

New taxa ratified in 1993
[from Pringle (1993) Arch Virol 133:491-495]

This lists all proposals ratified at Glasgow Congress on the 10th August 1993. These appear to be all the proposals since the 1990 Congress and are to be incorporated into the 6th Report so should contain all changes between the 5th and 6th Reports. **Informal codes in red** have been assigned by MJA for convenient reference but are not used in any minutes or other formal records.

Bacterial viruses

The Chlamydia phages

[1993.01B]

1. To establish a new genus within the family *Microviridae*
2. To name the new genus *Chlamydiamicrovirus*
3. To designate *Chlamydia* phage Chp 1 as type virus of the genus

The Mac-1 type phages

[1993.02B]

1. To establish a new genus within the family *Microviridae*
2. To name the genus containing Mac-1 and related phages *Bdellomicrovirus*
3. To establish Mac-1 as the type species of the genus

The SSV-1 type phages

[1993.03B]

1. To name the family containing SSV-1 type phages *Fuselloviridae*
2. To name the SSV-1 group genus *Fusellovirus*

Protozoal and fungal viruses

Totiviruses

[1993.01F]

1. To revise the classification of the *Giardiavirus* genus of dsDNA protozoal viruses from a possible genus in the family *Totiviridae* to a legitimate genus
2. To establish a new genus of isometric dsRNA viruses of the parasitic protozoan *Leishmania braziliensis* within the family *Totiviridae*
3. To name the genus *Leishmaniavirus*
4. To designate *Leishmania* RNA Virus 1-1 (LRV1-1) as the type species of the genus

Bacilliform viruses of fungi

[1993.02F]

1. To establish a new family of ssRNA bacilliform viruses of fungi
2. To name the family the *Barnaviridae*
3. To establish one genus within the family *Barnaviridae*
4. To name the genus *Barnavirus*

Cryphonectria parasitica viruses

[1993.03F]

1. To establish a family of RNA viruses known to be the determinants of hypovirulence in the chestnut blight fungus *Cryphonectria parasitica*
2. To name the family *Hypoviridae*

3. To establish one genus within the family
4. To name the genus *Hypovirus*
5. To designate *Cryphonectria hypovirus* 1-713 (CHVI-713) as the type species

Penicillium chrysogenum virus group

[1993.04F]

1. To revise the classification of the *Penicillium chrysogenum virus group* from a possible genus in the family *Partitiviridae* to a genus in the family
2. To name the genus *Chrysovirus*

Joint proposal of the fungal virus and plant virus sub-committee

[1993.05F; see also 1993.07P below]

1. To merge the Cryptovirus group with its two genera *Alphacryptovirus* and *Betacryptovirus* with the established family *Partitiviridae* with its two genera *Partitivirus* and *Chrysovirus*

Plant viruses

Machlomoviruses

[1993.01P]

1. To establish a new genus of plant viruses with icosahedral particles and monopartite ssRNA
2. To name the genus *Machlomovirus*
3. To designate maize chlorotic mottle virus as the type species of the genus *Machlomovirus*

Idaeoviruses **[1993.02P]**

1. To establish a new genus of plant viruses with small deformable isometric particles and a bipartite ssRNA genome
2. To name the genus *Idaeovirus*
3. To designate raspberry bushy dwarf virus as the type species of the genus *Idaeovirus*

Trichoviruses **[1993.03P]**

1. To establish a new genus of plant viruses with highly flexuous filamentous particles and monopartite ssRNA genomes
2. To name the genus *Trichovirus*
3. To designate apple chlorotic leaf spot virus as the type species of the genus

Umbraviruses **[1993.04P]**

1. To establish a new genus of plant viruses apparently deprived of conventional particles, and dependent for transmission on a helper virus
2. To name the genus *Umbravirus* (from Latin *umbra*, a shadow, an uninvited guest that comes with an invited one)
3. To designate carrot mottle virus as the type species of the genus

Sequiviruses **[1993.05P]**

1. To establish a new family of plant viruses with icosahedral particles, monopartite ssRNA genomes and protein coats with three distinct polypeptides
2. To name the family *Sequiviridae*
3. To place the genera *Sequivirus* and *Waikavirus* in this family
4. To name the genus corresponding to the former maize chlorotic dwarf virus group *Waikavirus*

