Kuzmin IV, Lamb RA, Lavazza A, Lee B, Lelli D, Leroy EM, Li J, Maes P, Marzano S-YL, Moreno A, Mühlberger E, Netesov SV, Nowotny N, Nylund A, Økland AL, Palacios G, Pályi B, Pawęska JT, Payne SL, Prosperi A, Ramos-González PL, Rima BK, Rota P, Rubbenstroth D, Shī M, Simmonds P, Smither SJ, Sozzi E, Spann K, Stenglein MD, Stone DM, Takada A, Tesh RB, Tomonaga K, Tordo N, Towner JS, van den Hoogen B, Vasilakis N, Wahl V, Walker PJ, Wang L-F, Whitfield AE, Williams JV, Zerbini FM, Zhāng T, Zhang Y-Z, Kuhn JH (2019) Taxonomy of the order *Mononegavirales*: update 2019. *Arch Virol* 164:1967–1980
 10. Amaro F, Zé-Zé L, Alves MJ, Böstler J, Clos J, Lorenzen S, Becker SC, Schmidt-Chanasit J, Cadar D (2015) Co-circulation of a novel phlebovirus and Massilia virus in sandflies, Portugal. *Virol J* 12:174
 11. Barr J, Smith C, Smith I, de Jong C, Todd S, Melville D, Broos A, Crameri S, Haining J, Marsh G, Crameri G, Field H, Wang LF (2015) Isolation of multiple novel paramyxoviruses from pterodactyl bat urine. *J Gen Virol* 96:24–29
 12. Bejerman N, de Breuil S, Debat H, Miretti M, Badaracco A, Nome C (2017) Molecular characterization of yerba mate chlorosis-associated virus, a putative cytorhabdovirus infecting yerba mate (*Ilex paraguariensis*). *Arch Virol* 162:2481–2484
 13. Berge TO (1975) International Catalogue of Arboviruses Including Certain Other Viruses of Vertebrates. US Public Health Service publication no. (CDC) 75-8301, 2nd edn. Department of Health, Education and Welfare, Washington, DC
 14. Bhatt PN, Kulkarni KG, Boshell MJ, Rajagopalan PK, Patil AP, Goverdhan MK, Pavri KM (1966) Kaisodi virus, a new agent isolated from *Haemaphysalis spinigera* in Mysore State, South India. I. Isolation of strains. *Am J Trop Med Hyg* 15:958–960
 15. Bichaud L, Dachraoui K, Alwassouf S, Alkan C, Mensi M, Piorkowski G, Sakhria S, Seston M, Fares W, De Lamballerie X, Zhioua E, Charrel RN (2016) Isolation, full genomic characterization and neutralization-based human seroprevalence of Medjerda Valley virus, a novel sandfly-borne phlebovirus belonging to the Salehabad virus complex in northern Tunisia. *J Gen Virol* 97:602–610

16. Bishop DHL, Pringle CR (1995) Order *Mononegavirales*. In: Murphy FA, Fauquet CM, Bishop DHL, Ghabrial SA, Jarvis AW, Martelli GP, Mayo MA, Summers MD (eds) Virus taxonomy—sixth report of the international committee on taxonomy of viruses/archives of virology supplement 10. Springer, Vienna, pp 265–267
17. Bouquet J, Melgar M, Swei A, Delwart E, Lane RS, Chiu CY (2017) Metagenomic-based surveillance of Pacific Coast tick *Dermacentor occidentalis* identifies two novel bunyaviruses and an emerging human rickettsial pathogen. *Sci Rep* 7:12234
18. Buzkan N, Chiumenti M, Massart S, Sarpkaya K, Karadağ S, Minafra A (2019) A new emaravirus discovered in *Pistacia* from Turkey. *Virus Res* 263:159–163
19. Causey OR, Shope RE (1965) Icoaraci, a new virus related to Naples phlebotomus fever virus. *Proc Soc Exp Biol Med* 118:420–421
20. Charrel RN, Moureau G, Temmam S, Izri A, Marty P, Parola P, da Rosa AT, Tesh RB, de Lamballerie X (2009) Massilia virus, a novel *Phlebovirus* (*Bunyaviridae*) isolated from sandflies in the Mediterranean. *Vector Borne Zoonotic Dis* 9:519–530
21. Chen CC, Chiu RJ (1996) A tospovirus infecting peanut in Taiwan. *Acta Hort* 431:57–67
22. Cheng Y-H, Zheng Y-X, Tai C-H, Yen J-H, Chen Y-K, Jan F-J (2014) Identification, characterisation and detection of a new tospovirus on sweet pepper. *Ann Appl Biol* 164:107–115
23. Coffey LL, Page BL, Greninger AL, Herring BL, Russell RC, Doggett SL, Haniotis J, Wang C, Deng X, Delwart EL (2014) Enhanced arbovirus surveillance with deep sequencing: identification of novel rhabdoviruses and bunyaviruses in Australian mosquitoes. *Virology* 448:146–158
24. de Carvalho MS, de Lara Pinto AZ, Pinheiro A, Rodrigues JSV, Melo FL, da Silva LA, Ribeiro BM, Dezengrini-Slhessarenko R (2018) Viola phlebovirus is a novel Phlebotomus fever serogroup member identified in *Lutzomyia* (*Lutzomyia*) *longipalpis* from Brazilian Pantanal. *Parasit Vectors* 11:405
25. De Haas RA, Jonkers AH, Heinemann DW (1966) Kwatta virus, a new agent isolated from *Culex* mosquitoes in Surinam. *Am J Trop Med Hyg* 15:954–957
26. Debat HJ, Bejerman N (2019) Novel bird's-foot trefoil RNA viruses provide insights into a clade of legume-associated enomoviruses and rhabdoviruses. *Arch Virol* 164:1419–1426
27. Dilcher M, Alves MJ, Finkeisen D, Hufert F, Weidmann M (2012) Genetic characterization of Bhanja virus and Palma virus, two tick-borne phleboviruses. *Virus Genes* 45:311–315
