

**Part 1:** **TITLE, AUTHORS, APPROVALS, etc**

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| **Code assigned:** | **2020.015D** |  |
| **Short title:** Create 17 genera and new 80 species (*Anelloviridae*) | | |
|  | | |

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**List the ICTV Study Group(s) that have seen this proposal**

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| *Anelloviridae* SG |

**ICTV study group comments and response of proposer**

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**Authority to use the name of a living person**

|  |  |  |
| --- | --- | --- |
| **Taxon name** | **Person from whom the name is derived** | **Permission attached (Y/N)** |
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**Submission dates**

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| --- | --- |
| Date first submitted to SC Chair | August 4, 2020 |
| Date of this revision (if different to above) | August 27, 2020 |

**ICTV-EC comments and response of the proposer**

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**Part 3:** **TAXONOMIC PROPOSAL**

**Name of accompanying Excel module**

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| 2020.015D.R.Anelloviridae\_17ngen\_80nsp.xlsx |

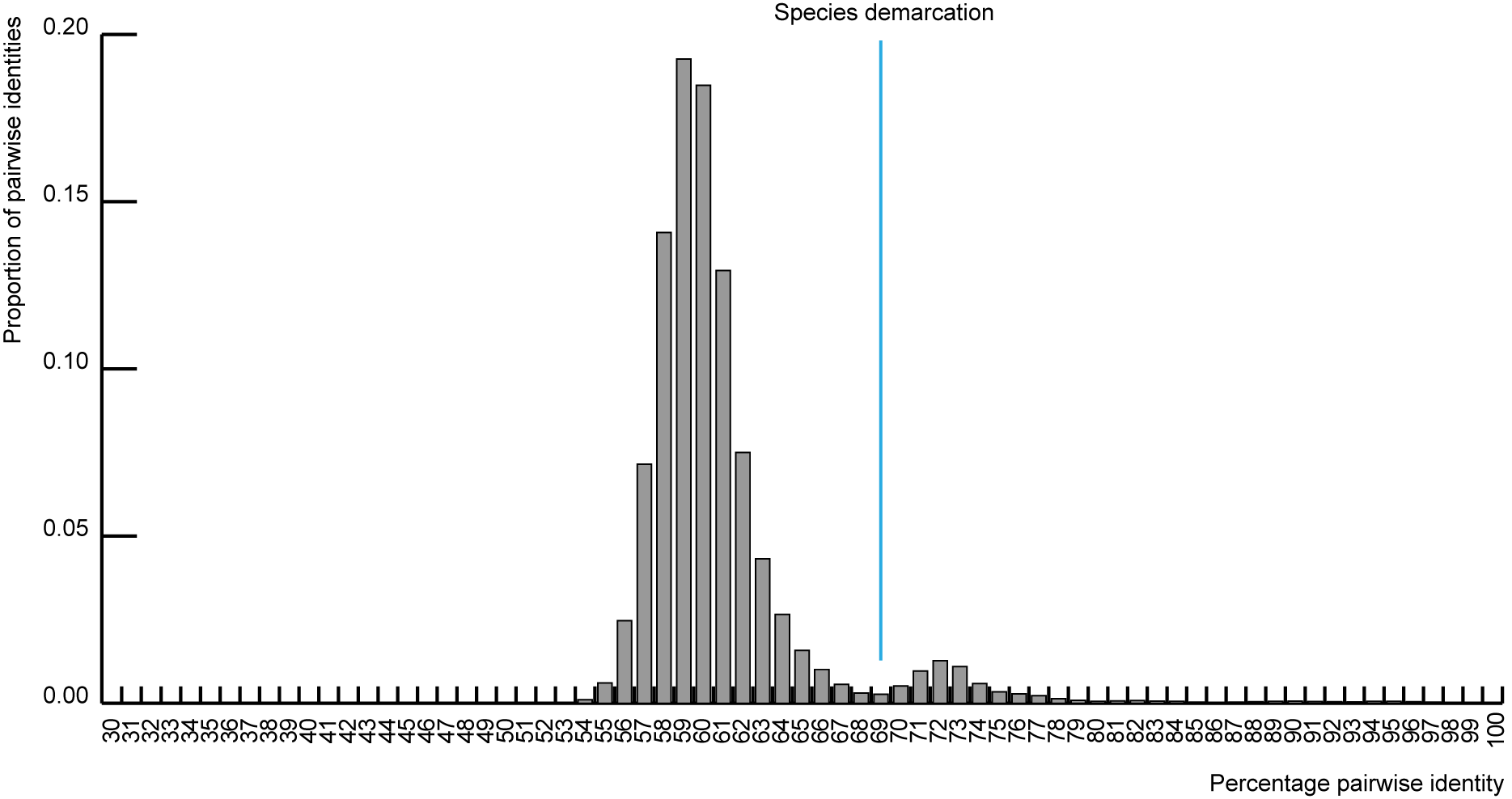
**Abstract**

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| The family *Anelloviridae* currently comprises 14 genera. In the last five years a large number of diverse anelloviruses have been identified in various organisms. Here we undertake a global analysis of anelloviruses whose full genome sequences have been determined. Viruses that belong to the genus *Gyrovirus* are described in a separate proposal. Based on our analyses we propose to establish 17 new genera and 80 new species to accommodate the unclassified anelloviruses. We also note that based on the species demarcation criteria, some previously assigned species merge into other existing species (n=10). |

