Proposal from the Plant Virus SC

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2002.P094.02: To assign *Grapevine red globe virus* (GRGV) the status of species in the genus *Maculavirus* based on the properties and relationships detailed in the annex.

Annex to the taxonomic proposal for the upgrading of *Grapevine redglobe virus* to definitive species in the genus *Maculavirus*

Grapevine redglobe virus (GRGV) is a phloem-limited non mechanically transmissible virus with isometric particles *c*. 30 nm in diameter, which was identified in *Vitis vinifera* cv. Redglobe affected by leafroll but induced no symptoms in graft-inoculated *Vitis rupestris* indicators. Virus particles are non enveloped, have a rounded contour, prominent surface structure, and clustering of coat protein subunit in pentamers and hexamers (Sabanadzovic *et al*., 2000). The viral genome (Fig. 1), more than one third of which has been sequenced (Sabanadzovic *et al*., 2000 and unpublished information), is a linear, single-stranded, positive sense RNA with a high cytidine content and an organization basically similar to that of *Grapevine fleck virus* (GFkV), the type species of the newly established genus *Maculavirus* (Martelli *et al*. 2002), although it lacks one of the two 3' most open reading frames (ORFs). GRGV genome has three ORFs, is polyadenylated at the 3' end and may be capped at the 5' terminus. ORF1 is the largest and encodes replication-associated proteins (methyltransferase and RdRp) analogous to those of other taxa of the "alpha-like" supergroup of ssRNA, but apparently lacks the conserved 16 nucleotide subgenomic RNA promoter present in tymoviruses (tymobox, Ding *et al*., 1990) and marafiviruses (marafibox, Izadpanah *et al*., 2002). ORF2 is the CP gene and ORF3 codes for a 16K proline-rich protein.

GRGV is phylogenetically (Fig.2) but not serologically (Sabanadzovic *et al*., 2000) related to GFkV.

The similarity level between nucleotides and amino acids of specific genes of the two viruses is:

(i) RdRp cistron, 60% nt identity, 60% aa identity,

(ii) Coat protein, 40% aa identity

References

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Izadpanah K, Zhang YP, Daubert S, Rowhani A (2002) Sequence of the coat prtoein gene of bermuda grass etched-line virus and of the adjacent "marafibox" motif. *Virus Genes* 24: 131-134.

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Fig. 1. Comparative organization of the 3' end of the genome of *Grapevine fleck virus* (GFkV) and Grapevine redglobe virus (GRGV). MTR, methytransferase; PRO, papain-like protease; POL, polymerase (RdRp); CP, coat protein. Dashed lines indicate the non sequenced part of the GRGV genome.

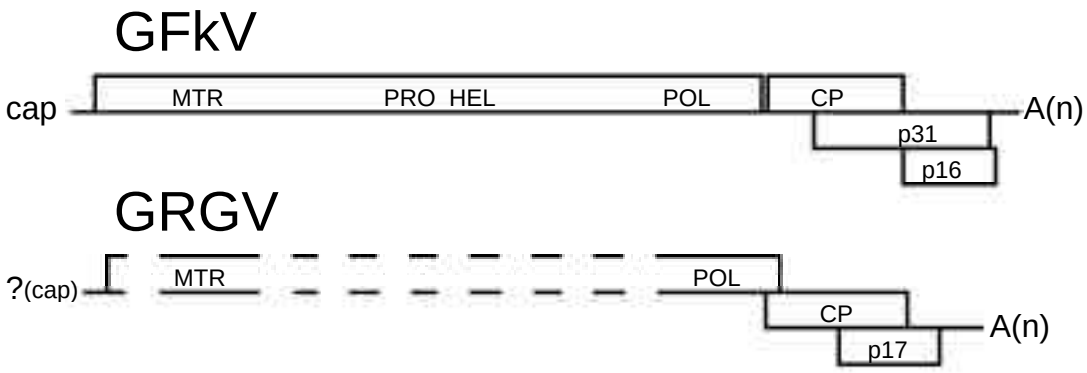

Fig. 2. Phylogenetic tree showing the relationships between the species and genera of the family *Tymoviridae* based on the RdRp (A) and CP (B) sequences. The tree was produced using CLUSTAL W. Branch lengths are proportional to sequence distances.