28. Dilcher M, Faye O, Weber F, Koch A, Sadegh C, Weidmann M, Sall AA (2015) Zahedan rhabdovirus, a novel virus detected in ticks from Iran. *Virology* 448:146–158
29. Doherty RL, Carley JG, Standfast HA, Dyce AL, Kay BH, Snowdon WA (1973) Isolation of arboviruses from mosquitoes, biting midges, sandflies and vertebrates collected in Queensland, 1969 and 1970. *Trans R Soc Trop Med Hyg* 67:536–543
30. Dong J-H, Cheng X-F, Yin YY, Fang Q, Ding M, Li T-T, Zhang L-Z, Su X-X, McBeath J-H, Zhang Z-K (2008) Characterization of tomato zonate spot virus, a new tospovirus in China. *Arch Virol* 153:855–864
31. Dong JH, Yin YY, Fang Q, McBeath JH, Zhang ZK (2013) A new tospovirus causing chlorotic ringspot on *Hippeastrum* sp. in China. *Virus Genes* 46:567–570
32. Easton AJ, Pringle CR (2011) Order *Mononegavirales*. In: King AMQ, Adams MJ, Carstens EB, Lefkowitz EJ (eds) Virus taxonomy—ninth report of the international committee on taxonomy of viruses. Elsevier/Academic Press, London, pp 653–657
33. Fernandes J, Guterres A, de Oliveira RC, Chamberlain J, Lewandowski K, Teixeira BR, Coelho TA, Crisóstomo CF, Bonvicino CR, D'Andrea PS, Hewson R, de Lemos ERS (2018) Xapuri virus, a novel mammarenavirus: natural reassortment and increased diversity between New World viruses. *Emerg Microbes Infect* 7:120
34. Fernandes J, Guterres A, de Oliveira RC, Jardim R, Dávila AMR, Hewson R, de Lemos ERS (2019) Apore virus, a novel mammarenavirus (*Bunyavirales*: *Arenaviridae*) related to highly pathogenic virus from South America. *Mem Inst Oswaldo Cruz* 114:e180586
35. Forth LF, Konrath A, Klose K, Schlottau K, Hoffmann K, Ulrich RG, Höper D, Pohlmann A, Beer M (2018) A novel squirrel respirovirus with putative zoonotic potential. *Viruses* 10:373
36. Gaafar YZA, Richert-Pöggeler KR, Maaß C, Vetten H-J, Ziebell H (2019) Characterisation of a novel nucleorhabdovirus infecting alfalfa (*Medicago sativa*). *Virology* 523:16–25
37. Goldstein T, Anthony SJ, Gbakima A, Bird BH, Bangura J, Tremeau-Bravard A, Belaganahalli MN, Wells HL, Dhanota JK, Liang E, Grodus M, Jangra RK, DeJesus VA, Lasso G, Smith BR, Jambai A, Kamara BO, Kamara S, Bangura W, Monagin C, Shapira S, Johnson CK, Saylor K, Rubin EM, Chandran K, Lipkin WI, Mazet JAK (2018) The discovery of Bombali virus adds further support for bats as hosts of ebolaviruses. *Nat Microbiol* 3:1084–1089
38. Gubala A, Walsh S, McAllister J, Weir R, Davis S, Melville L, Mitchell I, Bulach D, Gauci P, Skvortsov A, Boyle D (2017) Identification of very small open reading frames in the genomes of Holmes Jungle virus, Ord River virus, and Wongabel virus of the genus *Hapavirus*, family *Rhabdoviridae*. *Evol Bioinform Online* 13:1176934317713484
39. Hang J, Klein TA, Kim H-C, Yang Y, Jima DD, Richardson JH, Jarman RG (2016) Genome sequences of five arboviruses in field-captured mosquitoes in a unique rural environment of South Korea. *Genome Announc* 4:e01644-15
40. Hannoun C, Corniou B, Rageau J (1970) Isolation in southern France and characterization of new tick-borne viruses related to Uukuniemi: Grand Arbaud and Ponteves. *Acta Virol* 14:167–170
41. Hassan M, Di Bello PL, Keller KE, Martin RR, Sabanadzovic S, Tzanetakis IE (2017) A new, widespread emaravirus discovered in blackberry. *Virus Res* 235:1–5
42. Hassani-Mehraban A, Botermans M, Verhoeven JJJ, Meekes E, Saaij J, Peters D, Goldbach R, Kormelink R (2010) A distinct tospovirus causing necrotic streak on *Alstroemeria* sp. in Colombia. *Arch Virol* 155:423–428
43. Hassani-Mehraban A, Dullemans AM, Verhoeven JJJ, Roenhorst JW, Peters D, van der Vlugt RAA, Kormelink R (2019) *Alstroemeria* yellow spot virus (AYSV): a new orthotospovirus species within a growing Eurasian clade. *Arch Virol* 164:117–126
44. Hepojoki J, Hepojoki S, Smura T, Szirovicza L, Dervas E, Prahauer B, Nufer L, Schraner EM, Vapalahti O, Kipar A, Hetzel U (2018) Characterization of Haartman Institute snake virus-1 (HISV-1) and HISV-like viruses - the representatives of genus *Hartmanivirus*, family *Arenaviridae*. *PLoS Pathog* 14:e1007415
45. Hu S-C, Hsu C-L, Lee M-S, Tu Y-C, Chang J-C, Wu C-H, Lee S-H, Ting L-J, Tsai K-R, Cheng M-C, Tu W-J, Hsu W-C (2018) Lyssavirus in Japanese pipistrelle, Taiwan. *Emerg Infect Dis* 24:782–785
46. Hughes HR, Russell BJ, Lambert AJ (2020) Genetic characterization of Frijoles and Chilibre species complex viruses (genus *Phlebovirus*; family *Phenuiviridae*) and three unclassified New World phleboviruses. *Am J Trop Med Hyg* 102:359–365
