

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

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| **Code assigned:** | ***2023.024D*** |  |
| **Short title:** Establishing the order *Gredzevirales*, two new families (*Ouroboviridae* and *Gandrviridae*) and associated genera and species in the class *Arfiviricetes* (phylum *Cressdnaviricota*) | | |
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**List the ICTV Study Group(s) that have seen this proposal**

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**ICTV Study Group comments and response of proposer**

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**ICTV Study Group votes on proposal**

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| **Study Group** | **Number of members** | | |
| **Votes support** | **Votes against** | **No vote** |
|  |  |  |  |
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**Authority to use the name of a living person**

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| --- | --- |
| **Is any taxon name used here derived from that of a living person (Y/N)** | N |

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| --- | --- | --- |
| **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 | 14 July 2023 |
| Date of this revision (if different to above) | 5 Oct 2023 |

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

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| The proposal was deemed acceptable in the form presented at the EC meeting. |

**Part 2:** **NON-TAXONOMIC PROPOSAL**

**Text of proposal**

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

**Name of accompanying Excel module**

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| 2023.024D.N.v2. Gredzevirales\_1no\_2nf\_38ng\_58nsp.xlsx |

**Abstract**

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| We propose to establish the order *Gredzevirales* in the class *Arfiviricetes* (phylum *Cressdnaviricota*), including two new families, *Ouroboviridae* and *Gandrviridae*,with 38 genera and 58 species. |

