

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

|  |  |  |
| --- | --- | --- |
| **Code assigned:** | **2021.029M** |  |
| **Short title:** Create one new species in genus *Peropuvirus* (*Mononegavirales*: *Artoviridae*) | | |
|  | | |

**Author(s) and email address(es)**

|  |  |
| --- | --- |
|  |  |
| Dietzgen RG, Kuhn JH, Vasilakis N, Okland AL, Ye GY | |  | | --- | | [r.dietzgen@uq.edu.au](mailto:r.dietzgen@uq.edu.au); | | [kuhnjens@niaid.nih.gov](mailto:kuhnjens@niaid.nih.gov); | | nivasila@utmb.edu; | | arnfinn.lodden.okland@zoetis.com; | | chu@zju.edu.cn | |

**Author(s) institutional address(es) (optional)**

|  |
| --- |
|  |

**Corresponding author**

|  |
| --- |
| Dietzgen RG |

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

|  |
| --- |
| ICTV *Artoviridae* Study Group |

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

|  |
| --- |
|  |

**Submission dates**

|  |  |
| --- | --- |
| Date first submitted to SC Chair | May 28, 2021 |
| Date of this revision (if different to above) |  |

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

|  |
| --- |
|  |

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

**Name of accompanying Excel module**

|  |
| --- |
| 2021.029M.R.Peropuvirus\_1nsp |

**Abstract**

|  |
| --- |
| The family *Artoviridae* includes two genera, *Hexartovirus* and *Peropuvirus.* Here we propose to create one new species in genus *Peropuvirus* for Solanum melongena rhabdo-like virus. |

**Text of proposal**

|  |  |
| --- | --- |
| |  | | --- | | Solanum melongena rhabdo-like virus (SmRLV) was identified in eggplant (*Solanum melongena* L.) leaf tissue during a metagenomic study of plants growing along an ancient canal in Zhènjiāng (镇江市), China [1]. The complete genome sequence has 11,542 nucleotides (strain pt065-rha-4; GenBank #MN831436) and contains five ORFs in the order 3’-U1-U2-U3-U4-L-5’. A small putative ORF also occurs in the negative orientation (Table 1, Figure 1). The genome organization is thus similar to that of Pteromalus puparum negative-strand RNA virus 1 (PpNSRV1) in the genus *Peropuvirus*. In BlastP analysis, the L protein amino acid sequence of SmRLV is 47% and 46.5% identical to PpNSRV1 and Húběi rhabdovirus-like virus 6 (HbRLV-6), respectively. Based on a ML tree generated from complete L protein sequences, SmRLV forms a well-supported clade with PpNSRV1 and HbRLV-6 in the genus *Peropuvirus* (Figure 2).  There are currently six recognized species in the genus *Peropuvirus*. Viruses classified in these species infect parasitoid wasps, barnacles pillworms, woodlice, odonates or copepods. SmRLV is the first peropuvirus identified in a plant, i.e., eggplant. No species demarcation criteria have been established beyond virus phylogeny and hosts. Members of different *Peropuvirus* species differ by 52-75% in L protein amino acid sequence, although sequence divergence is not currently used as a formal species demarcation criterion.  Based on phylogeny and host, we propose to classify SmRLV in the new species *Peropuvirus melongenae* (melongena is Latin for eggplant)*.* | |

**Supporting evidence**

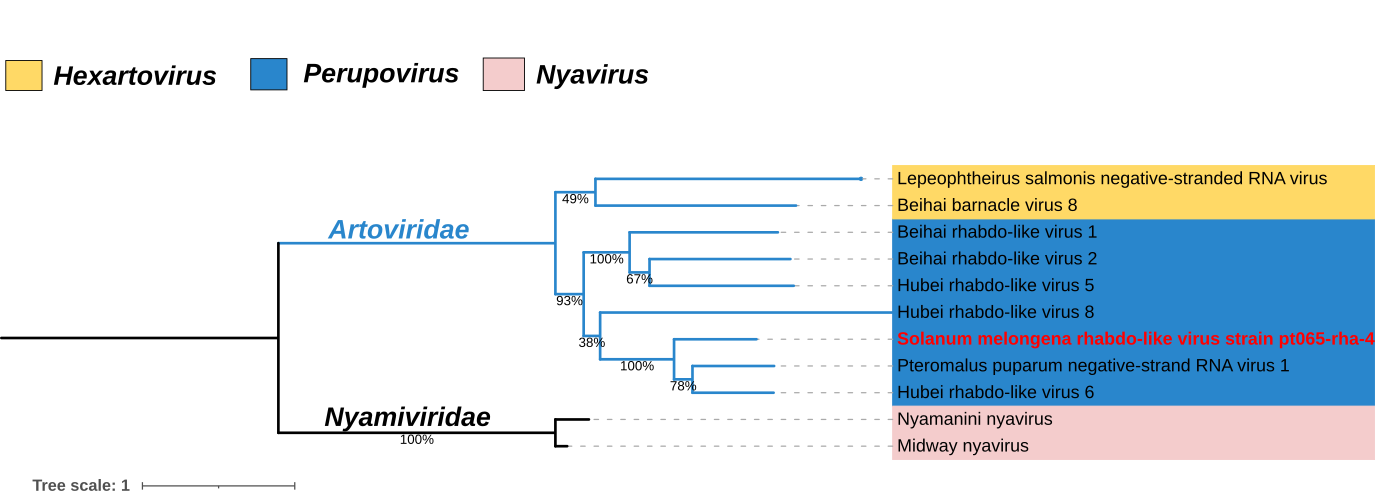
**Table 1.**

Features of the ORFs encoded by Solanum melongena rhabdo-like virus pt065-rha-4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ORF | Strand | Frame | Start (nt) | Stop (nt) | Length (nt | aa) |
| ORF1 | + | 2 | 29 | 1372 | 1344 | 447 |
| ORF2 | + | 2 | 1412 | 1873 | 462 | 153 |
| ORF3 | + | 1 | 1948 | 3108 | 1161 | 386 |
| ORF4 | + | 1 | 3148 | 4839 | 1692 | 563 |
| ORF5 | + | 3 | 4893 | 11435 | 6543 | 2180 |
| ORF6 | - | 2 | 1821 | 1396 | 426 | 141 |

****

**Figure 1.** Genome organization of Solanum melongena rhabdo-like virus pt065-rha-4



**Figure 2**. Phylogenetic analysis of viruses in the family *Artoviridae*. Maximum likelihood tree of L protein amino acid sequences utilizing LG+G+I+F model and 800 bootstraps. Model test and phylogeny based on complete deletion of gaps.

**References**

[1] Yang S, Shan T, Wang Y, Yang J, Chen X, Xiao Y, You Z, He Y, Zhao M, Lu J, Yang Z, Dai Z, Liu Q, Yao Y, Lu X, Li H, Zhou R, Li W, Zhou C, Zhang W (2020). Virome of riverside phytocommunity ecosystem of an ancient canal. Research Square preprint server. Doi:10.21203/rs.3.rs-25620/v1