47. Ito T, Suzuki K, Nakano M (2013) Genetic characterization of novel putative rhabdovirus and dsRNA virus from Japanese persimmon. *J Gen Virol* 94:1917–1921
48. Jeong J, Kim Y, An I, Wang S-J, Kim Y, Lee H-J, Choi K-S, Im S-P, Min W, Oem J-K, Jheong W (2018) Complete genome sequence of a novel avian paramyxovirus isolated from wild birds in South Korea. *Arch Virol* 163:223–227

49. Johnson RI, Tachedjian M, Rowe B, Clayton BA, Layton R, Bergfeld J, Wang L-F, Marsh GA (2018) Alston virus, a novel paramyxovirus isolated from bats causes upper respiratory tract infection in experimentally challenged ferrets. *Viruses* 10:675
50. Jones S, McGavin W, MacFarlane S (2019) The complete sequences of two divergent variants of the rhabdovirus raspberry vein chlorosis virus and the design of improved primers for virus detection. *Virus Res* 265:162–165
51. Karabatsos N (1985) International catalogue of arboviruses including certain other viruses of vertebrates. American Society for Tropical Medicine and Hygiene, San Antonio
52. Kerschner JH, Calisher CH, Vorndam AV, Francly DB (1986) Identification and characterization of Bahia Grande, Reed Ranch and Muir Springs viruses, related members of the family Rhabdoviridae with widespread distribution in the United States. *J Gen Virol* 67:1081–1089
53. Kohl C, Tachedjian M, Todd S, Monaghan P, Boyd V, Marsh GA, Cramer G, Field H, Kurth A, Smith I, Wang L-F (2018) Hervey virus: a study on co-circulation with henipaviruses in pteropid bats within their distribution range from Australia to Africa. *PLoS One* 13:e0191933
54. Kokernot RH, Calisher CH, Stannard LJ, Hayes J (1969) Arbovirus studies in the Ohio-Mississippi Basin, 1964–1967. VII. Lone star virus, a hitherto unknown agent isolated from the tick *Amblyomma americanum* (Linn.). *Am J Trop Med Hyg* 18:789–795
55. Koonin EV, Dolja VV, Krupovic M, Arvind V, Wolf YI, Yutin N, Zerbini FM, Kuhn JH (2020) Global organization and proposed megataxonomy of the virus world. *Microbiol Mol Biol Rev* 84:e00061-19
56. Kuhn JH, Wolf YI, Krupovic M, Zhang Y-Z, Maes P, Dolja VV, Koonin EV (2019) Classify viruses—the gain is worth the pain. *Nature* 566:318–320
57. Lecoq H, Wipf-Scheibel C, Verdin E, Desbiez C (2019) Characterization of the first tenuivirus naturally infecting dicotyledonous plants. *Arch Virol* 164:297–301
58. Ledermann JP, Zeidner N, Borland EM, Mutebi J-P, Lanciotti RS, Miller BR, Lutwama JJ, Tendo JM, Andama V, Powers AM (2014) Sunguru virus: a novel virus in the family *Rhabdoviridae* isolated from a chicken in north-western Uganda. *J Gen Virol* 95:1436–1443
59. Li C-X, Shi M, Tian J-H, Lin X-D, Kang Y-J, Chen L-J, Qin X-C, Xu J, Holmes EC, Zhang Y-Z (2015) Unprecedented genomic diversity of RNA viruses in arthropods reveals the ancestry of negative-sense RNA viruses. *Elife* 4:e05378
60. Lin Y-H, Fujita M, Chiba S, Hyodo K, Andika IB, Suzuki N, Kondo H (2019) Two novel fungal negative-strand RNA viruses related to mymonaviruses and phenuiviruses in the shiitake mushroom (*Lentinula edodes*). *Virology* 533:125–136
61. Liu Y, Du Z, Wang H, Zhang S, Cao M, Wang X (2018) Identification and characterization of wheat yellow striate virus, a novel leafhopper-transmitted nucleorhabdovirus infecting wheat. *Front Microbiol* 9:468
62. Lvov DK, Timopheeva AA, Gromashevski VL, Gostinshchikova GV, Veselovskaya OV, Chervonski VI, Fomina KB, Gromov AI, Pogrebenko AG, Zhezmer VY (1973) “Zaliv Terpeniya” virus, a new Uukuniemi group arbovirus isolated from Ixodes (Ceratiixodes) putus Pick.-Camb. 1878 on Tyuleniy Island (Sakhalin region) and Commodore Islands (Kamchatsk region). *Arch Gesamte Virusforsch* 41:165–169
63. Lvov SD, Gromashevsky VL, Andreev VP, Skvortsova TM, Kondrashina NG, Morozova TN, Avershin AD, Aristova VA, Dmitriev GA, Kandaurov YK, Kuznetsov AA, Galkina IV, Yamnikova SS, Shchipanova MV (1990) Natural foci of arboviruses in far northern latitudes of Eurasia. In: Calisher CH (ed) Hemorrhagic fever with renal syndrome, tick- and mosquito-borne viruses. Springer, Vienna, pp 267–275
64. Maes P, Alkhovsky SV, Bào Y, Beer M, Birkhead M, Briese T, Buchmeier MJ, Calisher CH, Charrel RN, Choi IR, Clegg CS, Torre JC, Delwart E, DeRisi JL, Bello PLD, Serio FD, Digiario M, Dolja VV, Drosten C, Druciarek TZ, Du J, Ebihara H, Elbeaino T, Gergerich RC, Gillis AN, Gonzalez J-PJ, Haenni A-L, Hepojoki J, Hetzel U, Hò T, Hông N, Jain RK, Vuren Pjv, Jin Q, Jonson MG, Junglen S, Keller KE, Kemp A, Kipar A, Kondov NO, Koonin EV, Kormelink R, Korzyukov Y, Krupovic M, Lambert AJ, Laney AG, LeBreton M, Lukashevich IS, Marklewitz M, Markotter W, Martelli GP, Martin RR, Mielke-Ehret N, Mühlbach H-P, Navarro B, Ng TFF, Nunes MRT, Palacios G, Pawęska JT, Peters CJ, Plyusnin A, Radoshitzky SR, Romanowski V, Salmenperä P, Salvato MS, Sanfaçon H, Sasaya T, Schmaljohn C, Schneider BS, Shirako Y, Siddell S, Sironen TA, Stenglein MD, Storm N, Sudini H, Tesh RB, Tzanetakis IE, Uppala M, Vapalahti O, Vasilakis N, Walker PJ, Wáng G, Wáng L, Wáng Y, Wèi T, Wiley MR, Wolf YI, Wolfe ND, Wú Z, Xú W, Yang L, Yāng Z, Yeh S-D, Zhāng Y-Z, Zhèng Y, Zhou X, Zhū C, Zirkel F, Kuhn JH (2018) Taxonomy of the family Arenaviridae and the order Bunyavirales: update 2018. *Arch Virol* 163:2295–310