**Text of proposal**

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| |  | | --- | | We propose to establish the order *Gredzevirales,* including two new families, *Ouroboviridae* and *Gandrviridae*,comprising 38 genera and 58 species to classify 79 viral sequences that are part of a group of viruses informally referred to as CRESSV5 in the phylum *Cressdnaviricota* [1-4].  The order name *Gredzevirales* is derived from Latvian **gredze**ns for “ring”, referring to the circularity of the viral genomes.  The family name *Ouroboviridae* is derived from **ourobo**ros, a symbol depicting a serpent eating its own tail.  The family name *Gandrviridae* is derived from Jörmun**gandr**, a serpent in Norse mythology equivalent of ouroboros. The prefix "Jörmun-" denotes something huge, vast superhuman, whereas the word "gandr" refers to elongated entities, including snake, and or supernatural beings.  **Genus and species demarcation**  We undertook comparative genomics and phylogenetic analyses of the Rep proteins of members of this group to determine their relationships. Genera were delineated based on phylogenetic analyses coupled with pairwise identities and also the genome organization relative to the *rep* open reading frame (Figures 2-3).  For species demarcation, we used a 78% pairwise nucleotide genome-wide sequence identity which is similar to that used for other cressdnaviruses [5-7].  **Genera for *Ouroboviridae***  Etymology of genus names   1. *Boebeisivirus: Boebeïs - lake in ancient Magnesia* 2. *Kreonivirus: Kreon - king of Thebes* 3. *Proteusivirus: Proteus - old man of the sea* 4. *Tantalovirus: Tantalos - early king of Lydia* 5. *Ioniavirus: Ionia - west coast of Asia Minor (Homer's Odyssey)* 6. *Tethyvirus: Tethys - a Titan, wife of Ocean* 7. *Dorisivirus: Doris - a Nereid, daugther of Tethys* 8. *Eurynomevirus: Eurynome - an Oceanid, daughter of Tethys* 9. *Otosivirus: Otos - brother of Ephialtes* 10. *Demetevirus: Demeter - goddess of the grain harvest* 11. *Naiadivirus: Naiad - spirit who guards freshwater* 12. *Persevirus: Persê - daughter of Ocean* 13. *Perimedevirus: Perimedes - one of Odysseus' companions* 14. *Telemovirus: Telemos - the seer of the Cyclops* 15. *Pylenevirus: Pylene - town in ancient Aetolia* 16. *Rhipevirus: Rhipe - city in ancient Arcadia* 17. *Taphiavirus: Taphians - pirates of the western seas* 18. *Styxivirus: Styx - a river in the underworld* 19. *Lamposivirus: Lampos - one of Dawn's horses* 20. *Kadmovirus: Kadmos - founder of Thebes* 21. *Doliovirus: Dolios - an aged servant of Penelope* 22. *Stentovirus: Stentor - Herald of the Argives* 23. *Aretevirus: Aretê - queen of the Phaeacians* 24. *Gorgovirus: Gorgon - head of Medusa* 25. *Heravirus: Hera - daughter of Kronos and Rhea* 26. *Mantiovirus: Mantios - son of Melampous* 27. *Peronelivirus: Pero - daughter of Neleus* 28. *Patroklovirus: Patroklos - Achilles' best friend* 29. *Horusivirus: Horus - child of Isis and Osiris* 30. *Pythorivirus: Pytho - Homer's name for Delphi*   Etymology of species epithets – derived from host names and source   1. *manatense: Manatee Spring* 2. *mintis: minnow tissue* 3. *cygolis: Cygnus olor* 4. *seabatis: seabass tissue* 5. *raitis: rainbow trout tissue* 6. *resnatis: red snapper tissue* 7. *farduois: Farfantepenaeus duorarum* 8. *callioris: Callinectes ornatus* 9. *abatis: abalone tissue* 10. *nemileis: Mnemiopsis leidyi* 11. *orcatis: Orcinus orca tissue* 12. *aiptaes: Aiptasia* 13. *troutis: rainbow trout tissue* 14. *volusiense: Volusia Spring* 15. *plantaes: planta is the Spanish word for plant* 16. *haddotis: haddock tissue* 17. *wakense: Wakvhokte - cow in Muscogee (Manatee springs)* 18. *vacaense: vaca - cow in Spanish (Manatee springs)* 19. *befense: bèf - cow in Haitian Creole (Manatee springs)* 20. *forpensaes: Forsythia suspensa* 21. *pectis: minnow tissue; pececillo is the Spanish word for minnow* 22. *pargotis: red snapper tissue; pargo is the Spanish word for snapper* 23. *truchatis: rainbow trout tissue, trucha is the Spanish word for trout* 24. *niaois: bird metagenome; niao is the Mandarin pinyin word for bird* 25. *mingois: flamingo* 26. *blatis: black fly tissue* 27. *vaitis: minnow tissue; vairon is the French word for minnow* 28. *paphis: Paphies subtriangulata* 29. *didemis: Didemnum sp.* 30. *pestrotis: rainbow trout tissue; pestrófa is the Greek word for trout* 31. *ecklonis: Ecklonia radiata* 32. *ageladense: Manatee Spring; ageláda is the Greek word for cow* 33. *gammaris: Gammarus sp.* 34. *poulis: bird metagenome; poulí is the Greek word for bird* 35. *lythtis: red snapper tissue, lythríni is the Greek word for snapper* 36. *reppertis: red snapper tissue* 37. *swances: mute swan; cygnus olor feces* 38. *marisnaco: marine snail associated circovirus* 39. *hermico: Hermit crab associated circovirus* 40. *cisneis: cisne is the Spanish word for swan* 41. *camaronis: camarón is the Spanish word for shrimp* 42. *ealaes: eala is the Irish word for swan* 43. *clamco: clam associated circovirus* 44. *doingaes: doingaen is the Irish word for seabass* 45. *palaeminteris: Palaemonetes intermedius* 46. *gulmense: Gulf of Mexico* 47. *pandaco: Giant panda circovirus* 48. *mencois: flamenco is the Spanish word for flamingo* 49. *apimellis: Apis mellifera* 50. *pauaes: pāua is the Māori name given to abalone*   **Genera for *Gandrviridae***  Etymology of genus names   1. *Satyrivirus: Satyrs - rustic fertility spirits of the countryside and wilds.* 2. *Oreadivirus: Oreads - the nymphs of trees, groves, woodlands and mountain forests* 3. *Meliavirus: Meliae - nymphs of the ash-tree* 4. *Oreiadivirus: Oreiades - Nymphs of the mountains* 5. *Atripovirus: Atropos - One of the three Fates.* 6. *Thyiavirua: Thyia - Naiad-nymph of Mount Parnassus loved by the god Apollo* 7. *Thisbivirus: Thisbe - The eponymous nymph of the Boeotian town of Thebes* 8. *Sthenivirus: Stheno - One of the two immortal Gorgons*   Etymology of species epithets – derived from host names and source   1. *cordulis: Procordulia grayi* 2. *manflis: Manatee Spring – Florida* 3. *jackflis: Jackson Spring - Florida* 4. *spriflis: Manatee Spring - Florida* 5. *timinis: minnow tissue* 6. *flanatis: Manatee Spring - Florida* 7. *naringis: Manatee Spring - Florida* 8. *nowtis: minnow tissue* | |