(a name derived from the Japanese "waika" (stunt) to describe the diseases induced by rice tungro spherical virus)

5. To designate rice tungro spherical virus as the type of species of the genus

***Rhabdoviruses* [1993.06P;
see also 1993.05V below]**

1. To name *Cytorhabdovirus* and *Nucleorhabdovirus* the genera of plant rhabdoviruses corresponding to the current subgroups A and B, respectively

***Cryptoviruses* [1993.07P;
see also 1993.05F above]**

1. That the *Cryptovirus* group be abolished
2. That its two constituent genera *Alphacryptovirus* and *Betacryptovirus* be moved to the family *Partitiviridae*

General proposal for the revision of plant virus taxonomy:

To adapt the current "group- virus" classification of plant viruses to the traditional taxonomic system based on "family- genus-species", and to establish a new classification and nomenclature of plant viruses as follows [see Tables at end of document].

Invertebrate viruses

***Baculoviruses* [1993.01I]**

1. To revise the classification of the family *Baculoviridae* so that it becomes a single family with two genera *Nucleopolyhedrovirus* and *Granulovirus*
2. Deletion of the subgenus "Single Nucleocapsid" from the genus "Nuclear Polyhedrosis Virus"
3. Deletion of the subgenus "Multiple Nucleocapsid" from the genus "Nuclear Polyhedrosis virus"
4. Replacement of the genus name "Nuclear polyhedrosis Virus" by "Nucleopolyhedrovirus"
5. Deletion of the subfamily "*Nudibaculovirinae*" from the family *Baculoviridae*
6. Deletion of the genus name "Non-occluded baculoviruses"
7. Replacement of the genus name "Granulosis viruses" by *Granulovirus*
8. Deletion of the subfamily *Eubaculovirinae* from the family *Baculoviridae*

Vertebrate viruses

***Birnaviruses* [1993.01V]**

1. To establish the genus *Aquabirnavirus* in the family *Birnaviridae*
2. To establish the genus *Avibirnavirus* in the family *Birnaviridae*
3. To establish the genus *Entombirnavirus* in the family *Birnaviridae*

***Deltavirus* [1993.02V]**

1. To establish the genus *Deltavirus*
2. To designate hepatitis delta virus as the type virus in the genus *Deltavirus*

***Herpesviruses* [1993.03V]**

1. To establish the genus *Roseolovirus* in the subfamily *Betaherpesvirinae* of the family *Herpesviridae*
2. To establish human herpesvirus 6 as the type of species of the genus *Roseolovirus*

Parvoviruses [1993.04V]

1. To establish the subfamilies *Parvovirinae* and *Densovirinae* in the family *Parvoviridae*
2. To establish the genus *Erythrovirus* in addition to the genera *Parvovirus* and *Dependovirus* in the subfamily *Parvovirinae*
3. To establish the genera *Densovirus*, *Iteravirus* and *Contravirus* in the subfamily *Densovirinae* [N.B. *Densovirus* is an existing genus but *Iteravirus* and *Contravirus* were created by this proposal]

Rhabdoviruses [1993.05V; see also 1993.06P, above]

1. To establish the genus *Cytorhabdovirus* in the family *Rhabdoviridae*
2. To establish the genus *Nucleorhabdovirus* in the family *Rhabdoviridae*
3. To establish the genus *Ephemerovirus* in the family *Rhabdoviridae*
4. To establish bovine ephemeral fever virus as the type species of the genus *Ephemerovirus*

Circoviruses 1993.06V

It seems likely that a proposal to create a new family of ssDNA viruses named *Circoviridae* was also ratified in 1993 but was omitted from the article by Pringle (1993) in error. It had been approved by the Executive Committee at EC21 in 1992 and the family with a single genus (*Circovirus*) are included in the 6th Report (1995). The relevant parts of the EC21 minutes are:

Proposal 1: Establishment of a new family, the *Circodnaviridae* family, in the DNA viruses. There were some reservations about this proposal on account of the existence of plant viruses with circular DNA. It was felt that all these viruses and the parvoviruses should be considered together in order to achieve a coherent taxonomy. The proposed description of the family was deficient in this respect. It was agreed unanimously that this proposal and two others identifying genera within the family be referred back to the Study Group for further consideration (EC21/2/42). [Later this decision was reconsidered in Session 5 and reversed. New proposals that a family be created (EC21/5/1), named *Circoviridae* (EC21/5/3), were approved unanimously].