65. Maes P, Adkins S, Alkhovsky SV, Avšič-Županc T, Ballinger MJ, Bente DA, Beer M, Bergeron É, Blair CD, Briese T, Buchmeier MJ, Burt FJ, Calisher CH, Charrel RN, Choi IR, Clegg JCS, de la Torre JC, de Lamballerie X, DeRisi JL, Digiario M, Drobot M, Ebihara H, Elbeaino T, Ergünay K, Fulhorst CF, Garrison AR, Gào GF, Gonzalez J-PJ, Groschup MH, Günther S, Haenni A-L, Hall RA, Hewson R, Hughes HR, Jain RK, Jonson MG, Junglen S, Klempa B, Klingström J, Kormelink R, Lambert AJ, Langevin SA, Lukashevich IS, Marklewitz M, Martelli GP, Mielke-Ehret N, Mirazimi A, Mühlbach H-P, Naidu R, Nunes MRT, Palacios G, Papa A, Pawęska JT, Peters CJ, Plyusnin A, Radoshitzky SR, Resende RO, Romanowski V, Sall AA, Salvato MS, Sasaya T, Schmaljohn C, Shí X, Shirako Y, Simmonds P, Sironi M, Song J-W, Spengler JR, Stenglein MD, Tesh RB, Turina M, Wèi T, Whitfield AE, Yeh S-D, Zerbini FM, Zhang Y-Z, Zhou X, Kuhn JH (2019) Taxonomy of the order Bunyavirales: second update 2018. *Arch Virol* 164:927–41
66. Maes P, Amarasinghe GK, Ayllón MA, Basler CF, Bavari S, Blasdel KR, Briese T, Brown PA, Bukreyev A, Balkema-Buschmann A, Buchholz UJ, Chandran K, Crozier I, de Swart RL, Dietzgen RG, Dolnik O, Domier LL, Drexler JF, Dürrwald R, Dundon WG, Duprex WP, Dye JM, Easton AJ, Fooks AR, Formenty PBH, Fouchier RAM, Freitas-Astúa J, Ghedin E, Grifiths A, Hewson R, Horie M, Hurwitz JL, Hyndman TH, Jiāng D, Kobinger GP, Kondō H, Kurath G, Kuzmin IV, Lamb RA, Lee B, Leroy EM, Li J, Marzano S-YL, Mühlberger E, Netesov SV, Nowotny N, Palacios G, Pályi B, Pawęska JT, Payne SL, Rima BK, Rota P, Rubbenstroth D, Simmonds P, Smither SJ, Song Q, Song T, Spann K, Stenglein MD, Stone DM, Takada A, Tesh RB, Tomonaga K, Tordo N, Towner JS, van den Hoogen B, Vasilakis N, Wahl V, Walker PJ, Wang D, Wang L-F, Whitfield AE, Williams JV, Yè G, Zerbini FM, Zhang Y-Z, Kuhn JH (2019) Taxonomy of the order *Mononegavirales*: second update 2018. *Arch Virol* 164:1233–1244
67. Main AJ, Carey AB (1980) Connecticut virus: a new Sawgrass group virus from *Ixodes dentatus* (Acari: Ixodidae). *J Med Entomol* 17:473–476
68. Marklewitz M, Dutari LC, Paraskevopoulou S, Page RA, Loaiza JR, Junglen S (2019) Diverse novel phleboviruses in sandflies from the Panama Canal area, Central Panama. *J Gen Virol* 100:938–949
69. Matsuno K, Weisend C, Kajihara M, Matysiak C, Williamson BN, Simuunza M, Mweene AS, Takada A, Tesh RB, Ebihara H (2015) Comprehensive molecular detection of tick-borne phleboviruses leads to the retrospective identification of taxonomically

- unassigned bunyaviruses and the discovery of a novel member of the genus *Phlebovirus*. *J Virol* 89:594–604
70. Maurino F, Dumón AD, Llauger G, Alemandri V, de Haro LA, Mattio MF, Del Vas M, Laguna IG, MdIP Giménez Pecci (2018) Complete genome sequence of maize yellow striate virus, a new cytorhabdovirus infecting maize and wheat crops in Argentina. *Arch Virol* 163:291–295
 71. McAllister J, Gauci PJ, Mitchell IR, Boyle DB, Bulach DM, Weir RP, Melville LF, Davis SS, Gubala AJ (2014) Genomic characterisation of Almpiwar virus, Harrison Dam virus and Walkabout Creek virus; three novel rhabdoviruses from northern Australia. *Virol Rep* 3–4:1–17
 72. McLean DM, Larke RPB (1963) Powassan and Silverwater viruses: ecology of two Ontario arboviruses. *Can Med Assoc J* 88:182–185
 73. Medina-Salguero AX, Cornejo-Franco JF, Grinstead S, Mollov D, Mowery JD, Flores F, Quito-Avila DF (2019) Sequencing, genome analysis and prevalence of a cytorhabdovirus discovered in *Carica papaya*. *PLoS One* 14:e0215798
 74. Meng J, Liu P, Zhu L, Zou C, Li J, Chen B (2015) Complete genome sequence of mulberry vein banding associated virus, a new tospovirus infecting mulberry. *PLoS One* 10:e0136196
 75. Meng JR, Liu PP, Zou CW, Wang ZQ, Liao YM, Cai JH, Qin BX, Chen BS (2013) First report of a *Tospovirus* in mulberry. *Plant Dis* 97:1001
 76. Menzel W, Richert-Pöggeler KR, Winter S, Knierim D (2018) Characterization of a nucleorhabdovirus from *Physostegia*. *Acta Horti* 1193:29–38
