ICTV Virus Taxonomy Profile: *Virgaviridae*

Michael J. Adams,¹,* Scott Adkins,² Claude Bragard,³ David Gilmer,⁴ Dawei Li,⁵ Stuart A. MacFarlane,⁶ Sek-Man Wong,⁷ Ulrich Melcher,⁸ Claudio Ratti,⁹ Ki Hyun Ryu¹⁰ and ICTV Report Consortium

**Abstract**

The family *Virgaviridae* is a family of plant viruses with rod-shaped virions, a ssRNA genome with a 3′-terminal tRNA-like structure and a replication protein typical of alpha-like viruses. Differences in the number of genome components, genome organization and the mode of transmission provide the basis for genus demarcation. Tobacco mosaic virus (genus *Tobamovirus*) was the first virus to be discovered (in 1886); it is present in high concentrations in infected plants, is extremely stable and has been extensively studied. This is a summary of the International Committee on Taxonomy of Viruses (ICTV) Report on the taxonomy of the *Virgaviridae*, which is available at [www.ictv.global/report/virgaviridae](http://www.ictv.global/report/virgaviridae).

**Table 1. Characteristics of the family *Virgaviridae***

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<th>Typical member: tobacco mosaic virus variant 1 (V01408), species <em>Tobacco mosaic virus</em>, genus <em>Tobamovirus</em></th>
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**VIRION**

The non-enveloped, rod-shaped virus particles of members of the family *Virgaviridae* are helically constructed with a pitch of 2.3 to 2.5 nm and an axial canal (Table 1, Fig. 1). They are about 20 nm in diameter, with predominant lengths that depend upon the genus. In most viruses, the capsid comprises multiple copies of a single protein of about 17–24 kDa [1]. In viruses of the genera *Furovirus* and *Pomovirus* (all transmitted by plasmodiophorids), a larger minor capsid protein is also produced by translational read-through of the capsid protein-encoding gene stop codon and can be detected at the extremity of virus particles [2]. In at least some furoviruses, a further minor coat protein of 25 kDa is initiated from a CUG codon upstream of the canonical start codon [3].

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**Author affiliations:** ¹ICTV, Stevenage, Hertfordshire SG2 8BT, UK; ²USDA ARS USHRL, Fort Pierce, FL 34945, USA; ³Université Catholique de Louvain, Louvain-la-Neuve, Belgium; ⁴Institut de Biologie Moléculaire des Plantes, 67084 Strasbourg Cedex, Strasbourg, France; ⁵State Key Laboratory for Agro-biotechnology, China Agricultural University, Beijing 100193, PR China; ⁶The James Hutton Institute, Dundee DD2 5DA, UK; ⁷Department of Biological Sciences, National University of Singapore, Singapore 117543, Singapore; ⁸Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK 74078, USA; ⁹Dipartimento di Scienze e Tecnologie Agroambientali, Università di Bologna, Bologna 40127, Italy; ¹⁰Department of Horticultural Science, Seoul Women’s University, Seoul, Republic of Korea.

*Correspondence: Michael J. Adams, mike.adams.ictv@gmail.com

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**Abbreviation:** ICTV, International Committee on Taxonomy of Viruses.
(negative-strand) RNA in the complex; and (e) synthesis of progeny genomic RNA [4].

**TAXONOMY**

There are seven genera with distinct genome organisations (Fig. 2) and other features as follows:

- **Goravirus.** Pollen transmission.
- **Furovirus.** Transmitted to graminaceous plants by the plasmidophorid *Polymyxa graminis*. Soil-borne wheat mosaic virus is the best-known member.
- **Hordeivirus.** Pollen and seed transmission. Barley stripe virus is the best known member.
- **Pecluvirus.** Transmitted by the plasmidophorid *Polymyxa graminis*.
- **Pomovirus.** Transmitted by plasmodiophorids.
- **Tobamovirus.** No natural vector. This large genus includes tobacco mosaic virus, the first virus to be discovered and crystallized, and since widely studied [5, 6].
- **Tobravirus.** Nematode transmission. Tobacco rattle virus is the best-known member.

The only plant viruses with rod-shaped particles not included in the family are those classified in the genus *Benyvirus*, family *Benyviridae*. Benyviruses have polyadenylated RNAs and replication proteins only distantly related to those of viruses in the family *Virgaviridae*.

**RESOURCES**


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**Conflicts of interest**

The authors declare that there are no conflicts of interest.

**References**