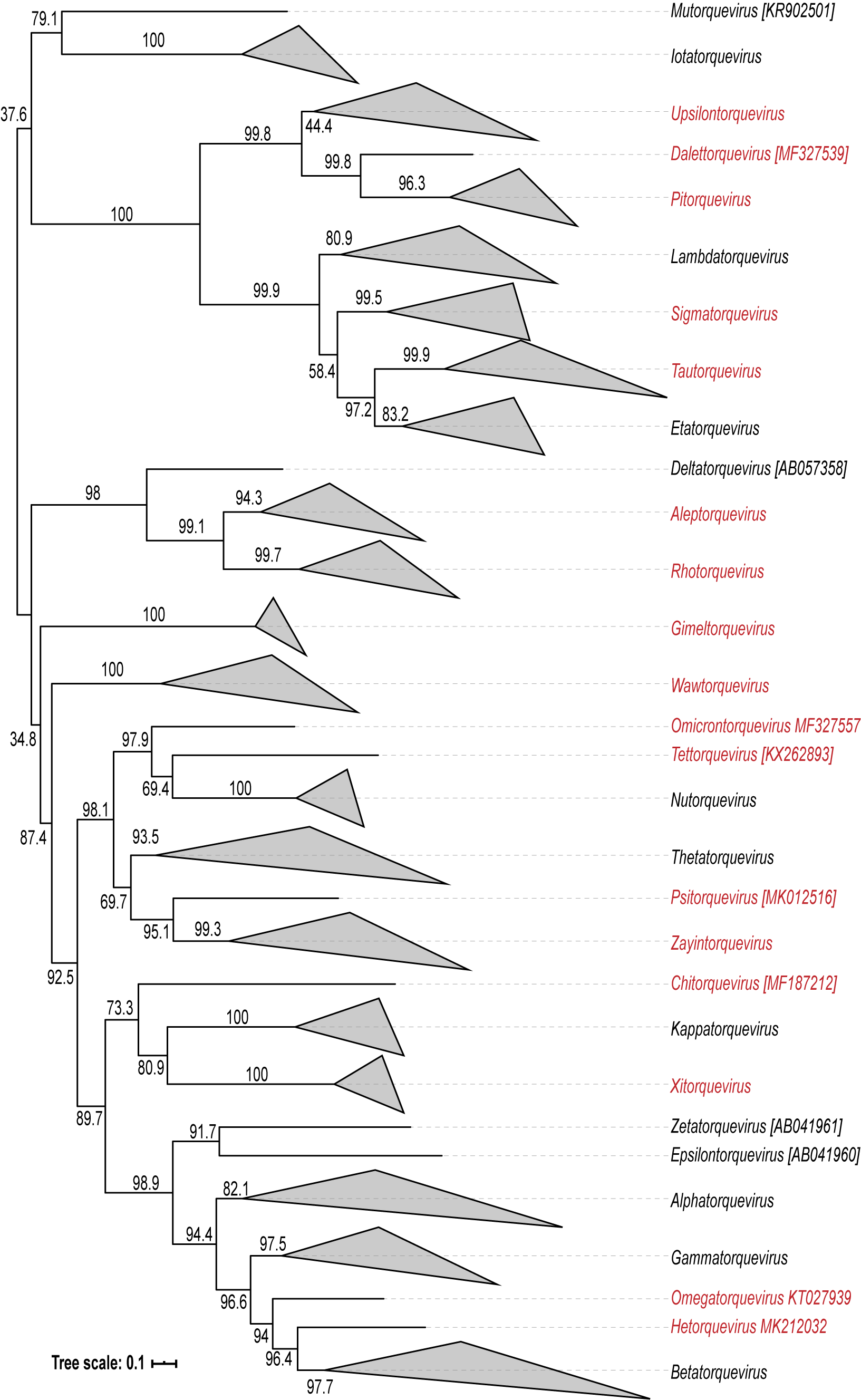
**Text of proposal**

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| |  | | --- | | Anelloviruses are circular negative sense single stranded DNA viruses. They have genomes ranging from 1.6 to 3.9 kb. Gyroviruses posses at least 3 large open reading frames whereas the rest of the anelloviruses have one large and 2-3 smaller open reading frames.  The family *Anelloviridae* is currently composed of the following 14 genera:   1. *Alphatorquevirus* 2. *Betatorquevirus* 3. *Deltatorquevirus* 4. *Epsilontorquevirus* 5. *Etatorquevirus* 6. *Gammatorquevirus* 7. *Iotatorquevirus* 8. *Kappatorquevirus* 9. *Lambdatorquevirus* 10. *Mutorquevirus* 11. *Nutorquevirus* 12. *Thetatorquevirus* 13. *Zetatorquevirus* 14. *Gyrovirus*   With the exception of viruses in the genus *Gyrovirus*, all anelloviruses have previously been classified based on the global alignment derived pairwise identities of the ORF1 coding nucleotide sequence. A 65% threshold was established for species and 44% for genera [1, 2]. Global alignment derived pairwise identities can result in deflation of the sequence identities due to fixed gaps from the global alignment. This becomes problematic and thus here the pairwise sequence identities are calculated using SDT v1.2 [7].  We analysed the ORF1 sequences from all the anellovirus complete genomes (n=749) available in GenBank. We determined the pairwise identities of all the ORF1 nucleotide sequences using SDT v1.2 [7]. The plot of the distribution of the pairwise identities (Figure 1) reveals a trough at ~69%.  Using 69% as a species demarcation threshold, of the 75 currently established species, viruses in only 10 species did not fit this criterion and thus these are proposed to be abolished and their members reassigned to already established species (see table 1 for the species to abolish and the reassignment of their members).  