 77. Muller MJ, Standfast HA (1986) Vectors of ephemeral fever group viruses. In: St George TD, Kay BH, Blok J (eds) Arbovirus research in Australia—proceedings of the fourth symposium. CSIRO/QMIR, Brisbane, pp 295–300
 78. Navarro B, Zicca S, Minutolo M, Saponari M, Alioto D, Di Serio F (2018) A negative-stranded RNA virus infecting citrus trees: the second member of a new genus within the order Bunyvirales. *Front Microbiol* 9:2340
 79. Noh JY, Jeong DG, Yoon S-W, Kim JH, Choi YG, Kang S-Y, Kim HK (2018) Isolation and characterization of novel bat paramyxovirus B16-40 potentially belonging to the proposed genus *Shaanvirus*. *Sci Rep* 8:12533
 80. Nunes-Neto JP, Souza WM, Acrani GO, Romeiro MF, Fumagalli M, Vieira LC, Medeiros DBdA, Lima JA, de Lima CPS, Cardoso JF, Figueiredo LTM, da Silva SPD, Tesh R, Nunes MRT, Vasconcelos PFdC (2017) Characterization of the Bujaru, frijoles and Tapara antigenic complexes into the sandfly fever group and two unclassified phleboviruses from Brazil. *J Gen Virol* 98:585–594
 81. Økland AL, Nylund A, Øvergård A-C, Skoge RH, Kongshaug H (2019) Genomic characterization, phylogenetic position and *in situ* localization of a novel putative mononegavirus in *Lepeophtheirus salmonis*. *Arch Virol* 164:675–689
 82. Palacios G, da Rosa AT, Savji N, Sze W, Wick I, Guzman H, Hutchison S, Tesh R, Lipkin WI (2011) *Aguacate virus*, a new antigenic complex of the genus *Phlebovirus* (family *Bunyaviridae*). *J Gen Virol* 92:1445–1453
 83. Palacios G, Tesh R, Travassos da Rosa A, Savji N, Sze W, Jain K, Serge R, Guzman H, Guevara C, Nunes MR, Nunes-Neto JP, Kochel T, Hutchison S, Vasconcelos PFC, Lipkin WI (2011) Characterization of the Candiru antigenic complex (*Bunyaviridae*: *Phlebovirus*), a highly diverse and reassorting group of viruses affecting humans in tropical America. *J Virol* 85:3811–3820
 84. Palacios G, Savji N, Travassos da Rosa A, Desai A, Sanchez-Seco MP, Guzman H, Lipkin WI, Tesh R (2013) Characterization of the Salehabad virus species complex of the genus *Phlebovirus* (*Bunyaviridae*). *J Gen Virol* 94:837–842
 85. Palacios G, Savji N, Travassos da Rosa A, Guzman H, Yu X, Desai A, Rosen GE, Hutchison S, Lipkin WI, Tesh R (2013) Characterization of the Uukuniemi virus group (*Phlebovirus*: *Bunyaviridae*): evidence for seven distinct species. *J Virol* 87:3187–3195
 86. Palacios G, Tesh RB, Savji N, Travassos da Rosa APA, Guzman H, Bussetti AV, Desai A, Ladner J, Sanchez-Seco M, Lipkin WI (2014) Characterization of the Sandfly fever Naples species complex and description of a new Karimabad species complex (genus *Phlebovirus*, family *Bunyaviridae*). *J Gen Virol* 95:292–300
 87. Palacios G, Wiley MR, Travassos da Rosa APA, Guzman H, Quiroz E, Savji N, Carrera J-P, Bussetti AV, Ladner JT, Lipkin WI, Tesh RB (2015) Characterization of the Punta Toro species complex (genus *Phlebovirus*, family *Bunyaviridae*). *J Gen Virol* 96:2079–2085
 88. Pavri KM, Casals J (1966) Kaisodi virus, a new agent isolated from *Haemaphysalis spinigera* in Mysore state, South India. *Am J Trop Med Hyg* 15:961–963
 89. Pecman A, Kutnjak D, Gutiérrez-Aguirre I, Adams I, Fox A, Boonham N, Ravnkar M (2017) Next generation sequencing for detection and discovery of plant viruses and viroids: comparison of two approaches. *Front Microbiol* 8:1998
 90. Peralta PH, Shelokov A, Brody JA (1965) Chagres virus: a new human isolate from Panama. *Am J Trop Med Hyg* 14:146–151
 91. Pettersson JH-O, Shi M, Bohlin J, Eldholm V, Brynildsrud OB, Paulsen KM, Andreassen Å, Holmes EC (2017) Characterizing the virome of *Ixodes ricinus* ticks from northern Europe. *Sci Rep* 7:10870
 92. Pringle CR, Alexander DJ, Billeter MA, Collins PL, Kingsbury DW, Lipkind MA, Nagai Y, Orvell C, Rima B, Rott R, ter Meulen V (1991) The order *Mononegavirales*. *Arch Virol* 117:137–140
 93. Pringle CR (1997) The order *Mononegavirales*—current status. *Arch Virol* 142:2321–2326
 94. Pringle CR (2000) Order *Mononegavirales*. In: van Regenmortel MHV, Fauquet CM, Bishop DHL, Carstens EB, Estes MK, Lemon SM, Maniloff J, Mayo MA, McGeoch DJ, Pringle CR, Wickner RB (eds) *Virus taxonomy—seventh report of the international committee on taxonomy of viruses*. Academic Press, San Diego, pp 525–530
 95. Pringle CR (2005) Order *Mononegavirales*. In: Fauquet CM, Mayo MA, Maniloff J, Desselberger U, Ball LA (eds) *Virus taxonomy—eighth report of the international committee on taxonomy of viruses*. Elsevier/Academic Press, San Diego, pp 609–614