**Supporting evidence**

**Table 1:** Summary of the viruses classified in the new order *Gredzevirales* and family *Ouroboviridae*.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Genus** | **Species** | **Accession #** | **Virus** | **Year** | **Country** | **Host /source** | **Isolate** |
| *Boebeisivirus* | *Boebeisivirus manatense* | MW202799 | Circoviridae sp. ctMfu914 | 2019 | USA | Manatee Spring | ctMfu914 |
| *Boebeisivirus* | *Boebeisivirus manatense* | MW202791 | Circoviridae sp. cthqR948 | 2019 | USA | Manatee Spring | cthqR948 |
| *Boebeisivirus* | *Boebeisivirus mintis* | MH617165 | Circoviridae sp. ctbg280 | 2017 | USA | minnow tissue | ctbg280 |
| *Kreonivirus* | *Kreonivirus cygolis* | MW588082 | mute swan feces associated circular virus 8 | 2016 | United Kingdom | *Cygnus olor* | Abbotsbury/A/2016 |
| *Kreonivirus* | *Kreonivirus seabatis* | MH648934 | Circoviridae sp. ctch688 | 2017 | USA | seabass tissue | ctch688 |
| *Proteusivirus* | *Proteusivirus raitis* | MH617435 | Circoviridae sp. ctda94 | 2017 | USA | rainbow trout tissue | ctda94 |
| *Proteusivirus* | *Proteusivirus raitis* | MH617183 | Circoviridae sp. ctic98 | 2017 | USA | rainbow trout tissue | ctic98 |
| *Tantalovirus* | *Tantalovirus resnatis* | MH649205 | Circoviridae sp. ctch025 | 2017 | USA | red snapper tissue | ctch025 |
| *Ioniavirus* | *Ioniavirus farduois* | KR528553 | Farfantepenaeus duorarum pink shrimp associated circular virus I0069 |  | USA | *Farfantepenaeus duorarum* | I0069 |
| *Ioniavirus* | *Ioniavirus callioris* | KR528549 | Callinectes ornatus blue crab associated circular virus I0054 |  | USA | *Callinectes ornatus* | I0054 |
| *Tethyvirus* | *Tethyvirus abatis* | MH617703 | CRESS virus sp. ctce130 | 2017 | USA | abalone tissue | ctce130 |
| *Tethyvirus* | *Tethyvirus nemileis* | KT945163 | Ctenophore-associated circular virus 2 | 2013 | USA: Skidaway River, Georgia | *Mnemiopsis leidyi* | I1098 |
| *Dorisivirus* | *Dorisivirus orcatis* | MW562325 | delphin virus 2 M3\_2163\_2086 | 2018 | Saint Vincent and the Grenadines | *Orcinus orca* | M3\_2163\_2086 |
| *Dorisivirus* | *Dorisivirus orcatis* | MW562319 | delphin virus 2 K3\_2163\_2086 | 2018 | Saint Vincent and the Grenadines | *Orcinus orca* | K3\_2163\_2086 |
| *Dorisivirus* | *Dorisivirus aiptaes* | KR528545 | Aiptasia sp. sea anemone associated circular virus I0007C3 |  | USA | *Aiptasia sp.* | I0007C3 |
| *Dorisivirus* | *Dorisivirus aiptaes* | KR528544 | Aiptasia sp. sea anemone associated circular virus I0007C2 |  | USA | *Aiptasia sp.* | I0007C2 |
| *Eurynomevirus* | *Eurynomevirus troutis* | MH617336 | CRESS virus sp. ctii88 | 2017 | USA | rainbow trout tissue | ctii88 |
| *Otosivirus* | *Otosivirus volusiense* | MN582106 | CRESS virus sp. ct6pe1 | 2017 | USA | Volusia Spring | ct6pe1 |
| *Demetevirus* | *Demetevirus plantaes* | MN891801 | Trichosanthes kirilowii CRESS virus strain pt111-nan-3 |  | China | *Trichosanthes kirilowii* | pt111-nan-3 |
| *Demetevirus* | *Demetevirus plantaes* | MN891790 | Toona sinensis CRESS virus strain pt109-nan-1 |  | China | *Toona sinensis* (A. Juss.) Roem. | pt109-nan-1 |
| *Demetevirus* | *Demetevirus haddotis* | MH616684 | CRESS virus sp. ctcg236 | 2017 | USA | haddock tissue | ctcg236 |