To refine genus demarcation, since the pairwise identity plot does not give a clear demarcation threshold, we opted for a phylogeny-based approach using the ORF1 amino acid sequences. The ORF1 amino acid sequences were aligned using MAFFT [4]. The alignment was trimmed with TrimAL [3] using the gappyout option and the alignment was used to infer a maximum likelihood tree with IQTree [6] with LG+F+G4 substitution model. The TrimAL alignment contained 361 amino acid sites in the final alignment. The resulting maximum likelihood phylogenetic tree was midpoint rooted and edited in iTOL v4 [5]. Based on the phylogeny, and considering the currently established genera, we identified 17 new genera (Figure 2).   1. *Chitorquevirus* 2. *Omegatorquevirus* 3. *Omicrontorquevirus* 4. *Pitorquevirus* 5. *Psitorquevirus* 6. *Rhotorquevirus* 7. *Sigmatorquevirus* 8. *Tautorquevirus* 9. *Upsilontorquevirus* 10. *Xitorquevirus* 11. *Aleptorquevirus* 12. *Dalettorquevirus* 13. *Gimeltorquevirus* 14. *Hetorquevirus* 15. *Tettorquevirus* 16. *Wawtorquevirus* 17. *Zayintorquevirus*   We used the Greek alphabet for the naming of the new genera (with the exception of not using Phi; genera names 1-10 above). In the spirit of using ancient alphabets, we adopt the Phoenician alphabet for an additional 6 new genera (genera names 11-16 above) in series without using ‘bet’ (to avoid spellings and typo errors with Beta). For future, the following can be used from the Phoenician alphabet for new genera names with minimal conflict with current names.   1. yod 2. lamed 3. mem 4. samek 5. ayin 6. pe 7. sade 8. qop 9. res 10. sin 11. taw   Based on the existing and new genera coupled with the ORF1 nucleotide pairwise identity threshold, we establish 80 new species (see table 2 for details).  We confirm the 69% species demarcation threshold by a colour coded pairwise identity matrix using a representative species ORF1 sequence (Figure 3). | |

