Code assigned:	***2011.009a-eB***	(to be completed by ICTV officers)

Short title: In the family *Guttaviridae* create genus *Betaguttavirus* and change the name existing genus, *Guttavirus*, to *Alphaguttavirus*

Modules attached	**1** ☒	**2** ☒	**3** ☒	**4** ☐	**5** ☐
	6 ☐	**7** ☐	**8** ☒	**9** ☒	

Author(s) with e-mail address(es) of the proposer:

Prangishvili D. (david.prangishvili@pasteur.fr)
Mochizuki T. (tomohiro.mochizuki@pasteur.fr)

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 (fungal, invertebrate, plant, prokaryote or vertebrate viruses)	

ICTV-EC or Study Group comments and response of the proposer:

Date first submitted to ICTV:	June 2011
Date of this revision (if different to above):	June 2012

NEW SPECIES

Code	***2011.009aB***

To create 1 new species within:

Genus:	***Betaguttavirus*** (new)
Subfamily:	
Family:	***Guttaviridae***
Order:	

Fill in all that apply.

- If the higher taxon has yet to be created (in a later module, below) write "**(new)**" after its proposed name.
- If no genus is specified, enter "**unassigned**" in the genus box.

And name the new species:	**GenBank sequence accession number(s) of reference isolate:**
Aeropyrum pernix ovoid virus 1	HE580237

Reasons to justify the creation and assignment of the new species:

The proposed species differs from the only species of the family by its morphology, size of the virion and the genome (see module below, and annex, Figure 1).

Negatively stained virions of *Aeropyrum pernix* ovoid virus 1 (APOV1) appear as slightly irregular oval particles with one pointed end, while on cryo-electron micrographs, the virions had a regular oval shape and uniform size (about 70 x 55 nm) (Figures 1A, 1B). The morphology of virions shows pronounced similarity to that of the virions of *Sulfolobus neozealandicus* droplet-shaped virus (SNDV), the sole member of the genus *Guttavirus* and the family *Guttaviridae* (Figures 1C, 1D). However, the virion of SNDV is slightly larger, and carries dense filaments at the pointed end, which could not be observed in the virion of APOV1.

Unfortunately, the available information on the SNDV is restricted to the original description of the virion and a superficial characterization of the genome, which was reported to be a circular dsDNA containing about 20 kb. SNDV has not been characterized further since the original description, and it is impossible to do this at present due to the absence of the virus in strain collections. Considering the similarities of the virion morphotypes of APOV1 and SNDV, as well as the fact that the genomes of both viruses are circular, dsDNA molecules of comparable sizes, we propose to assign APOV1 to the family *Guttaviridae*. Such taxonomical classification will enable to populate the *Guttaviridae* with an available member, allowing further characterization of the family.

The ds DNA of APOV1 carries 13,769 bp (Figure 2). It is found integrated in the genome the hyperthermophilic archaeon *Aeropyrum pernix* strain DSM 11879. Excision of the provirus, its circularization and virus replication can be induced by growing cells of an obligate aerobe *A. pernix* in sub-optimal conditions, with oxygen supply.

NEW GENUS

Code	***2011.009bB***	(assigned by ICTV officers)

To create a new genus within:

Subfamily:	
Family:	***Guttaviridae***
Order:	

Fill in all that apply.
- If the higher taxon has yet to be created (in a later module, below) write "**(new)**" after its proposed name.
- If no family is specified, enter "**unassigned**" in the family box

Code	***2011.009cB***	(assigned by ICTV officers)

To name the new genus: *Betaguttavirus*

Assigning the type species and other species to a new genus

Code	***2011.009dB***	(assigned by ICTV officers)

To designate the following as the type species of the new genus

Aeropurum pernix ovoid virus 1

Please enter here the TOTAL number of species (including the type species) that the genus will contain:

1 species

Reasons to justify the creation of a new genus:

Negatively stained virions of *Aeropyrum pernix ovoid virus 1* (APOV1) appear as slightly irregular oval particles with one pointed end, while on cryo-electron micrographs, the virions had a regular oval shape and uniform size (about 70 x 55 nm) (Figures 1A, 1B). The morphology of virions shows pronounced similarity to that of the virions of *Sulfolobus neozealandicus* droplet-shaped virus (SNDV), the sole member of the genus *Guttavirus* and the family *Guttaviridae* (Figures 1C, 1D). However, the virion of SNDV is slightly larger, and carries dense filaments at the pointed end, which could not be observed in the virion of APOV1.

Unfortunately, the available information on the SNDV is restricted to the original description of the virion and a superficial characterization of the genome, which was reported to be a circular dsDNA containing about 20 kb. SNDV has not been characterized further since the original description, and it is impossible to do this at present due to the absence of the virus in strain collections. Considering the similarities of the virion morphotypes of APOV1 and SNDV, as well as the fact that the genomes of both viruses are circular, dsDNA molecules of comparable sizes, we propose to assign APOV1 to the family *Guttaviridae*. Such taxonomical classification will enable to populate the *Guttaviridae* with an available member, allowing further characterization of the family.

The ds DNA of APOV1 carries 13,769 bp (Figure 2). It is found integrated in the genome the hyperthermophilic archaeon *Aeropyrum pernix* strain DSM 11879. Excision of the provirus, its circularization and virus replication can be induced by growing *A. pernix* cells in sub-optimal conditions.