 96. Quan P-L, Williams DT, Johansen CA, Jain K, Petrosov A, Diviney SM, Tashmukhamedova A, Hutchison SK, Tesh RB, Mackenzie JS, Briese T, Lipkin WI (2011) Genetic characterization of K13965, a strain of Oak Vale virus from Western Australia. *Virus Res* 160:206–213
 97. Read DA, Featherston J, Rees DJG, Thompson GD, Roberts R, Flett BC, Mashingaidze K, Pietersen G, Kiula B, Kullaya A, Mbega ER (2019) Molecular characterization of Morogoro maize-associated virus, a nucleorhabdovirus detected in maize (*Zea mays*) in Tanzania. *Arch Virol* 164:1711–1715
 98. Reuter G, Boros A, Pál J, Kapusinszky B, Delwart E, Pankovics P (2016) Detection and genome analysis of a novel (dima)rhabdovirus (Riverside virus) from *Ochlerotatus* sp. mosquitoes in Central Europe. *Infect Genet Evol* 39:336–341
 99. Ritter DG, Calisher CH, Muth DJ, Shope RE, Murphy FA, Whitfield SG (1978) New Minto virus: a new rhabdovirus from ticks in Alaska. *Can J Microbiol* 24:422–426
 100. Rott ME, Kesanakurti P, Berwarth C, Rast H, Boyes I, Phelan J, Jelkmann W (2018) Discovery of negative-sense RNA viruses in trees infected with apple rubbery wood disease by next-generation sequencing. *Plant Dis* 102:1254–1263

101. Sabin AB (1951) Experimental studies on *Phlebotomus* (papatangi, sandfly) fever during World War II. *Arch Gesamte Virusforsch* 4:367–410
102. Sather GE, Lewis AL, Jennings W, Bond JO, Hammon WM (1970) Sawgrass virus: a newly described arbovirus in Florida. *Am J Trop Med Hyg* 19:319–326
103. Scarpassa VM, Debat HJ, Alencar RB, Saraiva JF, Calvo E, Arcà B, Ribeiro JMC (2019) An insight into the sialotranscriptome and virome of Amazonian anophelines. *BMC Genom* 20:166
104. Shah KV, Work TH (1969) Bhanja virus: a new arbovirus from ticks *Haemaphysalis intermedia* Warburton and Nuttall, 1909, in Orissa, India. *Indian J Med Res* 57:793–798
105. Shahhosseini N, Lühken R, Jöst H, Jansen S, Börstler J, Rieger T, Krüger A, Yadouleton A, de Mendonça Campos R, Cirne-Santos CC, Ferreira DF, Garms R, Becker N, Tannich E, Cadar D, Schmidt-Chanasit J (2017) Detection and characterization of a novel rhabdovirus in *Aedes cantans* mosquitoes and evidence for a mosquito-associated new genus in the family *Rhabdoviridae*. *Infect Genet Evol* 55:260–268
106. Shi M, Lin XD, Tian JH, Chen LJ, Chen X, Li CX, Qin XC, Li J, Cao JP, Eden JS, Buchmann J, Wang W, Xu J, Holmes EC, Zhang YZ (2016) Redefining the invertebrate RNA virosphere. *Nature* 540:539–543
107. Shi M, Neville P, Nicholson J, Eden J-S, Imrie A, Holmes EC (2017) High-resolution metatranscriptomics reveals the ecological dynamics of mosquito-associated RNA viruses in western Australia. *J Virol* 91:e00680-17
108. Shi M, Lin X-D, Chen X, Tian J-H, Chen L-J, Li K, Wang W, Eden J-S, Shen J-J, Liu L, Holmes EC, Zhang Y-Z (2018) The evolutionary history of vertebrate RNA viruses. *Nature* 556:197–202
109. Siddell SG, Walker PJ, Lefkowitz EJ, Mushegian AR, Adams MJ, Dutilh BE, Gorbalenya AE, Bz Harrach, Harrison RL, Junglen S, Knowles NJ, Kropinski AM, Krupovic M, Kuhn JH, Nibert M, Rubino L, Sabanadzovic S, Sanfaçon H, Simmonds P, Varsani A, Zerbini FM, Davison AJ (2019) Additional changes to taxonomy ratified in a special vote by the International Committee on Taxonomy of Viruses (October 2018). *Arch Virol* 164:943–946
110. Spence L, Anderson CR, Aitken THG, Downs WG (1966) Aruac virus, a new agent isolated from Trinidadian mosquitoes. *Am J Trop Med Hyg* 15:231–234
111. St George TD, Doherty RL, Carley JG, Filippich C, Brescia A, Casals J, Kemp DH, Brothers N (1985) The isolation of arboviruses including a new flavivirus and a new bunyavirus from *Ixodes* (*Ceratixodes*) uriae (Ixodoidea: Ixodidae) collected at Macquarie Island, Australia, 1975–1979. *Am J Trop Med Hyg* 34:406–412
112. Straková P, Dufkova L, Širmarová J, Salát J, Bartonička T, Klempa B, Pfaff F, Höper D, Hoffmann B, Ulrich RG, Růžek D (2017) Novel hantavirus identified in European bat species *Nyctalus noctula*. *Infect Genet Evol* 48:127–130
113. Sun Q, Zhao Q, An X, Guo X, Zuo S, Zhang X, Pei G, Liu W, Cheng S, Wang Y, Shu P, Mi Z, Huang Y, Zhang Z, Tong Y, Zhou H, Zhang J (2017) Complete genome sequence of Menghai rhabdovirus, a novel mosquito-borne rhabdovirus from China. *Arch Virol* 162:1103–1106
114. Swei A, Russell BJ, Naccache SN, Kabre B, Veeraraghavan N, Pilgard MA, Johnson BJB, Chiu CY (2013) The genome sequence of lone star virus, a highly divergent bunyavirus found in the *Amblyomma americanum* tick. *PLoS One* 8:e62083
115. Tchouassi DP, Marklewitz M, Chepkorir E, Zirkel F, Agha SB, Tigoi CC, Koskei E, Drosten C, Borgemeister C, Torto B, Junglen S, Sang R (2019) Sand fly-associated phlebovirus with evidence of neutralizing antibodies in humans, Kenya. *Emerg Infect Dis* 25:681–690