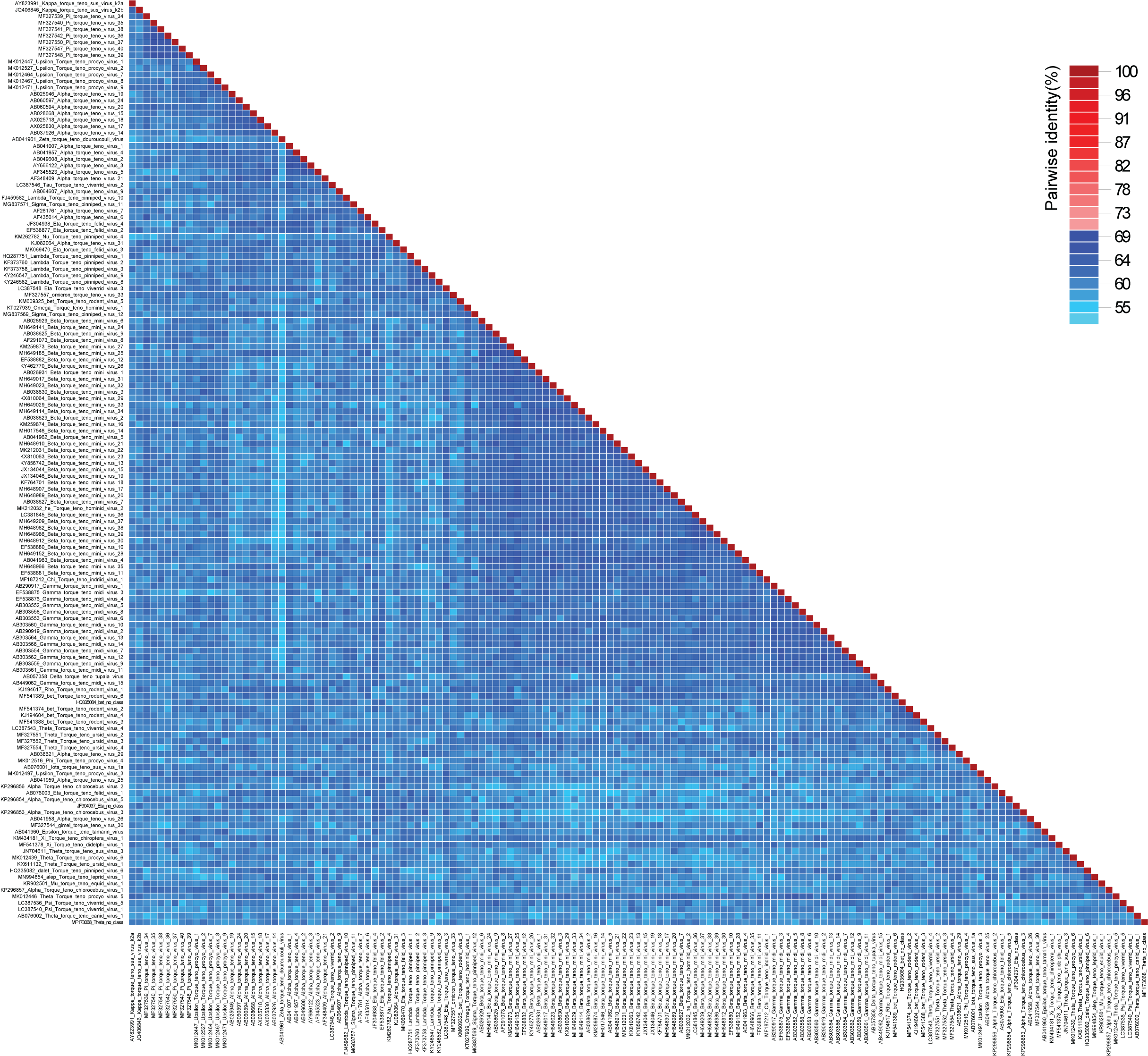
**Supporting evidence**

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**Figure 1:** Distribution of pairwise identities of the ORF1 nucleotide sequences of anellovirus genomes available in GenBank (n=749).

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**Figure 2:** Maximum likelihood phylogenetic tree of the ORF1 amino acid sequences of anelloviruses (derived from complete genomes available in GenBank). The sequences of gyroviruses are not included as their VP1 is not homologous to the ORF1.Numbers at the nodes represent percentage bootstrap support values.

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**Figure 3:** Pairwise identity matrix of the ORF1 nucleotide sequences of a representative member from each species of anellovirus (excluding gyroviruses) determined using SDT v1.2 [7].

**Table 1:** Summary of changes to currently existing species. Taxa to be abolished are highlighted in purple font and those that need to be renamed in blue font

