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

Code† 2005.077B.04 To create a new unassigned genus*

Code† 2005.078B.04 To name the new genus* ***Globulovirus***

Code† 2005.079B.04 To designate the species ***Pyrobaculum spherical virus*** As the type species of the new genus*

Code† 2005.080B.04 To designate the following as species of the new genus*:

Pyrobaculum spherical virus
Pyrobaculum spherical virus (PSV) AJ635161

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

none

† 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

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New Taxonomic Order

Order
Family
Genus ***Globulovirus***
Type Species ***Pyrobaculum spherical virus*** **(PSV)**
Species in the Genus ***Pyrobaculum spherical virus*** **(PSV)**
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

Pyrobaculum spherical virus **(PSV)**

List of Tentative Species in the created genus

none

Argumentation to create a new genus:

We propose classifying *Pyrobaculum spherical virus* (PSV) as the first representative of a new genus on the basis of its morphological features, unique for a DNA virus, and its exceptional gene content and genome organization. Spherical virions consist of an envelope surrounding a nucleocapsid with a helical symmetry, consisting of double-stranded DNA and DNA-binding proteins. To our knowledge, in the viral world no other enveloped DNA virus is known with a helical nucleocapsid. Superhelical arrays of nucleoprotein are known for enveloped RNA viruses, like paramyxoviruses. The genomic organisation of the PSV has several peculiarities, the most remarkable of which is that none of the putative genes yields any significant similarity to genes in public sequence databases.

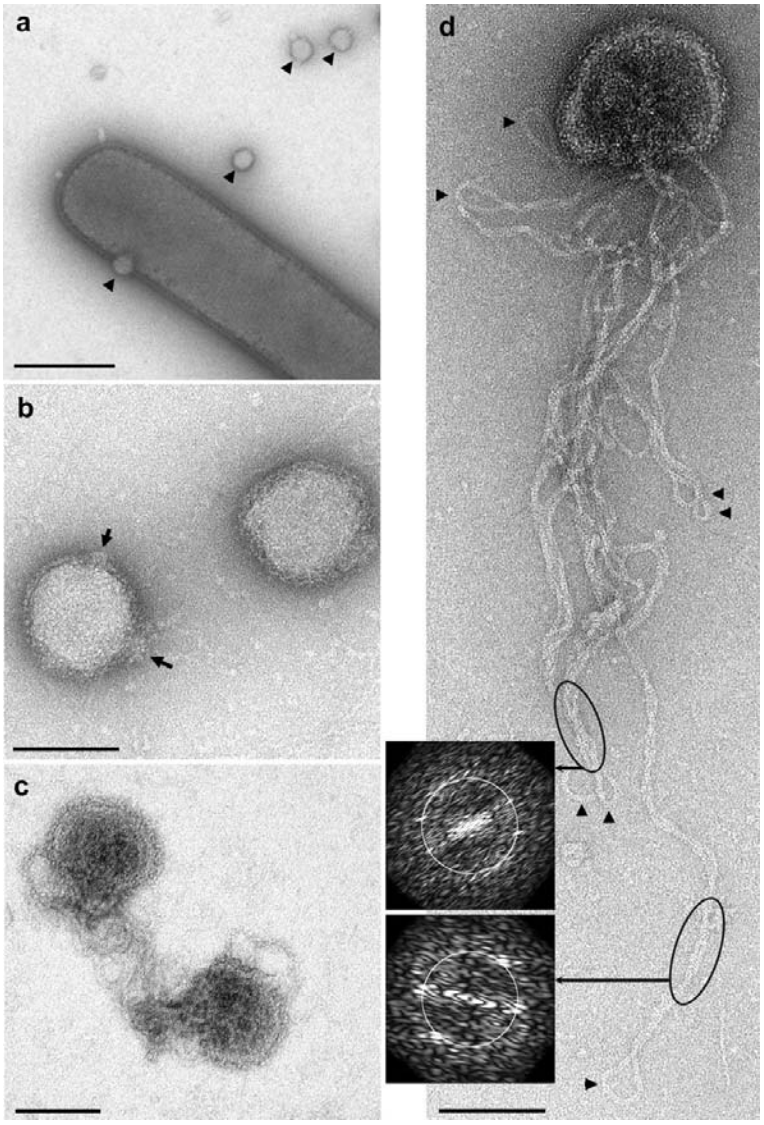
Origin of the proposed genus name

From the Latin *globulus*, a small ball.

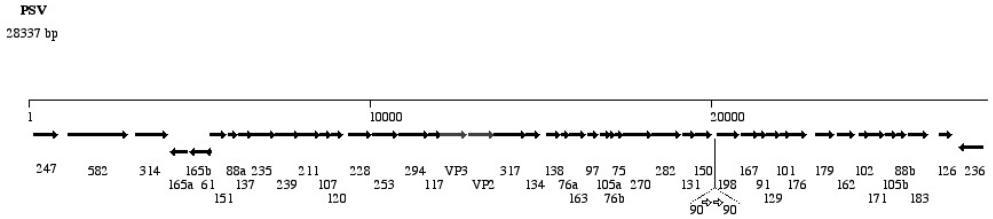
References

Häring M., X. Peng, K. Brügger, R. Rachel, K. O. Stetter, R. A. Garrett, and D. Prangishvili. 2004. Morphology and genome organisation of the virus PSV of the hyperthermophilic archaeal genera *Pyrobaculum* and *Thermoproteus*: a novel virus family, the *Globuloviridae*. *Virology*, 323, 232-242.

Annexes:



Electron microscopy of *Pyrobaculum* sp. D11 and PSV virions, negatively stained with 3% uranyl acetate. (a) Portion of a *Pyrobaculum* sp. D11 cell with four PSV virions marked by arrowheads, bar: 0.5. μm. (b) Two intact PSV virions, spherical protrusions are marked by arrows, bar: 0.1 μm. (c) Two disrupted PSV virions extruding disordered filamentous material, bar: 0.1 μm. (d) Disrupted PSV virion with extended filaments extruding from the particle. Several loops are marked by arrowheads, and two stretches enclosed by ellipsoids were analysed by Fourier analysis as shown in the insets. The circle indicates a frequency of $(2.8\ \text{nm})^{-1}$, bar: 0.1 μm.



Genome map of PSV showing positions and sizes of the ORFs and the direction of the gene transcripts. Only four putative ORFs, 61, 165a, 165 and 236 are encoded on the reverse strand. *VP2* and *VP3* encode virus proteins VP2 and VP3, respectively. The two inset ORF90s indicate the position of the triply repeated 241 bp sequence that occurs in about half of the clones (10 in total) sequenced from the PSV genome library.