

**PROPOSAL Prokaryote SC:
New species 'Mycobacteria phage D29'
in Genus 'L5-like viruses'**

2002.134B.02 to designate *Mycobacteria phage D29* as a Species of the Genus L5-like viruses

Rationale

Bacteriophage D29 is closely related to L5 by the criteria of largely conserved gene composition and organization and largely similar sequences across the genome. Virions are similar in morphology, composition, and in having covalently crosslinked major head proteins. D29 has the multiple repressor binding sites ('stoperators') originally characterized in L5 and is susceptible to L5 immunity.

Distinguishing properties

D29 and L5 differ primarily by relative insertions and deletions in an otherwise highly similar genomic background. The largest difference is a relative deletion in D29 that removes part of the repressor gene. Accordingly, D29 is not temperate, but it is susceptible to L5 immunity and it can form a lysogen if L5 repressor is provided from a plasmid.

Virion properties

Morphology

Phage heads are icosahedral and 60 nm in diameter. Tails are non-contractile, flexible, measure 120 x 8 nm, and have a small baseplate-like swelling at the distal end of the tail and a central fiber. Virions are indistinguishable from those of L5 by electron microscopy.

Nucleic acid

The genome in the virion is a linear, non-permuted molecule of 49,136 bp, with 9 base 3' extensions (cos ends). G+C content is 63.6%. The complete genome sequence is known.

Proteins

The major head subunit is found in the virion covalently crosslinked to its neighbors. Nine protein components of the virion have been identified, of which three are covalently crosslinked oligomers of the major head subunit.

Lipids

None reported.

Carbohydrates

None reported.

Genome organization and replication

There are approximately 85 genes identified, of which five encode tRNAs and the rest proteins. Gene orientation and order along the map are essentially like those of the type

species, as are the patterns of transcription. Host protein synthesis is shut off during D29 lytic infection.

References

Froman, S., Will, D.W. & Bogen, E. (1954). Bacteriophage active against virulent *Mycobacterium tuberculosis* I. Isolation and activity. *Am. J. Pub. Health*, **44**, 1326-1333.

Ford, M.E., Sarkis, G.J., Belanger, A.E., Hendrix, R.W. & Hatfull, G.F. (1998). Genome structure of Mycobacteriophage D29: Implications for phage evolution. *J. Mol. Biol.* **279**, 143-164.