Reconsideration of the circoviruses. David Bishop suggested that the matter of the circoviruses should be reconsidered and more specific proposals made to the Study Group. The circoviruses had no homology with parvoviruses or geminiviruses and they should be regarded as a separate group. Decision EC21/2/42 was therefore withdrawn and new proposals balloted.

A proposal that a new family should be created was approved without dissent (EC21/5/1).

A proposal that the family should be named *Circodnaviridae* was not approved; 7 for, 9 against (EC21/5/2)

A proposal that the family should be named *Circoviridae* was approved unanimously (EC21/5/3).

A recommendation was added that the Study Group should give further consideration to the genus proposal and deal with the plant virus relationship (EC21/5/4).

New families and genera of plant viruses

For a number of years plant virologists have been more circumspect about virus taxonomy than their animal or, to an extent, bacterial virologist colleagues. There has been a reluctance to adopt hierarchical structures, such as the species/genus/family arrangement, for the sound reason that information has been in many instances too scant. The result was that in the Vth ICTV Report (Francki et al. 1991) most plant viruses were assigned to "groups" which were not necessarily of equal taxonomic status. Some plant viruses have been classified in families originally formed to contain viruses of animals when the similarities were very striking between the plant and animal viruses. These are the plant rhabdoviruses (Sub-group A = *Cytorhabdovirus* and sub-group B = *Nucleorhabdovirus*), the plant reoviruses (*Phytoreovirus*, *Fijivirus* and *Oryzavirus*) and the *Tospovirus* genus in the *Bunyaviridae*.

In part because of changes to the Rules of Classification (Martelli 1992), and in part because of increasing amounts of molecular information about viruses in many groups, there has recently been a substantial change in the way plant viruses are classified. At the plenary session of ICTV held during the ICV in Glasgow these changes were ratified and will be incorporated into the forthcoming VIth Report of the ICTV. This note summarises the new classification.

Forty-seven genera of plant viruses are now recognised, most of which are the same as the old "virus groups". Twenty five are clustered into families. Of these, 17 are in 6 newly created families (Table 1). The other 8 genera are in existing families (Table 2), the only change from the previous classification being that the viruses in the old cryptic virus group have been added to the family *Partitiviridae* as 2 genera (*Alphacryptovirus* = sub-group I and *Betacryptovirus* = sub-group II) to join the 2 existing genera of fungus viruses. The remaining 22 genera are as yet not clustered into higher taxa but are presented in Table 3 under the convenient headings of particle morphology and genome structure.

The classification into families formalises unofficial usage in some instances (e.g. *Bromoviridae* has sometimes been called *Tricornaviridae*) and should have useful predictive power in that genera in a family should share some characteristics. However, for some genera (Table 3) it is not clear how clustering into families can yield discontinuous groupings to give "natural" families because the characters available at present do not discriminate clearly between groups of genera. More information may resolve these problems or it may be necessary, if higher clustering is deemed essential, to adopt an arbitrary approach.

The present scheme represents an early stage in the development of a structured classification of plant viruses. Inevitably it is incomplete. There are distinctive viruses which have not yet been assigned to genera (e.g. coconut foliar decay virus, ourmia melon virus, etc.) and some genera (e.g. *Luteovirus*) which seem to be too heterogeneous for their retention as one genus to be useful. Thus one purpose of this note is to solicit comments on the present scheme from members of the plant virology community. These should be communicated to ICTV via any member of the Plant Virus Sub-Committee

Table 1. The new families of plant viruses

Viruses with a ssDNA genome

<i>Geminiviridae</i> 1993.08P	Genus Subgroup I (type species maize streak virus)
	Genus Subgroup II (type species beet curly top virus)
	Genus Subgroup III (type species bean golden mosaic virus)