116. Tesh RB, Chaniotis BN, Peralta PH, Johnson KM (1974) Ecology of viruses isolated from Panamanian phlebotomine sandflies. *Am J Trop Med Hyg* 23:258–269
117. Tesh RB (1975) Multiplication of *Phlebotomus* fever group arboviruses in mosquitos after intrathoracic inoculation. *J Med Entomol* 12:1–4
118. Tesh RB, Boshell J, Young DG, Morales A, De Carrasquilla CF, Corredor A, Modi GB, Travassos Da Rosa APA, McLean RG, De Rodriguez C, Gaitan MO (1989) Characterization of 5 new phleboviruses recently isolated from sand flies in tropical America. *Am J Trop Med Hyg* 40:529–533
119. Tokarz R, Sameroff S, Leon MS, Jain K, Lipkin WI (2014) Genome characterization of Long Island tick rhabdovirus, a new virus identified in *Amblyomma americanum* ticks. *Virol J* 11:26
120. Tokarz R, Williams SH, Sameroff S, Sanchez Leon M, Jain K, Lipkin WI (2014) Virome analysis of *Amblyomma americanum*, *Dermacentor variabilis*, and *Ixodes scapularis* ticks reveals novel highly divergent vertebrate and invertebrate viruses. *J Virol* 88:11480–11492
121. Trapp EE, Paes de Andrade AH, Shope RE (1965) Itaporanga, a newly recognized arbovirus from Sao Paulo State, Brazil. *Proc Soc Exp Biol Med* 118:421–422
122. Travassos da Rosa APA, Tesh RB, Pinheiro FP, Travassos da Rosa JFS, Peterson NE (1983) Characterization of eight new phlebotomus fever serogroup arboviruses (Bunyaviridae: *Phlebovirus*) from the Amazon region of Brazil. *Am J Trop Med Hyg* 32:1164–1171
123. Vasilakis N, Tesh RB, Widen SG, Mirchandani D, Walker PJ (2019) Genomic characterisation of Cuiaba and Charleville viruses: arboviruses (family *Rhabdoviridae*, genus *Sripivirus*) infecting reptiles and amphibians. *Virus Genes* 55:87–94
124. Velasco L, Arjona-Girona I, Cretazzo E, López-Herrera C (2019) Viromes in Xylariaceae fungi infecting avocado in Spain. *Virology* 532:11–21
125. Verani P, Ciufolini MG, Nicoletti L, Balducci M, Sabatinelli G, Coluzzi M, Paci P, Amaducci L (1982) Studi ecologici ed epidemiologici del virus Toscana, un arbovirus isolato da flebotomi. *Ann Ist Super Sanita* 18:397–9
126. Walker PJ, Firth C, Widen SG, Blasdel KR, Guzman H, Wood TG, Paradkar PN, Holmes EC, Tesh RB, Vasilakis N (2015) Evolution of genome size and complexity in the *Rhabdoviridae*. *PLoS Pathog* 11:e1004664
127. Walker PJ, Siddell SG, Lefkowitz EJ, Mushegian AR, Dempsey DM, Dutilh BE, Harrach B, Harrison RL, Hendrickson RC, Junglen S, Knowles NJ, Kropinski AM, Krupovic M, Kuhn JH, Nibert M, Rubino L, Sabanadzovic S, Simmonds P (2019) Changes to virus taxonomy and the International Code of Virus Classification and Nomenclature ratified by the International Committee on Taxonomy of Viruses (2019). *Arch Virol* 164:2417–2429
128. Walker PJ, Siddell SG, Lefkowitz EJ, Mushegian AR, Adrienssens E, Dempsey DM, Dutilh BE, Harrach Bz, Harrison RL, Hendrickson RC, Junglen S, Knowles NJ, Kropinski AM, Krupovic M, Kuhn JH, Nibert M, Rubino L, Sabanadzovic S, Simmonds P, Varsani A, Zerbini FM, Davison AJ (2020) Changes to virus taxonomy and the Statutes ratified by the International Committee on Taxonomy of Viruses (2020). *Arch Virol* 164:617–620
129. Wang H, Liu Y, Liu W, Cao M, Wang X (2019) Sequence analysis and genomic organization of a novel chuvirus, Tàiyuán leafhopper virus. *Arch Virol* 164:617–620
130. Wang J, Selleck P, Yu M, Ha W, Rootes C, Gales R, Wise T, Crameri S, Chen H, Broz I, Hyatt A, Woods R, Meehan B, McCullough S, Wang L-F (2014) Novel phlebovirus with zoonotic potential isolated from ticks, Australia. *Emerg Infect Dis* 20:1040–1043

131. Wang Y, Hua W, Wang J, Hannoufa A, Xu Z, Wang Z (2013) Deep sequencing of *Lotus corniculatus* L. reveals key enzymes and potential transcription factors related to the flavonoid biosynthesis pathway. *Mol Genet Genom* 288:131–139
132. Wanzeller ALM, Martins LC, Diniz Júnior JAP, de Almeida Medeiros DB, Cardoso JF, da Silva DEA, de Oliveira LF, de Vasconcelos JM, Nunes MRT, da S. G. Vianez Júnior JL, Vasconcelos PFC (2014) Xiburema virus, a hitherto undescribed virus within the family *Rhabdoviridae* isolated in the Brazilian Amazon Region. *Genome Announc* 2:e00454-14
133. Willie K, Stewart LR (2017) Complete genome sequence of a new maize-associated cytorhabdovirus. *Genome Announc* 5:e00591-17
134. Winter S, Koerbler M, Shahraeen N, Katul L, Lesemann D-E (2003) Characterization of a new tospovirus species infecting tomato in Iran. *J Plant Dis Prot* 110:74
