

# Template for Taxonomic Proposal to the ICTV Executive Committee Creating Unassigned Species in an existing Family

Code † **2007.124P** To designate the following as unassigned species in the family:

*Tombusviridae*

*Maize necrotic streak virus*  
*Pelargonium line pattern virus*

† 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

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## Old Taxonomic Order

Order

Family *Tombusviridae*

Unassigned Species in the family 0

## New Taxonomic Order

Order

Family *Tombusviridae*

Unassigned Species in the family 2

## ICTV-EC comments and response of the SG

## Species demarcation criteria in the genera

Not applicable

## Argumentation to justify the designation of unassigned species in the family

### *Maize necrotic streak virus*

The disease caused by this virus was first described by Louie et al., (2000), with some evidence that the causal agent was a member of the family *Tombusviridae*. Scheets & Redingbaugh (2006) reported the complete sequence (AF266518) and concluded that it is a tombusvirus species, but based their conclusions on molecular properties that may be common to other genera in the family. In fact, there are distinct differences to true tombusviruses, particularly in the coat protein, the size of which (29 kDa) and the lack of the protruding domain places it closer to necro- and sobemoviruses. In phylogenetic analyses, the polymerase is closely related to that of the tombusviruses, but the coat protein is related to necro- and sobemoviruses. In addition MNeSV not mechanically transmissible and lacks multivesicular bodies in infected cells that are normally found in tombusviruses (De Stradis et al., 2005). It is possible that MNeSV may be representative of a new genus, but it is premature to propose that at the moment.

### *Pelargonium line pattern virus*

The complete sequence and analysis of this virus (AY613852) was reported by Castano et al., (2005). Their analyses showed that the arrangement of the 6 ORFs on the PLPV genome closely resembled that of members of the genus *Carmovirus* and that most of the putative PLPV gene products showed high identity with proteins of this viral group. However, several striking differences were noticed. Carmoviruses generate two subgenomic RNAs whereas PLPV produces a single one. In addition, only p7 showed similarity with movement proteins of carmoviruses whereas p6 (as p13) had no viral (or other) homologs. This protein might be expressed from a non-canonical start codon or, alternatively, through a -1 frameshift (FS) mechanism. Both the production of one subgenomic RNA and the likely involvement of a -1 FS for expression of an internal ORF parallel the translation strategies reported for the unique species of the genus *Panicovirus*, also belonging to the family *Tombusviridae*. Overall, the results support the placement of PLPV in this family although its peculiar characteristics preclude its direct assignment to any of the current genera. The SG consider that it would be best be held unassigned in the family until further data on related viruses are obtained to help determine whether a new genus may be required.

## List of created Unassigned Species in the family

<i>Maize necrotic streak virus</i>		
Maize necrotic streak virus	(MNeSV)	AF266518
<i>Pelargonium line pattern virus</i>		
Pelargonium line pattern virus	(PLPV)	AY613852

## References

- Castano A., Hernandez C. (2005). Complete nucleotide sequence and genome organization of Pelargonium line pattern virus and its relationship with the family *Tombusviridae*. *Arch. Virol.* 150:949-965.
- De Stradis A., Redinbaugh M.G., Abt J.J. and Martelli G.P. (2005). Ultrastructure of maize necrotic streak virus infections. *J. Plant Pathol.* 87: 213-221.
- Louie R., Redinbaugh M.G., Gordon D.T., Abt J.J., Anderson R.J. (2000). Maize Necrotic Streak Virus, a New Maize Virus with Similarity to Species of the Family Tombusviridae. *Plant Dis.* 84:1133-1139.
- Scheets K., Redinbaugh M.G. (2006). Infectious cDNA transcripts of Maize necrotic streak virus: Infectivity and translational characteristics. *Virology* 350:171-183.

**Annexes: none**