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Genus*** | ***Current species*** | **Virus** | **Accession**  **#** | **Changes** |
| *Alphatorquevirus* | *Torque teno virus 1* | torque teno virus 1 | AB041007 |  |
|  | *Torque teno virus 2* | torque teno virus 2 | AB049608 |  |
|  | *Torque teno virus 3* | torque teno virus 3 | AY666122 |  |
|  | *Torque teno virus 4* | torque teno virus 4 | AB041957 |  |
|  | *Torque teno virus 5* | torque teno virus 5 | AF345523 |  |
|  | *Torque teno virus 6* | torque teno virus 6 | AF435014 |  |
|  | *Torque teno virus 7* | torque teno virus 7 | AF261761 |  |
|  | *Torque teno virus 8* | torque teno virus 8 | AB054647 | Merges with *Torque teno virus 7* |
|  | *Torque teno virus 9* | torque teno virus 9 | DQ187006 |  |
|  | *Torque teno virus 10* | torque teno virus 10 | AB064607 |  |
|  | *Torque teno virus 11* | torque teno virus 11 | AF345524 | Merges with *Torque teno virus 9* |
|  | *Torque teno virus 12* | torque teno virus 12 | AB064605 | Merges with *Torque teno virus 9* |
|  | *Torque teno virus 13* | torque teno virus 13 | AF345526 |  |
|  | *Torque teno virus 14* | torque teno virus 14 | AB037926 |  |
|  | *Torque teno virus 15* | torque teno virus 15 | AB028668 |  |
|  | *Torque teno virus 16* | torque teno virus 16 | AB017613 | Merges with *Torque teno virus 15* |
|  | *Torque teno virus 17* | torque teno virus 17 | AX025830 |  |
|  | *Torque teno virus 18* | torque teno virus 18 | AX025718 |  |
|  | *Torque teno virus 19* | torque teno virus 19 | AB025946 |  |
|  | *Torque teno virus 20* | torque teno virus 20 | AB060594 |  |
|  | *Torque teno virus 21* | torque teno virus 21 | AF348409 |  |
|  | *Torque teno virus 22* | torque teno virus 22 | AX174942 | Merges with *Torque teno virus 24* |
|  | *Torque teno virus 23* | torque teno virus 23 | AB049607 | Merges with *Torque teno virus 24* |
|  | *Torque teno virus 24* | torque teno virus 24 | AB060597 |  |
|  | *Torque teno virus 25* | torque teno virus 25 | AB041959 |  |
|  | *Torque teno virus 26* | torque teno virus 26 | AB041958 |  |
|  | *Torque teno virus 27* | torque teno virus 27 | AB064595 | Merges with *Torque teno virus 29* |
|  | *Torque teno virus 28* | torque teno virus 28 | AB064598 | Merges with *Torque teno virus 29* |
|  | *Torque teno virus 29* | torque teno virus 29 | AB038621 |  |
| *Betatorquevirus* | *Torque teno mini virus 1* | torque teno mini virus 1 | AB026931 |  |
|  | *Torque teno mini virus 2* | torque teno mini virus 2 | AB038629 |  |
|  | *Torque teno mini virus 3* | torque teno mini virus 3 | AB038630 |  |
|  | *Torque teno mini virus 4* | torque teno mini virus 4 | AB041963 |  |
|  | *Torque teno mini virus 5* | torque teno mini virus 5 | AB041962 |  |
|  | *Torque teno mini virus 6* | torque teno mini virus 6 | AB026929 |  |
|  | *Torque teno mini virus 7* | torque teno mini virus 7 | AB038627 |  |
|  | *Torque teno mini virus 8* | torque teno mini virus 8 | AF291073 |  |
|  | *Torque teno mini virus 9* | torque teno mini virus 9 | AB038625 |  |
|  | *Torque teno mini virus 10* | torque teno mini virus 10 | EF538880 |  |
|  | *Torque teno mini virus 11* | torque teno mini virus 11 | EF538881 |  |
|  | *Torque teno mini virus 12* | torque teno mini virus 12 | EF538882 |  |
