

Template for Taxonomic Proposal to the ICTV Executive Committee To create a new Family

Code[†] To create a new family*

Code[†] To name the new family*

Code[†] To designate the following genera as part of the new family*:

Ampullavirus

[†] Assigned by ICTV officers

[°] Leave blank is not appropriate

* repeat these lines and the corresponding arguments for each genus created in the family

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Old Taxonomic Order

Order
Family
Genus *Ampullavirus*
Type Species *Acidianus bottle-shaped virus*
Species in the Genus *Acidianus bottle-shaped virus*
Tentative Species in the Genus none
Unassigned Species in the family none

New Taxonomic Order

Order
Family *Ampullaviridae*
Genus *Ampullavirus*
Type Species *Acidianus bottle-shaped virus*
Species in the Genus *Acidianus bottle-shaped virus*
Tentative Species in the Genus none
Unassigned Species in the family none

ICTV-EC comments and response of the SG

Argumentation to create a new family:

We propose classifying the *Acidianus bottle-shaped virus* as a first representative of a new family because of the unique bottle-shaped morphology of the virion which, to our knowledge, has not previously been observed in the viral world. Moreover, the complex asymmetric virion, lacking elements with icosahedral or regular helical symmetry, with two completely different structures at each end and an envelope encasing a funnel-shaped core represents, as far as we can judge, represents a principally novel type of virus particle.

The funnel-shaped core of the enveloped virion consists of three distinct structural units: the “stopper”, the nucleoprotein cone, consisting of double-stranded DNA and DNA-binding proteins, and the inner core. Electron microscopy evidence suggests that the “stopper” is a structural element involved in recognition of cellular receptors and adsorption, and it is the only component to which DNA is directly attached. The broad end of the virion exhibits an unusual structure with the 20 (\pm 2) thin filaments regularly distributed around, and inserted into, a disc or ring. TEM observations indicate that these filaments are not involved in adsorption and their function remains unclear.

Origin of the proposed family name

From the Latin *ampulla*, for bottle

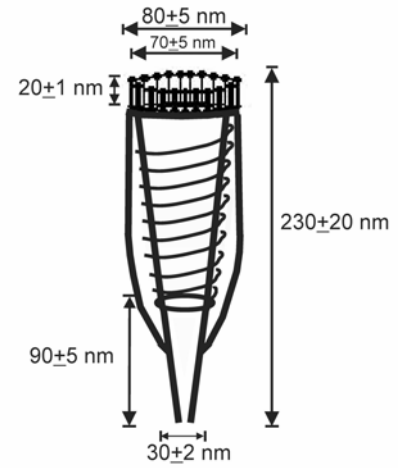
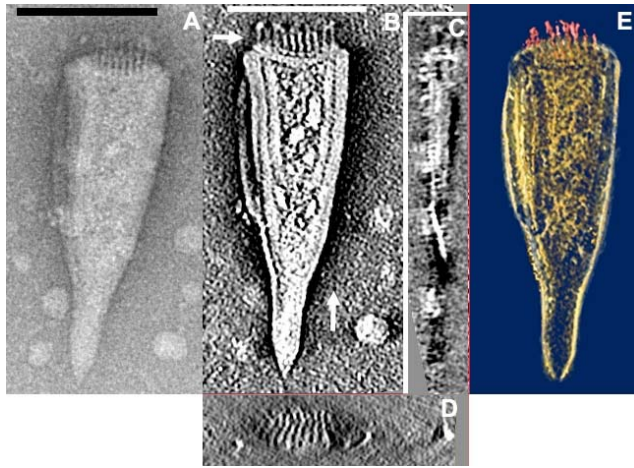
References

Häring, M., R. Rachel, X. Peng, R. A. Garrett, and D. Prangishvili (2005). Diverse viruses in hot springs of Pozzuoli, Italy, and characterization of a unique archaeal virus, *Acidianus*-bottle-shaped virus, from a new family, the *Ampullaviridae*. *Virology*, vol. 79, No. 15, in press.

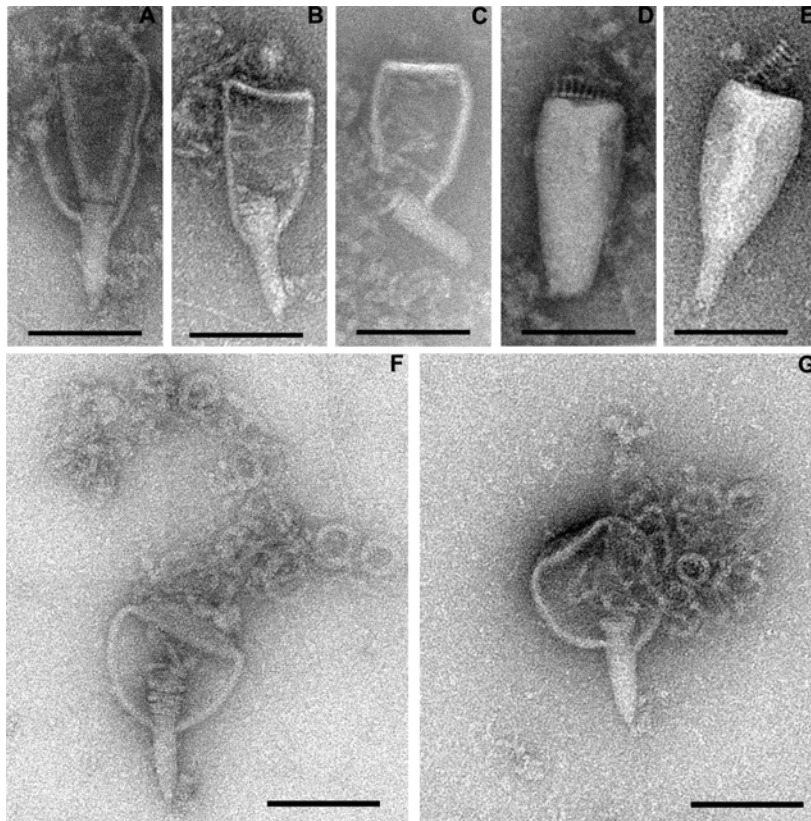
Häring M., R. Rachel, X. Peng, R. A. Garrett, and D. Prangishvili. 2005. Diverse viruses in hot springs of Pozzuoli, Italy, including a unique bottle-shaped archaeal virus ABV from a new family, the *Ampullaviridae*. *J. Virol.* 147, 2419-2429.

Peng, X., T. Basta, M. Haring, R. A. Garrett, and D. Prangishvili. 2007. Genome of *Acidianus* bottle-shaped virus and insights into the replication and packaging mechanisms. *Virology* 364, 237-243.

Annexes:



Electron micrograph and 3D reconstruction of ABV negatively stained with 3% uranyl acetate. (A) Original micrograph at 0 degree tilt. (B) Horizontal slice (0.7 nm) through the 3D data set of 3D reconstruction of ABV. (C) Vertical slice (YZ), (D) vertical slice (XZ) through the same data set. (C) and (D), the position of the slices are indicated by white arrows in B. (E) Color-coded representation of virions 3D structure. Bars: 100 nm. On the right side, a scheme of the structure of an ABV virion



Electron micrographs of partially disrupted particles of ABV negatively stained with 3% uranyl acetate. Bar, 100 nm.