This Word module should be used for all taxonomic proposals.

Please complete **Part 1** and:

either **Part 3** for proposals to create new taxa or change existing taxa

or **Part 2** for proposals of a general nature.

Submit the completed Word module, together with the accompanying Excel module named in Part 3, to the appropriate ICTV Subcommittee Chair.

For guidance, see the notes written in blue, below, and the help notes in file Taxonomic\_Proposals\_Help\_2018.

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Code assigned:** | ***2018.027B*** | | (to be completed by ICTV officers) |
| **Short title:** (e.g. “6 new species in the genus *Zetavirus”*)  **To create one (1) new genus, *Mimasvirus*, containing two species in the family *Myoviridae*** | | | |
|  | | | |
| **Author(s):** | | | |
| Andrew M. Kropinski, University of Guelph  Evelien M. Adriaenssens, University of Liverpool | | | |
| **Corresponding author with e-mail address:** | | | |
| Andrew M. Kropinski Phage.Canada@gmail.com | | | |
| **List the ICTV study group(s) that have seen this proposal:** | | | |
| A list of study groups and contacts is provided at <http://www.ictvonline.org/subcommittees.asp> . If in doubt, contact the appropriate subcommittee chair (there are six virus subcommittees: animal DNA and retroviruses, animal ssRNA-, animal ssRNA+, fungal and protist, plant, bacterial and archaeal) | | **Bacterial and Archaeal Viruses Subcommittee** | |
| **ICTV Study Group comments (if any) and response of the proposer:** | | | |
|  | | | |
|  | | | |
| Date first submitted to ICTV: | | | May 2018 |
| Date of this revision (if different to above): | | |  |

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

**Part 2:** **NON-STANDARD**

Template for any proposal regarding ICTV procedures, rules or policy, not involving the creation of new taxonomy.

| **Text of proposal:** |
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|  |

**Part 3:** **PROPOSED TAXONOMY**

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| **Name of accompanying Excel module: 2018.027B.N.v1.Mimasvirus** |

The taxonomic changes you are proposing should be presented on an accompanying Excel module, 2017\_TP\_Template\_Excel\_module. Please enter the file name of the completed module in this box.

**Supporting material:**

| additional material in support of this proposal |
| --- |
| Please explain the reasons for the taxonomic changes you are proposing and provide evidence to support them. The following information should be provided, where relevant:   * **Species demarcation criteria**: Explain how new species differ from others in the genus and demonstrate that these differences meet the criteria previously established for demarcating between species. If no criteriahave previously been established, and if there will now be more than one species in the genus, please state the demarcation criteria you are proposing. * **Higher taxa**:   + There is no formal requirement to state demarcation criteria when proposing new genera or other higher taxa. However, a similar concept should apply in pursuit of a rational and consistent virus taxonomy.   + Please indicate the **origin of names** assigned to new taxa at genus level and above.   + For each new genus a **type species** must be designated to represent it. Please explain your choice. * **Supporting evidence**: The use of Figures and Tables is strongly recommended (note that copying from publications will require permission from the copyright holder). For phylogenetic analysis, try to provide a tree where branch length is related to genetic distance. |

**Species demarcation criteria** We have chosen 95% DNA sequence identity as the criterion for demarcation of species in this new genus. Each of the proposed species differs from the others with more than 5% at the DNA level as confirmed with the BLASTN algorithm.

**Source of the name of this taxon:** Derived from the name of one of the giants in Greek mythology, Mimas.

**History:** The first isolated phage of this type was Cronobacter sakasaki phage vB\_CsaM\_GAP32 which was isolated by enrichment from a wastewater treatment plant in Guelph (Ontario, Canada) [1]. Morphologically it displays “a large head (113 nm) and a comparatively short (118×23 nm) contractile tail. The neck is 10 nm long and carries a collar of 20×3 nm. The normal tail sheath displays 24–25 striations” [1]. “Some of the unique features of this phage include: a chromosome condensation protein, two copies of the large subunit terminase, a predicted signal-arrest-release lysin; and an RpoD-like protein, which is possibly involved in the switch from immediate early to delayed early transcription.” Phage vB\_PcaM\_CBB has a broad host range lysing strains of Erwinia, Pectobacterium, and Cronobacter [2]. It was initially isolated on Pectobacterium carotovorum subsp carotovorum strain CBBL19-1-37. Electron microscopy revealed that the capsids “had a height of 126.9 nm and a width of 128.0 nm. Tails displayed transverse striations with dimensions of 123.0 × 27.1 nm with a base plate with dimensions of 36.4 × 14.7 nm.” [2]. One on the characteristics of this phage is that its genome is terminally redundant with repeat regions of 22,456 bp. This probably applied to GAP32 as well.

**GenBank Summary:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Phage name | RefSeq No. | INSDC | Size (Kb) | GC% | Protein | tRNA | Overall DNA sequence identity(\*) | Common proteins (\*\*) |
| vB\_CsaM\_GAP32 | NC\_019401 | JN882285 | 358.66 | 35.6 | 545 | 26 | 100 | 100 |
| vB\_PcaM\_CBB |  | KU574722 | 378.38 | 35.9 | 605 | 33 | 73 | 87.9 |

(\*) determined using BLASTn at NCBI; (\*\*) determined using CoreGenes 3.5 (<http://binf.gmu.edu:8080/CoreGenes3.5/>).

**BLASTN homologs:** The nearest relative is Serratia phage BF. At this time we do not consider creating a higher taxon to contain this virus.

**Phylogeny:** The phylogenetic tree was constructed, using phylogeny.fr, using the major capsid protein homologs of these and related phages.



| **References:** |
| --- |
| 1: Abbasifar R, Griffiths MW, Sabour PM, Ackermann HW, Vandersteegen K, Lavigne  R, Noben JP, Alanis Villa A, Abbasifar A, Nash JH, Kropinski AM. Supersize me:  Cronobacter sakazakii phage GAP32. Virology. 2014 Jul;460-46  2: Buttimer C, Hendrix H, Oliveira H, Casey A, Neve H, McAuliffe O, Ross RP, Hill  C, Noben JP, O'Mahony J, Lavigne R, Coffey A. Things Are Getting Hairy:  Enterobacteria Bacteriophage vB\_PcaM\_CBB. Front Microbiol. 2017 Jan 24;8:44. |