Template for Taxonomic Proposal to the ICTV Executive Committee
To create a new Genus in an existing Family

Code†	2005.255P.04	To create a new genus in the family*	***Avsunviroidae***
Code†	2005.256P.04	To name the new genus*	***Elaviroid***
Code†	2005.257P.04	To designate the species As the type species of the new genus*	***Eggplant latent viroid***
Code†	2005.258P.04	To designate the following as species of the new genus*:	***Eggplant latent viroid***
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

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Old Taxonomic Order

Order
Family
Genus
Type Species
Species in the Genus
Tentative Species in the Genus
Unassigned Species in the family

New Taxonomic Order

Order
Family Avsunviroidae
Genus Elaviroid
Type Species Eggplant latent viroid (ELVd)
Species in the Genus
Tentative Species in the Genus
Unassigned Species in the family

ICTV-EC comments and response of the SG

Argumentation to choose the type species in the genus

ELVd is the only species in the proposed genus.

Species demarcation criteria in the genus

Sequence identity below 90% and specific host range.

List of Species in the created genus

Type species only.

List of Tentative Species in the created genus

None.

Argumentation to create a new genus:

The family *Avsunviroidae* is composed of viroids lacking a central conserved region but able to self-cleave in strands of both polarities via hammerhead ribozymes. *Avocado sunblotch viroid* (ASBVd), the type member, and *Peach latent mosaic viroid* (PLMVd), replicate and accumulate in the chloroplast, and this is presumably the case for the third member of the family, *Chrysanthemum chlorotic viroid* (CChMVd).

Unique properties of ASBVd include its small size (246-247 nt), a G+C content of 38% (whereas this ratio is higher than 50% in the other viroids), and single hammerhead ribozymes that are thermodynamically unstable. Because of this instability, double hammerhead structures have been proposed to mediate self-cleavage. In contrast to ASBVd, the hammerhead structures of PLMVd and CChMVd are stable, and their predicted minimal free energy secondary structures are branched and different from the rod-like or quasi-rod-like models proposed for most viroids including ASBVd. The sequence heterogeneity found in PLMVd and CChMVd supports the biological significance of their branched conformations. These common properties have served to allocate PLMVd and CChMVd to the genus *Pelamoviroid*. Moreover, *in vitro* and *in vivo* evidence indicating that this branched conformation is stabilized by a pseudoknot between two hairpin loops provides further justification for including PLMVd and CChMVd in one genus.

Recently, a fourth viroid containing hammerhead ribozymes, *Eggplant latent viroid* (ELVd), has been reported. The quasi-rod-like secondary structure predicted for ELVd, supported in part by compensatory mutations and co-variations, resembles more that of ASBVd than the branched conformations of PLMVd and CChMVd, but ELVd is more similar to PLMVd and CChMVd than to ASBVd with respect to its G+C-rich composition and thermodynamically stable hammerhead structures. As appears to be the case for the other members of the family *Avsunviroidae,* the host range of ELVd is restricted to its natural host. On the basis of these singular properties of ELVd, we propose to assign it to a new genus within family *Avsunviroidae* for which we offer the name *Elaviroid* (from *e*ggplant *la*tent *viroid)*. The sequence identity between some ELVd variants is slightly below 90%, one of the demarcation criteria separating variants of the same viroid from different viroid species, but we consider that this criterion alone does not justify creating more than one species for ELVd.

Origin of the proposed genus name

Elaviroid (from *e*ggplant *la*tent *viroid)*.

References

1. Flores, R., Randles, J. W., Owens, R. A., Bar-Joseph, M., and Diener, T. O. 2005. *Viroidae*. In Virus Taxonomy. Eight Report of the International Committee on Taxonomy of Viruses, pp. 1145-1159. Edited by C. M. Fauquet, M. A. Mayo, J. Maniloff, U. Desselberger & A. L. Ball. London: Elsevier/Academic Press.

2. Flores, R., Daròs, J.A., and Hernández, C. 2000. The Avsunviroidae family: Viroids with hammerhead ribozymes. Adv. Virus Res. 55: 271-323.

3. Fadda, Z., Daròs, J.A., Fagoaga, C., Flores, R., and Duran-Vila, N. 2003. Eggplant latent viroid (ELVd): Candidate type species for a new genus within family Avsunviroidae (hammerhead viroids). J. Virol. 77: 6528-6532.

Annexes: