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.

The Word module explains and justifies your proposal. The Excel module is a critical document that will be used to implement the proposed taxonomic changes once they are approved and ratified. If proposals presented in the Word module are not presented accurately in the Excel module, the taxonomic changes cannot proceed.

For guidance, see the notes written in blue, below, and the Help Notes in file Taxonomic\_Proposals\_Help\_2019.

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Code assigned:** | ***2019.075B*** | |  |
| **Short title:** Create one new genus (*Phapecoctavirus*) including five new species in the family *Myoviridae* | | | |
|  | | | |
| **Author(s) and email address(es):** | | | |
| List authors in a single line *Archives of Virology* citation format (e.g. Smith AB, Huang C-L, Santos, F) | | Provide email address for each author in a single line separated by semi-colons | |
| Kropinski AM, Adriaenssens EM, Rohde M, Korf I, Wittmann J | | Phage.Canada@gmail.com;  evelien.adriaenssens@quadram.ac.uk; Manfred.Rohde@helmholtz-hzi.de ims16@dsmz.de;  jow12@dsmz.de | |
| **Author(s) institutional address(es) (optional):**   |  | | --- | | Provide institutional addresses, each on a single line followed by author(s) initials (e.g. University of Woolloomooloo [SAB, HCL]) | | University of Guelph, Canada [AMK]  Quadram Institute Bioscience, UK [EMA]  Helmholtz Centre for Infection Research, Germany [MR]  DSMZ, Germany [IK, JW] | | | | |
| **Corresponding author** | | | |
| Johannes Wittmann | | | |
| **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**  **Caudovirales Study Group** | |
| **ICTV Study Group comments (if any) and response of the proposer:** | | | |
|  | | | |
|  | | | |
| Date first submitted to ICTV: | | |  |
| 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:** |
| --- |
|  |

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

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| --- |
| **Name of accompanying Excel module:** 2019.075B.A.v1.Phapecoctavirus\_1gen5sp.xlsx |