| *Deltatorquevirus* | *Torque teno tupaia virus* | torque teno tupaia virus | AB057358 |  |
| *Epsilontorquevirus* | *Torque teno tamarin virus* | torque teno tamarin virus | AB041960 |  |
| *Etatorquevirus* | *Torque teno felis virus* | torque teno felis virus | AB076003 | Rename: *Torque teno felid virus 1* |
|  | *Torque teno felis virus 2* | torque teno felis virus 2 | EF538877 | Rename: *Torque teno felid virus 2* |
| *Gammatorquevirus* | *Torque teno midi virus 1* | torque teno midi virus 1 | AB290917 |  |
|  | *Torque teno midi virus 2* | torque teno midi virus 2 | AB290919 |  |
|  | *Torque teno midi virus 3* | torque teno midi virus 3 | EF538875 |  |
|  | *Torque teno midi virus 4* | torque teno midi virus 4 | EF538876 |  |
|  | *Torque teno midi virus 5* | torque teno midi virus 5 | AB303552 |  |
|  | *Torque teno midi virus 6* | torque teno midi virus 6 | AB303553 |  |
|  | *Torque teno midi virus 7* | torque teno midi virus 7 | AB303554 |  |
|  | *Torque teno midi virus 8* | torque teno midi virus 8 | AB303558 |  |
|  | *Torque teno midi virus 9* | torque teno midi virus 9 | AB303559 |  |
|  | *Torque teno midi virus 10* | torque teno midi virus 10 | AB303560 |  |
|  | *Torque teno midi virus 11* | torque teno midi virus 11 | AB303561 |  |
|  | *Torque teno midi virus 12* | torque teno midi virus 12 | AB303562 |  |
|  | *Torque teno midi virus 13* | torque teno midi virus 13 | AB303564 |  |
|  | *Torque teno midi virus 14* | torque teno midi virus 14 | AB303566 |  |
|  | *Torque teno midi virus 15* | torque teno midi virus 15 | AB449062 |  |
| *Gyrovirus* | *Chicken anemia virus* | chicken anemia virus | M55918 |  |
| *Iotatorquevirus* | *Torque teno sus virus 1a* | torque teno sus virus 1a | AB076001 |  |
|  | *Torque teno sus virus 1b* | torque teno sus virus 1b | AY823990 | Merges with *Torque teno sus virus 1a* |
| *Kappatorquevirus* | *Torque teno sus virus k2a* | torque teno sus virus k2a | AY823991 |  |
|  | *Torque teno sus virus k2b* | torque teno sus virus k2b | JQ406846 |  |
| *Lambdatorquevirus* | *Torque teno seal virus 1* | seal anellovirus TFFN | HQ287751 | Rename: *Torque teno pinniped virus 1* |
|  | *Torque teno seal virus 2* | torque teno seal virus 2 | KF373760 | Rename: *Torque teno pinniped virus 2* |
|  | *Torque teno seal virus 3* | torque teno seal virus 3 | KF373758 | Rename: *Torque teno pinniped virus 3* |
|  | *Torque teno seal virus 8* | torque teno Leptonychotes weddellii virus 1 | KY246582 | Rename: *Torque teno pinniped virus 8* |
|  | *Torque teno seal virus 9* | torque teno Leptonychotes weddellii virus 2 | KY246547 | Rename: *Torque teno pinniped virus 9* |
|  | *Torque teno zalophus virus 1* | torque teno zalophus virus 1 | FJ459582 | Rename: *Torque teno pinniped virus 5* |
| *Mutorquevirus* | *Torque teno equus virus 1* | torque teno equus virus 1 | KR902501 | Rename: *Torque teno equid virus 1* |
| *Nutorquevirus* | *Torque teno seal virus 4* | seal anellovirus 4 | KM262783 | Merge with *Torque teno pinniped virus 4* |
|  | *Torque teno seal virus 5* | seal anellovirus 5 | KM262782 | Rename: *Torque teno pinniped virus 4* |
| *Thetatorquevirus* | *Torque teno canis virus* | torque teno canis virus | AB076002 | Rename: *Torque teno canid virus 1* |
| *Zetatorquevirus* | *Torque teno douroucouli virus* | torque teno douroucouli virus | AB041961 |  |