Viruses with a ssRNA genome

<i>Tombusviridae</i>	1993.09P	Genus <i>Tombusvirus</i> (type species tomato bushy stunt virus)
		Genus <i>Carmovirus</i> (type species carnation mottle virus)
<i>Sequiviridae</i>	1993.05P	Genus <i>Sequivirus</i> (type species parsnip yellow fleck virus)
		Genus <i>Waikavirus</i> (type species rice tungro spherical virus)
<i>Comoviridae</i>	1993.10P	Genus <i>Comovirus</i> (type species cowpea mosaic virus)
		Genus <i>Nepovirus</i> (type species tobacco ringspot virus)
		Genus <i>Fabavirus</i> (type species broad bean wilt virus)
<i>Bromoviridae</i>	1993.11P	Genus <i>Bromovirus</i> (type species brome mosaic virus)
		Genus <i>Cucumovirus</i> (type species cucumber mosaic virus)
		Genus <i>Ilarvirus</i> (type species tobacco streak virus)
		Genus <i>Alfamovirus</i> (type species alfalfa mosaic virus)
<i>Potyviridae</i>	1993.12P	Genus <i>Potyvirus</i> (type species potato virus Y)
		Genus <i>Bymovirus</i> (type species barley yellow mosaic virus) *
		Genus <i>Rymovirus</i> (type species ryegrass mosaic virus) *

* these are new genera

Table 2. Established families with some plant virus members

<i>Reoviridae</i>		<i>Phytoreovirus</i>
		<i>Fijivirus</i>
	1993.31P	<i>Orzyavirus</i> *
<i>Rhabdoviridae</i>	1993.06P; 1993.04V	<i>Cytorhabdovirus</i> *
		<i>Nucleorhabdovirus</i> *
<i>Bunyaviridae</i>		<i>Tospovirus</i>
<i>Partitiviridae</i>	1993.07P	<i>Alphacryptovirus</i> *
		<i>Betacryptovirus</i> *

* these are being renamed from existing groups; other *Reoviridae* and *Bunyaviridae* genera were already established prior to 1993

Table 3. Plant virus genera not yet assigned to families

NB those shaded are totally new genera in 1993

Other genera are existing groups renamed as genera

1. Viruses with isometric particles and ssRNA genomes

a) monopartite genomes

1993.13P *Luteovirus* (type A-type species barley yellow dwarf virus) *Luteovirus*
(type B-type species potato leafroll virus)

1993.14P *Sobemovirus* (type species southern bean mosaic virus)

1993.15P *Tymovirus* (type species turnip yellow mosaic virus)

1993.16P *Necrovirus* (type species tobacco necrosis virus)

1993.01P *Machlomovirus* (type species maize chlorotic mottle virus)

1993.17P *Marafivirus* (type species maize rayado fino virus)

b) bipartite genomes

1993.18P *Enamovirus* (type species pea enation mosaic virus)

1993.19P *Dianthovirus* (type species carnation ringspot virus)

1993.02P *Idaeovirus* (type species raspberry bushy dwarf virus)

2. Viruses with filamentous particles and ssRNA genomes

1993.20P *Closterovirus* (type species beet yellows virus)

1993.21P *Capillovirus* (type species apple stem grooving virus)

1993.03P *Trichovirus* (type species apple chlorotic leafspot virus)

1993.22P *Carlavirus* (type species carnation latent virus)

1993.23P *Potexvirus* (type species potato virus X)

1993.24P *Tenuivirus* (type species rice stripe virus)

3. Viruses with rod-shaped particles and ssRNA genomes

1993.25P *Tobamovirus* (type species tobacco mosaic virus)

1993.26P *Tobravirus* (type species tobacco rattle virus)

1993.27P *Furovirus* (type species soil-borne wheat mosaic virus)

1993.28P *Hordeivirus* (type species barley stripe mosaic virus)

4. Viruses with dsDNA genomes

1993.29P *Caulimovirus* (type species cauliflower mosaic virus)

1993.30P *Badnavirus* (type species commelina yellow mottle virus)

5. Viruses with ssRNA but no particles

1993.04P *Umbravirus* (type species carrot mottle virus)