| *Naiadivirus* | *Naiadivirus wakense* | MW202695 | Circoviridae sp. ct2da291 | 2019 | USA | Manatee Spring | ct2da291 |
| *Naiadivirus* | *Naiadivirus vacaense* | MW202688 | Circoviridae sp. ctVGY598 | 2019 | USA | Manatee Spring | ctVGY598 |
| *Naiadivirus* | *Naiadivirus befense* | MW202635 | Circoviridae sp. ctk92474 | 2019 | USA | Manatee Spring | ctk92474 |
| *Naiadivirus* | *Naiadivirus befense* | MW202468 | Circoviridae sp. cttJj217 | 2019 | USA | Manatee Spring | cttJj217 |
| *Persevirus* | *Persevirus forpensaes* | MN891794 | Forsythia suspensa CRESS virus strain pt110-nan-2 |  | China | *Forsythia suspensa* |  |
| *Persevirus* | *Persevirus pectis* | MH617169 | CRESS virus sp. ctba375 | 2017 | USA | minnow tissue | ctba375 |
| *Persevirus* | *Persevirus pargotis* | MH649214 | CRESS virus sp. cthh024 | 2017 | USA | red snapper tissue | cthh024 |
| *Persevirus* | *Persevirus truchatis* | MH617752 | Circoviridae sp. ctbj92 | 2017 | USA | rainbow trout tissue | ctbj92 |
| *Persevirus* | *Persevirus niaois* | MT138055 | CRESS virus sp. zftfla02cir5 genomic sequence | 2016 |  | Avian anal swab | zftfla02cir5 |
| *Persevirus* | *Persevirus mingois* | MN928940 | CRESS virus sp. fla04cir2 | 2018 | China | Phoenicopteridae | fla04cir2 |
| *Persevirus* | *Persevirus mingois* | MT138057 | CRESS virus sp. zftfla02cir7 genomic sequence | 2016 |  | Avian anal swab | zftfla02cir7 |
| *Persevirus* | *Persevirus mingois* | MN928941 | CRESS virus sp. fla06cir3 | 2018 | China | Phoenicopteridae | fla06cir3 |
| *unclassified* | *unclassified* | MT341480 | clinch circular virus 1 | 2018 | USA: Clinch River, Kyle's Ford, Tennessee | *Actinonaias pectorosa* | CCcrV1/C64/2018 |
| *Perimedevirus* | *Perimedevirus blatis* | MK433220 | blackfly DNA Virus 6 | 2014 | New Zealand: Canterbury | *Austrosimulium australense* | SF01\_308 |
| *Telemovirus* | *Telemovirus vaitis* | MH616801 | CRESS virus sp. ctch860 | 2017 | USA | minnow tissue | ctch860 |
| *Pylenevirus* | *Pylenevirus paphis* | KM874354 | Avon-Heathcote Estuary associated circular virus 24 | 2012 | New Zealand | *Paphies subtriangulata* | AHEaCV-24-NZ-2183TU-2913 |
| *Rhipevirus* | *Rhipevirus didemis* | KR528547 | Didemnum sp. Sea Squirt associated virus I0026A7 |  | USA | *Didemnum sp.* | I0026A7 |
| *Taphiavirus* | *Taphiavirus pestrotis* | MH617453 | Circoviridae sp. ctdb89 | 2017 | USA | rainbow trout tissue | ctdb89 |
| *Styxivirus* | *Styxivirus ecklonis* | MG740721 | Ecklonia radiata-associated virus 10 | 2014 | Australia | *Ecklonia radiata* |  |
| *Styxivirus* | *Styxivirus ecklonis* | MG740722 | Ecklonia radiata-associated virus 11 | 2014 | Australia | *Ecklonia radiata* |  |
| *Styxivirus* | *Styxivirus ecklonis* | MG740716 | Ecklonia radiata-associated virus 5 | 2014 | Australia | *Ecklonia radiata* |  |
| *Styxivirus* | *Styxivirus ecklonis* | MG740713 | Ecklonia radiata-associated virus 2 | 2014 | Australia | *Ecklonia radiata* |  |
| *Styxivirus* | *Styxivirus ecklonis* | MG740715 | Ecklonia radiata-associated virus 4 | 2014 | Australia | *Ecklonia radiata* |  |
| *Styxivirus* | *Styxivirus ecklonis* | MG740717 | Ecklonia radiata-associated virus 6 | 2014 | Australia | *Ecklonia radiata* |  |
| *Lamposivirus* | *Lamposivirus ageladense* | MW202684 | Circoviridae sp. ct7MN831 | 2019 | USA | Manatee Spring | ct7MN831 |
