

Template for Taxonomic Proposal to the ICTV Executive Committee

Creating Species in an existing genus

Code[†] To designate the following as species in the genus:

Rudivirus

belonging to the family[°] : *Rudiviridae*

Acidianus rod-shaped virus 1
Acidianus rod-shaped virus 1 (ARV1) AJ875026

[†] Assigned by ICTV officers

[°] leave blank if inappropriate or in the case of an unassigned genus

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

prangish@pasteur.fr

Old Taxonomic Order

Order

Family *Rudiviridae*

Genus *Rudivirus*

Type Species *Sulfolbus islandicus rod-shaped virus 1*

Species in the Genus *Sulfolbus islandicus rod-shaped virus 1*,
Sulfolbus islandicus rod-shaped virus 2

Tentative Species in the Genus

Unassigned Species in the family

New Taxonomic Order

Order

Family *Rudiviridae*

Genus *Rudivirus*

Type Species *Sulfolbus islandicus rod-shaped virus 1*

Species in the Genus *Sulfolbus islandicus rod-shaped virus 1*,
Sulfolbus islandicus rod-shaped virus 2,
Acidianus rod-shaped virus 1

Tentative Species in the Genus none

Unassigned Species in the family none

ICTV-EC comments and response of the SG

Species demarcation criteria in the genus

Initially, demarcation criteria between species in the genus were virion size, genome size and host range. Later, nucleotide sequences of the genomes were shown to be different in the two known species.

Argumentation to justify the designation of new species in the genus

Acidianus rod-shaped virus 1 (ARV1) differs from the two known members of the genus *Rudivirus* by host range, virion size, and genome size and nucleotide sequence. There is no detectable similarity of nucleotide sequences with the genomes of the two known members of the genus *Rudivirus* and less than 40% of the predicted genes are homologous to those of the two known species.

List of created Species in the genus

Acidianus rod-shaped virus 1

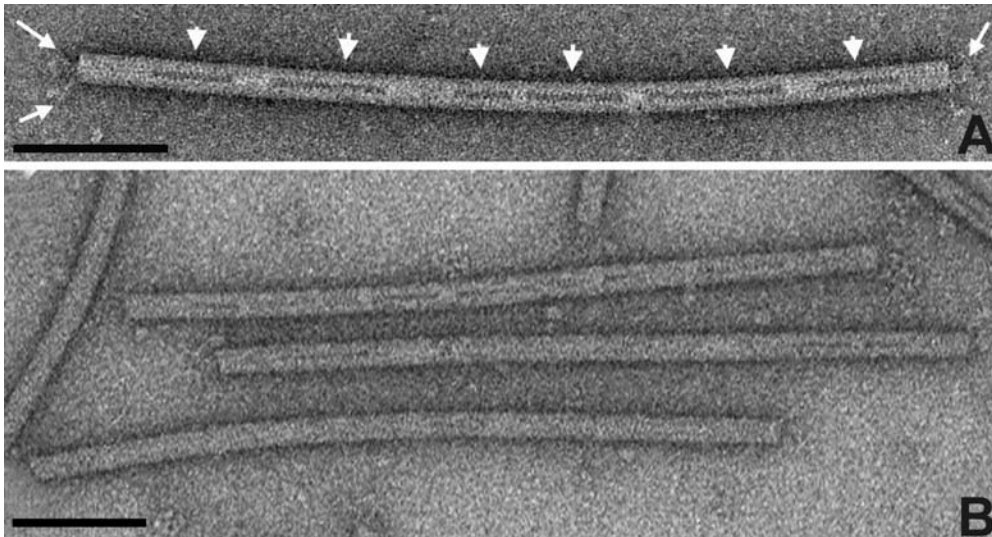
References

Vestergaard, G., M. Häring, X. Peng, R. Rachel, R. A. Garrett, and D. Prangishvili. (2005) A novel rudivirus, ARV1, of the hyperthermophilic archaeal genus *Acidianus*. *Virology* 336, 83-92.

