Template for Taxonomic Proposal to the ICTV Executive Committee
To create a new Genus in an existing Family

Code† 2005.074B.04 To create a new genus in the family* ***Lipothrixviridae***

Code† 2005.075B.04 To name the new genus* ***Deltalipothrixvirus***

Code† 2005.076B.04 To designate the species ***Acidianus filamentous virus 2***
As the type species of the new genus*

Code† 2005.077B.04 To designate the following as species of the new genus*:

Acidianus filamentous virus 2		
Acidianus filamentous virus 2	(AFV2)	AJ854042

Code† To designate the following as tentative species in the new genus*:

† Assigned by ICTV officers
* repeat these lines and the corresponding arguments for each genus created in the family

Author(s) with email address(es) of the Taxonomic Proposal

David Prangishvili
prangish@pasteur.fr

Old Taxonomic Order

Order
Family
Genus
Type Species
Species in the Genus
Tentative Species in the Genus
Unassigned Species in the family

New Taxonomic Order

Order
Family ***Lipothrixviridae***
Genus ***Deltalipothrixvridae***
Type Species ***Acidianus filamentous virus 2***
Species in the Genus ***Acidianus filamentous virus 2***
Tentative Species in the Genus **none**
Unassigned Species in the family **none**

ICTV-EC comments and response of the SG

Argumentation to choose the type species in the genus

Only virus described

Species demarcation criteria in the genus

Not appropriate

List of Species in the created genus

Acidianus filamentous virus 2 **(AFV2)**

List of Tentative Species in the created genus

none

Argumentation to create a new genus:

Virions of AFV2 resemble those of the species of the *Lipothrixviridae* family. They are flexible, enveloped, and carry specific terminal structures and double-stranded DNA. However, the detailed structures differ. The terminal structures of AFV2 show no similarity to those of members of the three genera of this family, *Alphalipothrixvirus, Betalipothrixvirus,* and *Gammalipothrixvirus*, nor do they resemble terminal structures of other known filamentous viruses.

The viral core structure of AFV2 does not resemble those described earlier for lipothrixviruses, neither the nucleoprotein complex of the alphalipothrixvirus TTV1, nor the nucleosome-like arrangement of the betalipothrixvirus SIFV. The genome properties are also consistent with these observations. No homologues of the major structural proteins of the alphalipothrixvirus TTV1 or the betalipothrixvirus SIFV are encoded in the AFV2 genome. Moreover, only about 20% of the predicted ORFs yield good matches with the ORFs of the betalipothrixvirus SIFV and the gammalipothrixvirus AFV1.Another feature of AFV2, which discriminates it from members of the three genera of the *Lipothrixviridae* is the apparent absence of lipids in the virions.

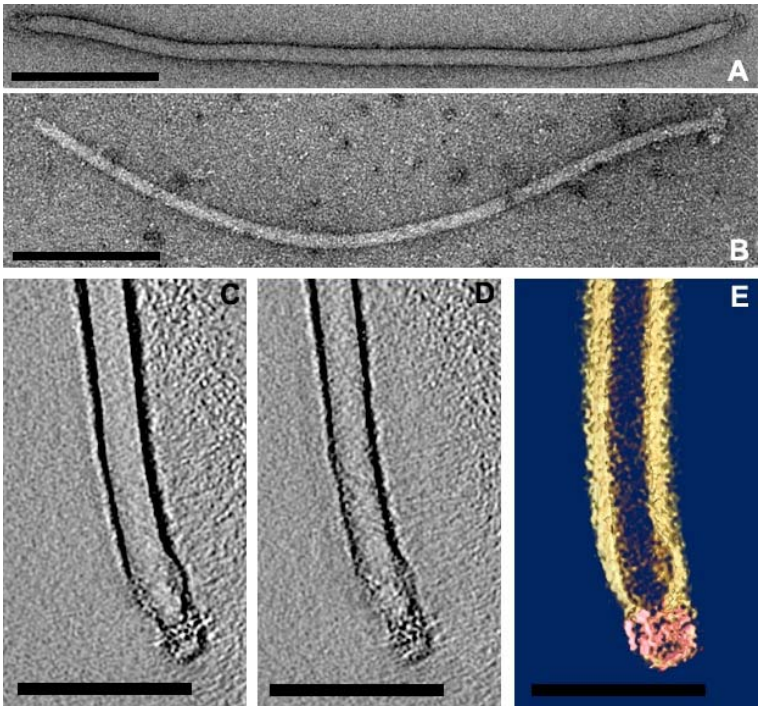
Origin of the proposed genus name

The name is accordance with the trend to designate genera of the family *Lipothrixviridae* with letters of the Greek alphabet.

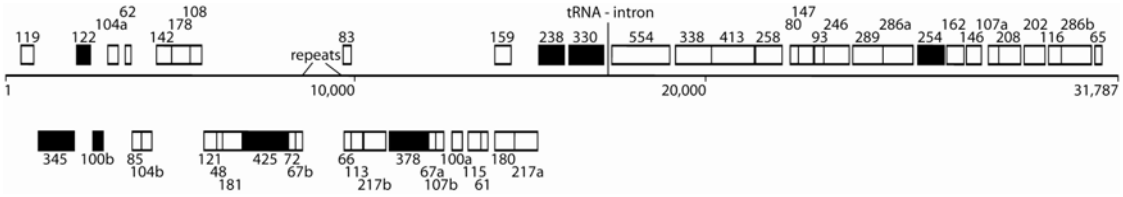
References

Häring M., Rachel, R , G. Vestergaard, K. Brügger, R. Rachel, R. A. Garrett, and D. Prangishvili. (2005) Structure and genome organisation of AFV2, a novel archaeal lipothrixvirus with unusual terminal and core structures. *J. Bacteriol*. 187, 3855-3858.

Annexes:



Electron micrographs of virions of AFV2 negatively stained with 3% uranyl acetate. A, Native virion. B, Virion after treatment with 0,1% SDS, 1 min. C-E, 3D-reconstruction of the termini of a native virion. A and B, Two different horizontal slices (0.7 nm) through the 3D data set. C, Colour-coded representation of 3D structure; pink - virion termini; yellow - envelope encasing the viral core. Bars - A, B 200 nm; C-E, 100 nm.



Genome map of AFV2 showing the locationand size of the putative genes present on the two DNA strands. Genes are expressed from left to right in the upper row and from left to right in the lower. ORF homologs that are shared with the lipothrixviruses AFV1, SIFV, and the rudiviruses SIRV1 and SIRV2 are represented by filled rectangles.