| *Lamposivirus* | *Lamposivirus gammaris* | KR528561 | Gammarus sp. amphipod associated circular virus I0153 |  | USA | *Gammarus sp.* | I0153 |
| *Kadmovirus* | *Kadmovirus poulis* | MT138059 | CRESS virus sp. zftfla02cir9 genomic sequence | 2016 |  | Avian anal swab | zftfla02cir9 |
| *Doliovirus* | *Doliovirus lythtis* | MH616757 | Circoviridae sp. ctda242 | 2017 | USA | red snapper tissue | ctda242 |
| *Stentovirus* | *Stentovirus reppertis* | KJ641738 | bat circovirus BtRh-CV-7/Tibet2013 | 2013 | China | *Rhinolophus hipposideros* | BtRh-CV-7/Tibet2013 |
| *unclassified* | *unclassified* | MT341482 | clinch circular virus 2 | 2018 | USA: Clinch River, Sycamore Island, Virginia | *Actinonaias pectorosa* | CCcrV2/B28/2018 |
| *Stentovirus* | *Stentovirus reppertis* | MH617575 | Circoviridae sp. ctbf290 | 2017 | USA | red snapper tissue | ctbf290 |
| *Aretevirus* | *Aretevirus swances* | MW588088 | mute swan feces associated circular virus 14 | 2016 | United Kingdom | *Cygnus olor* | Abbotsbury/A/2016 |
| *Aretevirus* | *Aretevirus marisnaco* | KR528554 | marine snail associated circular virus I0084 |  | USA | marine snail | I0084 |
| *Aretevirus* | *Aretevirus hermico* | KR528556 | hermit crab associated circular virus I0085A5 |  | USA | hermit crab | I0085A5 |
| *Aretevirus* | *Aretevirus hermico* | KR528555 | hermit crab associated circular virus I0085A4 |  | USA | hermit crab | I0085A4 |
| *Gorgovirus* | *Gorgovirus cisneis* | MW588087 | mute swan feces associated circular virus 13 | 2016 | United Kingdom | Cygnus olor | Abbotsbury/A/2016 |
| *Heravirus* | *Heravirus camaronis* | KR528552 | Farfantepenaeus duorarum pink shrimp associated circular virus I0066 |  | USA | *Farfantepenaeus duorarum* | I0066 |
| *Mantiovirus* | *Mantiovirus ealaes* | MW588078 | mute swan feces associated circular virus 4 | 2016 | United Kingdom | *Cygnus olor* | Abbotsbury/A/2016 |
| *Mantiovirus* | *Mantiovirus clamco* | KR528562 | Mytilus sp. clam associated circular virus I0169 |  | USA | *Mytilus sp.* | I0169 |
| *Peronelivirus* | *Peronelivirus doingaes* | MH649155 | Circoviridae sp. ctcg564 | 2017 | USA | seabass tissue | ctcg564 |
| *Peronelivirus* | *Peronelivirus palaeminteris* | KR528551 | Palaemonetes intermedius brackish grass shrimp associated circular virus I0059 |  | USA | *Palaemonetes intermedius* | I0059 |
| *Patroklovirus* | *Patroklovirus gulmense* | JX904231 | uncultured marine virus GOM00443 |  |  | Gulf of Mexico | GOM00443 |
| *Horusivirus* | *Horusivirus pandaco* | MF327574 | giant panda circovirus 2 gpci002 | 2015 | China | feces | gpci002 |
| *Horusivirus* | *Horusivirus mencois* | MN928942 | CRESS virus sp. fmg067cir4 | 2018 | China | Phoenicopteridae | fmg067cir4 |
| *Horusivirus* | *Horusivirus apimellis* | MW697481 | arizlama virus AZLM\_927 | 2012 | USA | Lake water sample | AZLM\_927 |
| *Horusivirus* | *Horusivirus apimellis* | MH973773 | Apis mellifera virus-16 | 2018 | USA | *Apis mellifera carnica* | BNH4370NG |
| *Horusivirus* | *Horusivirus apimellis* | MH973772 | Apis mellifera virus-16 | 2018 | USA | *Apis mellifera carnica* | BFB18385 |
| *Pythorivirus* | *Pythorivirus pauaes* | MH617051 | Circoviridae sp. ctih115 | 2017 | USA | abalone tissue | ctih115 |