135. Winton JR, Batts WN, Powers RL, Purcell MK (2019) Complete genome sequences of the index isolates of two genotypes of Pacific salmon paramyxovirus. *Microbiol Resour Announc* 8:e01521-18
136. Wolf YI, Kazlauskas D, Iranzo J, Lucía-Sanz A, Kuhn JH, Krupovic M, Dolja VV, Koonin EV (2018) Origins and evolution of the global RNA virome. *MBio* 9:e02329-18
137. Woyessa AB, Omballa V, Wang D, Lambert A, Waiboci L, Ayele W, Ahmed A, Abera NA, Cao S, Ochieng M, Montgomery JM, Jima D, Fields B (2014) An outbreak of acute febrile illness caused by sandfly fever Sicilian virus in the Afar Region of Ethiopia, 2011. *Am J Trop Med Hyg* 91:1250–1253
138. Wu L-P, Yang T, Liu H-W, Postman J, Li R (2018) Molecular characterization of a novel rhabdovirus infecting blackcurrant identified by high-throughput sequencing. *Arch Virol* 163:1363–1366
139. Wu Z, Du J, Lu L, Yang L, Dong J, Sun L, Zhu Y, Liu Q, Jin Q (2018) Detection of Hantaviruses and Arenaviruses [sic] in three-toed jerboas from the Inner Mongolia Autonomous Region, China. *Emerg Microbes Infect* 7:35
140. Wu Z, Lu L, Du J, Yang L, Ren X, Liu B, Jiang J, Yang J, Dong J, Sun L, Zhu Y, Li Y, Zheng D, Zhang C, Su H, Zheng Y, Zhou H, Zhu G, Li H, Chmura A, Yang F, Daszak P, Wang J, Liu Q, Jin Q (2018) Comparative analysis of rodent and small mammal viromes to better understand the wildlife origin of emerging infectious diseases. *Microbiome* 6:178
141. Xu C, Sun X, Taylor A, Jiao C, Xu Y, Cai X, Wang X, Ge C, Pan G, Wang Q, Fei Z, Wang Q (2017) Diversity, distribution, and evolution of tomato viruses in China uncovered by small RNA sequencing. *J Virol* 91:e00173-17
142. Xu FL, Liu DY, Nunes MRT, Da Rosa A, Tesh RB, Xiao SY (2007) Antigenic and genetic relationships among Rift Valley fever virus and other selected members of the genus *Phlebovirus* (*Bunyaviridae*). *Am J Trop Med Hyg* 76:1194–1200
143. Xu Y, Lou S-G, Li XL, Zheng Y-X, Wang W-C, Liu Y-T (2013) The complete S RNA and M RNA nucleotide sequences of a hippastrum chlorotic ringspot virus (HCRV) isolate from *Hymenocallis littoralis* (Jacq.) Salisb in China. *Arch Virol* 158:2597–2601
144. Yadav PD, Nyayanit DA, Shete AM, Jain S, Majumdar TP, Chaubal GY, Shil P, Kore PM, Mourya DT (2019) Complete genome sequencing of Kaisodi virus isolated from ticks in India belonging to *Phlebovirus* genus, family *Phenuiviridae*. *Ticks Tick Borne Dis* 10:23–33
145. Yang X-L, Zhang Y-Z, Jiang R-D, Guo H, Zhang W, Li B, Wang N, Wang L, Waruhiu C, Zhou J-H, Li S-Y, Daszak P, Wang L-F, Shi Z-L (2017) Genetically diverse filoviruses in *Rousettus* and *Eonycteris* spp. bats, China, 2009 and 2015. *Emerg Infect Dis* 23:482–486
146. Yang X-L, Tan CW, Anderson DE, Jiang R-D, Li B, Zhang W, Zhu Y, Lim XF, Zhou P, Liu X-L, Guan W, Zhang L, Li S-Y, Zhang Y-Z, Wang L-F, Shi Z-L (2019) Characterization of a filovirus (Měnglà virus) from *Rousettus* bats in China. *Nat Microbiol* 4:390–395
147. Yang X, Huang J, Liu C, Chen B, Zhang T, Zhou G (2016) Rice stripe mosaic virus, a novel cytorhabdovirus infecting rice via leafhopper transmission. *Front Microbiol* 7:2140
148. Zhao G, Krishnamurthy S, Cai Z, Popov VL, Travassos da Rosa AP, Guzman H, Cao S, Virgin HW, Tesh RB, Wang D (2013) Identification of novel viruses using VirusHunter - an automated data analysis pipeline. *PLoS One* 8:e78470
149. Бутенко АМ, Громашевский ВЛ, Львов ДК, Попов ВФ (1979) Вирус Кисемайо—представитель антигенной группы Бханджа. *Вопр Вирусол*:661–5
150. Львов ДК, Альховский СВ, Щелканов МЮ, Щетинин АМ, Дерябин ПГ, Аристова ВА, Гительман АК, Самохвалов ЕИ, Ботиков АГ (2014) Генетическая характеристика вирусов Сахалин (SAKV - Sakhalin virus), Парамушир (PMRV - Paramushir virus) (*Bunyaviridae*, *Nairovirus*, группа Сахалин) и Рукутама (RUKV - Rukutama virus) (*Bunyaviridae*, *Phlebovirus*, группа Укуниими), изолированных от облигатных паразитов колониальных морских птиц - клещей *Ixodes* (*Ceratixodes*) *uriae*, White 1852 и *I. signatus* Birulya, 1895 в бассейнах Охотского и Берингова морей. *Вопр Вирусол* 59:11–17
151. Львов ДК, Альховский СВ, Щелканов МЮ, Щетинин АМ, Дерябин ПГ, Гительман АК, Самохвалов ЕИ, Ботиков АГ (2014) Генетическая характеристика штаммов вируса Залив Терпения (ZTV - Zaliv Terpeniya virus) (*Bunyaviridae*, *Phlebovirus*, антигенный комплекс Укуниими), изолированного в высоких широтах Северной Евразии из облигатных эктопаразитов чистиковых птиц (*Alcidae* Leach, 1820)—клещей *Ixodes* (*Ceratixodes*) *uriae* White, 1852 и от комаров *Culex modestus* Ficalbi, 1889 в субтропиках Закавказья. *Вопр Вирусол* 59:12–18

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