The taxonomic changes you are proposing should be presented on an accompanying Excel module, 2019\_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, please provide a tree where branch length is **proportional to genetic** distance, generated using an appropriate algorithm (Neighbour-Joining, Maximum Likelihood, or Bayesian) and provide evidence of the reliability of the branching (e.g., by bootstrapping).   Please refer to the Help Notes file (Taxonomic\_Proposals\_Help\_2019) for more information.   | **References:** | | --- | | 1: [Tsonos J](https://www.ncbi.nlm.nih.gov/pubmed/?term=Tsonos%20J%5BAuthor%5D&cauthor=true&cauthor_uid=23118449), [Adriaenssens EM](https://www.ncbi.nlm.nih.gov/pubmed/?term=Adriaenssens%20EM%5BAuthor%5D&cauthor=true&cauthor_uid=23118449), [Klumpp J](https://www.ncbi.nlm.nih.gov/pubmed/?term=Klumpp%20J%5BAuthor%5D&cauthor=true&cauthor_uid=23118449), [Hernalsteens JP](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hernalsteens%20JP%5BAuthor%5D&cauthor=true&cauthor_uid=23118449), [Lavigne R](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lavigne%20R%5BAuthor%5D&cauthor=true&cauthor_uid=23118449), [De Greve H](https://www.ncbi.nlm.nih.gov/pubmed/?term=De%20Greve%20H%5BAuthor%5D&cauthor=true&cauthor_uid=23118449). Complete genome sequence of the novel Escherichia coli phage phAPEC8. [J Virol.](https://www.ncbi.nlm.nih.gov/pubmed/23118449) 2012; 86(23):13117-8.2:  [Meier-Kolthoff](https://www.ncbi.nlm.nih.gov/pubmed/?term=Meier-Kolthoff%20JP%5BAuthor%5D&cauthor=true&cauthor_uid=29036289) JP, Goeker M. VICTOR: genome-based phylogeny and classification of prokaryotic viruses. [Bioinformatics](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5860169/). 2017; 33(21): 3396–3404. 3: Korf IHE, Meier-Kolthoff JP, Adriaenssens E, Kropinski AM, Nimtz M, Rohde M, van Raaij M, Wittmann J. Still something to discover – novel insights into Escherichia coli phage diversity and taxonomy. Viruses. Under review.  4. Lowe, T.M. and Chan, P.P. (2016) tRNAscan-SE On-line: Search and Contextual Analysis of Transfer RNA Genes. Nucl. Acids Res. 44: W54-57.  5. Sayers EW, Agarwala R, Bolton EE, Brister JR, Canese K, Clark K, et al. Database resources of the National Center for Biotechnology Information. Nucleic Acids Res. 2019;47(D1):D23-D28.  6. Tolstoy I, Kropinski AM, Brister JR. Bacteriophage Taxonomy: An Evolving Discipline. Methods Mol Biol. 2018;1693:57-71.  7. O'Leary NA, Wright MW, Brister JR, Ciufo S, Haddad D, McVeigh R, et al. Reference sequence (RefSeq) database at NCBI: current status, taxonomic expansion, and functional annotation. Nucleic Acids Res. 2016;44(D1):D733-45.  8. Turner D, Reynolds D, Seto D, Mahadevan P. CoreGenes3.5: a webserver for the determination of core genes from sets of viral and small bacterial genomes. BMC Res Notes. 2013;6:140. |   **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:** The name is derived from the name of the isolated phage of this type, Escherichia phage phAPEC8.  **History:** Phage phAPEC8 is a member of the *Myoviridae* family. It was isolated from a water sample in the vicinity of a poultry house in Belgium in 2010 [1].  **GenBank Summary:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Phage name | RefSeq No. | INSDC | Size (Kb) | GC% | Protein | tRNA | Overall DNA sequence identity (\*\*) | % common proteins (\*\*) | | Escherichia phage phAPEC8 | [NC\_020079.1](https://www.ncbi.nlm.nih.gov/nuccore/NC_020079.1) | [JX561091.1](https://www.ncbi.nlm.nih.gov/nuccore/JX561091.1) | 147.74 | 39.1 | 269 | 11 | 100% | 100 | | Escherichia phage vB\_EcoM\_  Schickermooser |  | MK373788 | 151.19 |  | 284 | 12(\*) | 93.0 | 95.2 | | Escherichia phage ESCO5 |  | [KX664695.2](https://www.ncbi.nlm.nih.gov/nuccore/KX664695.2) | 149.31 | 39.0 | 265 | 10 | 91.8 | 90.7 | | Klebsiella phage ZCKP1 |  | [MH252123.1](https://www.ncbi.nlm.nih.gov/nuccore/MH252123.1) | 150.93 | 39.1 | 267 | 12(\*) | 90.1 | 90.0 | | Escherichia phage ESCO13 |  | [KX552041.2](https://www.ncbi.nlm.nih.gov/nuccore/KX552041.2) | 149.81 | 39.1 | 281 | 10 | 92.5 | 95.9 |   **\* Not shown in the GenBank genome summary; discovered using tRNAscan-SE (http://lowelab.ucsc.edu/tRNAscan-SE/) [4]**  **\*\* Determined using BLASTn at NCBI [5-7]**  **\*\*\* Determined using CoreGenes 3.5 at** [**http://binf.gmu.edu:8080/CoreGenes3.5/**](http://binf.gmu.edu:8080/CoreGenes3.5/) **[8]**  **BLASTN homologs:** The next homolog is Enterobacteria phage phi92 which shares 47.9% DNA sequence identity with Escherichia phage phAPEC8  **Electron micrograph of phage Schickermooser:**    **Phylogeny:** The phylogenetic tree was constructed with VICTOR [2], using whole genome sequences of Escherichia phages from different genera of the *Myoviridae* family at the amino acid level [3]. |
|  |



Genomic organization of phages Schickermooser and phAPEC8 and comparison with related phages [3].