**Table 2:** Summary of the viruses classified in the new order *Gredzevirales* and family *Gandrviridae*.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Genus** | **Species** | **Accession #** | **Virus** | **Year** | **Country** | **Host /source** | **Isolate** |
| unclassified | unclassified | MH648979 | CRESS virus sp. ctda051 | 2017 | USA | red snapper tissue | ctda051 |
| unclassified | unclassified | MH648980 | CRESS virus sp. ctch048 | 2017 | USA | red snapper tissue | ctch048 |
| unclassified | unclassified | MH649149 | CRESS virus sp. ctcf047 | 2017 | USA | red snapper tissue | ctcf047 |
| unclassified | unclassified | MH648975 | CRESS virus sp. ctjb043 | 2017 | USA | red snapper tissue | ctjb043 |
| unclassified | unclassified | MH616905 | CRESS virus sp. ctcc758 | 2017 | USA | red snapper tissue | ctcc758 |
| unclassified | unclassified | MH649027 | CRESS virus sp. cthd049 | 2017 | USA | red snapper tissue | cthd049 |
| unclassified | unclassified | MH649126 | CRESS virus sp. ctcf052 | 2017 | USA | red snapper tissue | ctcf052 |
| unclassified | unclassified | MH617558 | CRESS virus sp. ctga771 | 2017 | USA | red snapper tissue | ctga771 |
| unclassified | unclassified | MH648963 | CRESS virus sp. ctbg040 | 2017 | USA | red snapper tissue | ctbg040 |
| unclassified | unclassified | MH649154 | CRESS virus sp. ctie003 | 2017 | USA | crab tissue | ctie003 |
| unclassified | unclassified | MH648895 | CRESS virus sp. ctbb003 | 2017 | USA | rainbow trout tissue | ctbb003 |
| unclassified | unclassified | MH617007 | CRESS virus sp. ctjh137 | 2017 | USA | rainbow trout tissue | ctjh137 |
| *Satyrivirus* | *Satyrivirus cordulis* | KP153453 | Lake Sarah-associated circular virus-28 | 2013 | New Zealand | *Procordulia grayi* | LSaCV-28-LSLA-2013 |
| *Trintonivirus* | *Satyrivirus cordulis* | KP153452 | Lake Sarah-associated circular virus-28 | 2013 | New Zealand | *Musculium novaezelandiae* | LSaCV-28-LSCO-2013 |
| *Dryadivirus* | *Satyrivirus cordulis* | KP153451 | Lake Sarah-associated circular virus-28 | 2013 | New Zealand | *Potamopyrgus antipodarum* | LSaCV-28-LSGA-2013 |
| *Oreadivirus* | *Oreadivirus manflis* | MW202570 | CRESS virus sp. ctJ1A291 | 2019 | USA | Manatee Spring | ctJ1A291 |
| *Meliavirus* | *Meliavirus jackflis* | MN582096 | CRESS virus sp. ctin15 | 2017 | USA | Jackson Spring | ctin15 |
| *Oreiadivirus* | *Oreiadivirus spriflis* | MW202822 | CRESS virus sp. ctOGJ943 | 2019 | USA | Manatee Spring | ctOGJ943 |
| *Atripovirus* | *Atripovirus timinis* | MH617332 | CRESS virus sp. ctdb796 | 2017 | USA | minnow tissue | ctdb796 |
| *Thyiavirua* | *Thyiavirua flanatis* | MW202851 | CRESS virus sp. ctCcl689 | 2019 | USA | Manatee Spring | ctCcl689 |
| *Thisbivirus* | *Thisbivirus naringis* | MW202729 | CRESS virus sp. ctnuI873 | 2019 | USA | Manatee Spring | ctnuI873 |
| *Sthenivirus* | *Sthenivirus nowtis* | MH617353 | CRESS virus sp. ctce741 | 2017 | USA | minnow tissue | ctce741 |