**Table 2:** Summary of new species within new and established genera. All new taxa are highlighted in red.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Genus** | **Species** | **Accession #** | **Exemplar virus** | **Isolate / strain** | **Host / source** |
| *Aleptorquevirus* | *Torque teno leprid virus 1* | MN994854 | Lepus torque teno virus 1 | Lag01\_EL\_Anello4 | *Lepus granatensi* |
|  | *Torque teno arthrovec virus 1* | HQ335082 | mosquito VEM Anellovirus SDBVL | SDBVL A | mosquitoes (mixed species) |
| *Alphatorquevirus* | *Torque teno chlorocebus virus 1* | KP296857 | simian torque teno virus 30 | VWP00522.2 | *Chlorocebus sabaeus* |
|  | *Torque teno chlorocebus virus 2* | KP296856 | simian torque teno virus 34 | VGA00120.1 | *Chlorocebus sabaeus* |
|  | *Torque teno chlorocebus virus 3* | KP296853 | simian torque teno virus 31 | VGA00123.3 | *Chlorocebus sabaeus* |
|  | *Torque teno chlorocebus virus 5* | KP296854 | simian torque teno virus 32 | VGA00154.2 | *Chlorocebus sabaeus* |
|  | *Torque teno virus 31* | KJ082064 | torque teno virus | TTV-Hebei-1 | *Homo sapiens* |
| *Betatorquevirus* | *Torque teno mini virus 13* | KY856742 | TTV-like mini virus | zhenjiang | *Homo sapiens* |
|  | *Torque teno mini virus 14* | MH017546 | torque teno mini virus 10 | BNI-700620-G1-CS | *Homo sapiens* |
|  | *Torque teno mini virus 15* | JX134044 | TTV-like mini virus | TTMV\_LY1 | *Homo sapiens* |
|  | *Torque teno mini virus 16* | KM259874 | torque teno mini virus ALH8 | TTMV-ALH8 | *Homo sapiens* |
|  | *Torque teno mini virus 17* | MH648907 | Anelloviridae sp. | ctcf040 | *Homo sapiens* |
|  | *Torque teno mini virus 18* | KF764701 | TTV-like mini virus | D11 | *Homo sapiens* |
|  | *Torque teno mini virus 19* | JX134046 | TTV-like mini virus | TTMV\_LY3 | *Homo sapiens* |
|  | *Torque teno mini virus 20* | MH648989 | Anelloviridae sp. | ctga035 | *Homo sapiens* |
|  | *Torque teno mini virus 21* | MH648910 | Anelloviridae sp. | ctcd026 | *Homo sapiens* |
|  | *Torque teno mini virus 22* | MK212031 | TTV-like mini virus | vzttmv4 | *Homo sapiens* |
|  | *Torque teno mini virus 23* | KX810063 | TTV-like mini virus | Emory1 | *Homo sapiens* |
|  | *Torque teno mini virus 24* | MH649141 | Anelloviridae sp. | ctbc019 | *Homo sapiens* |
|  | *Torque teno mini virus 25* | MH648986 | Anelloviridae sp. | ctbd020 | *Homo sapiens* |
|  | *Torque teno mini virus 26* | KY462770 | torque teno mini virus SHA | SHA | *Homo sapiens* |
|  | *Torque teno mini virus 27* | KM259873 | torque teno mini virus ALA22 | TTMV-ALA22 | *Homo sapiens* |
|  | *Torque teno mini virus 28* | MH017563 | torque teno mini virus 10 | BNI-700835-G3-CSF | *Homo sapiens* |
|  | *Torque teno mini virus 29* | KX810064 | TTV-like mini virus | Emory2 | *Homo sapiens* |
|  | *Torque teno mini virus 30* | MH648912 | Anelloviridae sp. | ctea38 | *Homo sapiens* |
|  | *Torque teno mini virus 31* | MH649017 | Anelloviridae sp. | ctbb016 | *Homo sapiens* |
|  | *Torque teno mini virus 32* | KU041847 | torque teno mini virus 18 | 222 | *Homo sapiens* |
|  | *Torque teno mini virus 33* | MH649029 | Anelloviridae sp. | ctbi042 | *Homo sapiens* |
|  | *Torque teno mini virus 34* | MH649114 | Anelloviridae sp. | ctbf050 | *Homo sapiens* |
|  | *Torque teno mini virus 35* | MH648966 | Anelloviridae sp. | ctei055 | *Homo sapiens* |
|  | *Torque teno mini virus 36* | LC381845 | torque teno virus | KS025 | *Homo sapiens* |
|  | *Torque teno mini virus 37* | MH649209 | Anelloviridae sp. | ctbg056 | *Homo sapiens* |
|  | *Torque teno mini virus 38* | MH648982 | Anelloviridae sp. | ctbf014 | *Homo sapiens* |
| *Chitorquevirus* | *Torque teno indriid virus 1* | MF187212 | torque teno indri virus 1 | bet12.15 | *Indri indri* |
| *Dalettorquevirus* | *Torque teno ursid virus 6* | MF327539 | giant panda anellovirus | gpan20793 | *Ailuropoda melanoleuca* |
| *Etatorquevirus* | *Torque teno felid virus 3* | MK069470 | torque teno ocelot virus | WF10 | *Leopardus pardalis* |
|  | *Torque teno felid virus 4* | JF304938 | torque teno felis virus-Fc-TTV2 | VS4300008 | *Felis catus* |
|  | *Torque teno viverrid virus 3* | LC387548 | Paguma larvata torque teno virus | Pl-TTV3 | *Paguma larvata* |
| *Gimeltorquevirus* | *Torque teno virus 30* | MF327544 | giant panda anellovirus | gpan20806 | *Ailuropoda melanoleuca* |
| *Hetorquevirus* | *Torque teno hominid virus 2* | MK212032 | Anelloviridae sp. | vzttmv5 | *Homo sapiens* |
| *Omegatorquevirus* | *Torque teno hominid virus 1* | KT027939 | gorilla anellovirus | GorF | gorilla |