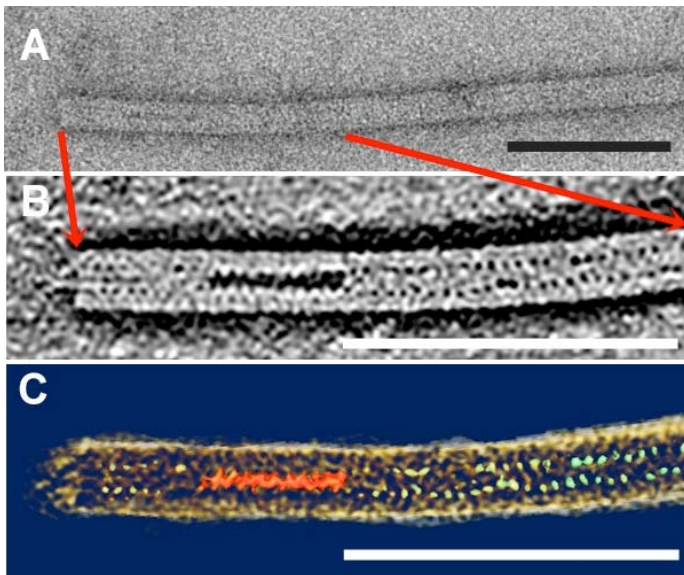
Peng X., H. Blum, Q. She, S. Mallok, K. Brügger, R. A. Garrett, W. Zillig, and D. Prangishvili. (2001). Sequences and replication of genomes of the archaeal viruses SIRV1 and SIRV2: Relationships to the archaeal lipothrixvirus SIFV and some eukaryal viruses. *Virology* 291, 226-234.

D. Prangishvili D., H. P. Arnold, U. Ziese, D. Goetz, I. Holz, and W. Zillig. (1999). A novel virus family, the *Rudiviridae*: structure, virus-host interactions and genome variability of *Sulfolobus* viruses SIRV1 and SIRV2. *Genetics* 153, 1387-1396.

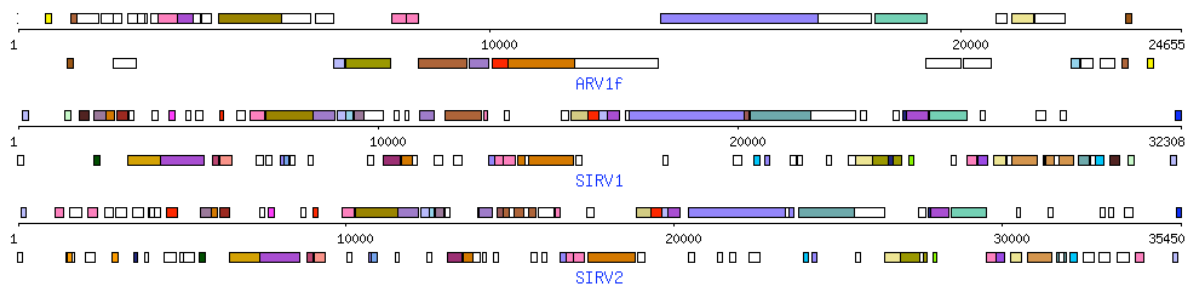
Annexes:



Electron micrographs of ARV1 virions, negatively stained with 3% uranyl acetate. (A) Single virion particle, with a central broken dark line denoted by arrowheads. The terminal fibers are indicated by larger arrows. (B) Virions showing differently stained central regions. Bar, 100 nm.



Electron tomography of an ARV1 virion. (A) Original micrograph. (B) Horizontal slice (0.7 nm) through the 3D-dataset of the reconstructed terminus of an ARV1-particle. (C) Visualisation of the 3D data set using Amira software. Bars 100 nm.



Comparison of the genome map of the virus ARV1 with those of the two other members of the genus *Rudivirus*, the viruses SIRV1 and SIRV2. ORFs shown above the horizontal line are transcribed from left to right and those below the line are transcribed in the opposite direction. Similar colors indicate >60% similarity of amino acid sequence.