Origin of the new genus name:

Derived from the name of the family.

Reasons to justify the choice of type species:

Aeropurum pernix ovoid virus 1 is the only species in the genus

Species demarcation criteria in the new genus:

Not applicable

MODULE 8: **NON-STANDARD**

Template for any proposal not covered by modules 2-7. This includes proposals to change the name of existing taxa (but note that stability of nomenclature is encouraged wherever possible).

non-standard proposal

Code	***2011.009eB***	(assigned by ICTV officers)
Title of proposal: Change the name of the genus *Guttavirus* to *Alphaguttavirus*		

Text of proposal:

Change the name of the genus *Guttavirus* to *Alphaguttavirus*
Reasons to justify proposal:
The proposed new name, *Alphaguttavirus*, complements that of the new genus *Betaguttavirus*

APPENDIX: supporting material

References:

Arnold, H. P., Ziese, U., and Zillig, W. (2000). SNDV, a novel virus of the extremely thermophilic and acidophilic archaeon Sulfolobus. *Virology*, 272**:**409-16.

Mochizuki, T., Sako, Y., and Prangishvili, D. (2011) Provirus induction in hyperthermophilic Archaea: characterization of Aeropyrum pernix spindle-shaped virus 1, APSV1, and Aeropyrum pernix ovoid virus 1, APOV1. *J .Bacteriol*., **193**: 5412-5419.

Annex:

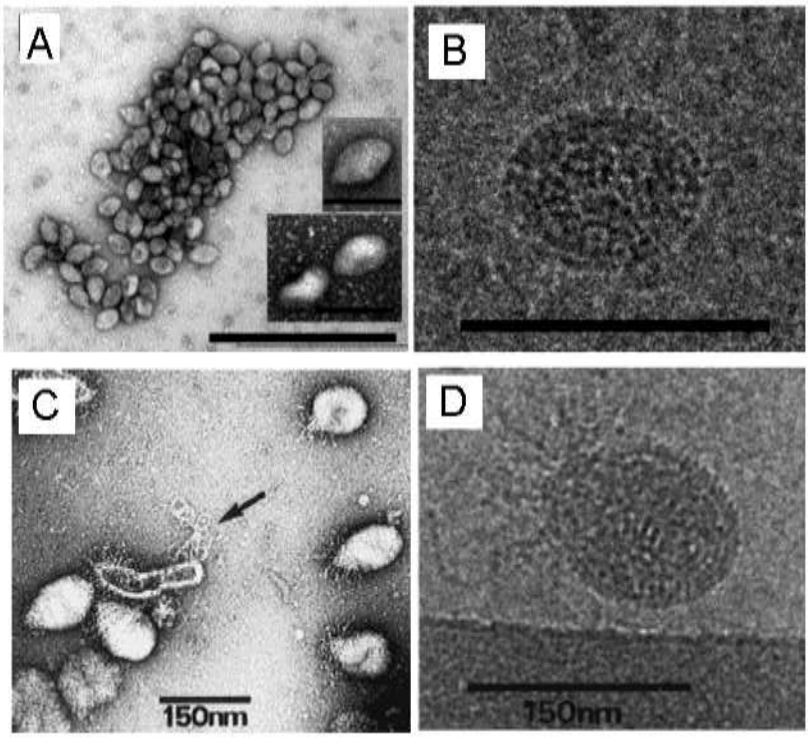

Figure 1. Virions of the Aeropyrum pernix ovoid virus 1 (A and B) and Sulfolobus newzealandicus droplet-shaped virus (C and D). Virions are negartively stained (A and C) and imbedded in ice (B and D). A and B, reproduced from Mochizuki *et al*., 2011; C and D, from Arnold *et al*., 2000.

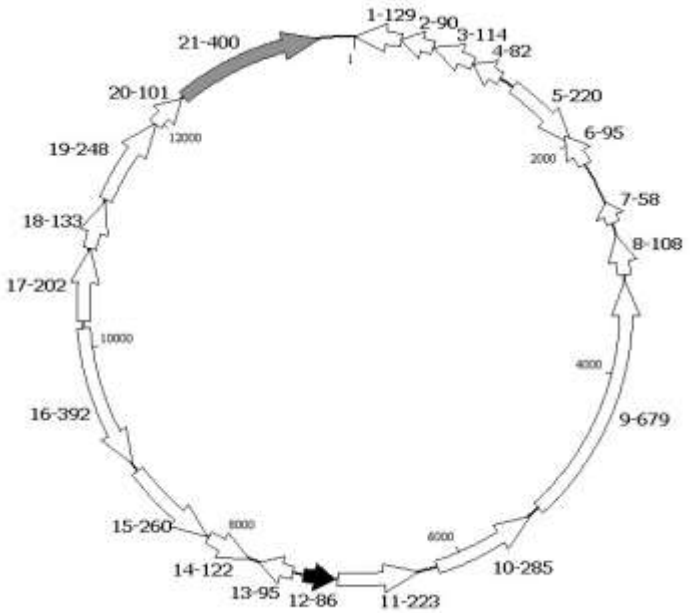

Figure 2. Genome map of the *Aeropyrum pernix ovoid virus 1*. In black is the putative gene encoding the major capsid protein, in grey is the putative gene for the integrase. Modified from Mochizuki *et al*., 2011.