**A diagram of different colored lines

Description automatically generated with medium confidence**

**Figure 1:** Maximum likelihood phylogenetic tree inferred from Rep proteins of members of the phylum *Cressdnaviricota*. Related sequence groups are collapsed into triangles, the side lengths of which are proportional to the distances between the closest and farthest leaf nodes. The alignment was trimmed with TrimAL [8] with gap threshold of 0.2. The maximum likelihood phylogenetic tree was constructed using IQtree [9] with automatic selection of the best-fit substitution model for a given alignment, which was Q.pfam+F+R10. Numbers at the nodes represent aLRT branch supports. The scale bar represents the number of substitutions per site.

**A screen shot of a computer

Description automatically generated**

**Figure 2:** Maximum likelihood phylogenetic tree of the Rep sequences of the members of the*Ouroboviridae* and *Gandrviridae* family inferred with PhyML 3.0 [11] with LG+I+G model determined as the best substitution model using ProtTest 3 [12] and rooted with representative sequences of members of the family *Smacoviridae*. The species belonging to the same genus are indicated with the same color. Numbers at the nodes represent aLRT branch supports. The cyan line shows a proposed demarcation of genera. The genome organization relative to the *rep* ORF is shown to the right of the phylogeny.

**A grid with different colored lines

Description automatically generated**

**Figure 3:** A ‘two color’ pairwise identity matrix of members of the families *Ouroboviridae* and *Gandrviridae* with 78% species threshold *s* inferred using SDT v1.2 [12].

**References**

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