| *Omicrontorquevirus* | *Torque teno ursid virus 5* | MF327557 | giant panda anellovirus | gpan20684 | *Ailuropoda melanoleuca* |
| *Pitorquevirus* | *Torque teno ursid virus 7* | MF327540 | giant panda anellovirus | gpan21094 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 8* | MF327542 | giant panda anellovirus | gpan21031 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 9* | MF327550 | giant panda anellovirus | gpan20868 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 10* | MF327541 | giant panda anellovirus | gpan20868 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 11* | MF327548 | giant panda anellovirus | gpan21066 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 12* | MF327547 | giant panda anellovirus | gpan21031 | *Ailuropoda melanoleuca* |
| *Psitorquevirus* | *Torque teno procyo virus 4* | MK012516 | Anelloviridae sp. | ctcf003 | *Procyon lotor* |
| *Rhotorquevirus* | *Torque teno rodent virus 1* | KJ194617 | rodent torque teno virus 1 | AS\_WM1\_Sp\_1 | *Apodemus sylvaticus* |
| *Sigmatorquevirus* | *Torque teno pinniped virus 6* | MG837569 | torque teno Arctocephalus gazella virus 1 | ASV20\_172 | *Arctocephalus gazella* |
| *Sigmatorquevirus* | *Torque teno pinniped virus 7* | MG837571 | torque teno Arctocephalus gazella virus 2 | ASV35\_197 | *Arctocephalus gazella* |
| *Tautorquevirus* | *Torque teno felid virus 5* | JF304937 | torque teno felis virus-Fc-TTV1 | VS4300006 | *Felis catus* |
| *Tettorquevirus* | *Torque teno felid virus 6* | KX262893 | feline anellovirus | FelineAV621 | *Felis catus* |
| *Thetatorquevirus* | *Torque teno arthrovec virus 3* | MF173068 | tick associated torque teno virus | tick24\_1 | *Dermacentor variabilis* |
|  | *Torque teno mustilid virus 1* | JN704611 | pine marten torque teno virus 1 | VS4700004 | *Martes martes* |
|  | *Torque teno procyo virus 5* | MK012446 | Anelloviridae sp. | ctdb009 | *Procyon lotor* |
|  | *Torque teno procyo virus 6* | MK012439 | Anelloviridae sp. | cthe000 | *Procyon lotor* |
|  | *Torque teno ursid virus 1* | KX611132 | lesser panda anellovirus | chengdu-1 | *Ailurus fulgens* |
|  | *Torque teno ursid virus 2* | MF327551 | giant panda anellovirus | gpan20783 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 3* | MF327552 | giant panda anellovirus | gpan20682 | *Ailuropoda melanoleuca* |
|  | *Torque teno ursid virus 4* | MF327554 | giant panda anellovirus | gpan20724 | *Ailuropoda melanoleuca* |
|  | *Torque teno viverrid virus 4* | LC387543 | Paguma larvata torque teno virus | Pl-TTV9-2 | *Paguma larvata* |
| *Upsilontorquevirus* | *Torque teno procyo virus 1* | MK012447 | Anelloviridae sp. | ctcf003 | *Procyon lotor* |
|  | *Torque teno procyo virus 2* | MK012527 | Anelloviridae sp. | ctcf007 | *Procyon lotor* |
|  | *Torque teno procyo virus 3* | MK012497 | Anelloviridae sp. | ctdc005 | *Procyon lotor* |
|  | *Torque teno procyo virus 7* | MK012464 | Anelloviridae sp. | ctbd010 | *Procyon lotor* |
|  | *Torque teno procyo virus 8* | MK012467 | Anelloviridae sp. | ctbb008 | *Procyon lotor* |
|  | *Torque teno procyo virus 9* | MK012471 | Anelloviridae sp. | ctbb005 | *Procyon lotor* |
|  | *Torque teno viverrid virus 2* | LC387546 | Paguma larvata torque teno virus | Pl-TTV9-1 | *Paguma larvata* |
| *Wawtorquevirus* | *Torque teno rodent virus 2* | MF541374 | rodent torque teno virus 3 | 2 | *Akodon montensis* |
|  | *Torque teno arthrovec virus 2* | HQ335084 | mosquito VEM Anellovirus SDRB A | SDRB | *Mosquitoes (mixed species)* |
|  | *Torque teno rodent virus 3* | MF541388 | rodent torque teno virus 7 | 15 | *Akodon montensis* |
|  | *Torque teno rodent virus 4* | KJ194604 | rodent torque teno virus 2 | AS\_WM1\_Se\_4 | *Apodemus sylvaticus* |
|  | *Torque teno rodent virus 5* | KM609325 | rodent torque teno virus 2 | RN\_8\_Se11 | *Rattus norvegicus* |
|  | *Torque teno rodent virus 6* | MF541389 | rodent torque teno virus 8 | 2252 | *Oligoryzomys nigripes* |
| *Xitorquevirus* | *Torque teno chiroptera virus 1* | KM434181 | torque teno Tadarida brasiliensis virus |  | *Tadarida brasiliensis* |
|  | *Torque teno didelphi virus 1* | MF541378 | torque teno didelphis albiventris virus | 3470 | *Didelphis albiventris* |
| *Zayintorquevirus* | *Torque teno viverrid virus 1* | LC387540 | Paguma larvata torque teno virus | Pl-TTV5-2 | *Paguma larvata* |
|  | *Torque teno viverrid virus 5* | LC387536 | Paguma larvata torque teno virus | Pl-TTV1-1 | *Paguma larvata* |

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