

The International Code of Virus Classification and Nomenclature (ICVCN): proposal to delete Rule 3.41

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Abstract It is proposed to delete Rule 3.41 of the International Code of Virus Classification and Nomenclature, which requires the name of a virus taxon to precede the term for the taxonomic unit.

Introduction

The International Committee on Taxonomy of Viruses (ICTV) is the body tasked by the International Union of Microbiological Societies (IUMS) to make decisions on matters of virus classification and nomenclature [1]. ICTV activities are governed by statutes (the Statutes) [2]. One of these Statutes states that classification and nomenclature will be subject to rules (the Rules) set out in an interna-

tional code (the Code). The most recent version of this *International Code of Virus Classification and Nomenclature* (ICVCN) is available in the latest, 9th, ICTV Report, which was published in 2011 [3].

The ICVCN is organized in three major parts: Section 1 outlines the “Statutory basis for the International Committee on Taxonomy of Viruses (ICTV)”. Section 2 describes the “Principles of nomenclature”. Finally, section 3 outlines the “Rules of Classification and Nomenclature” [capitalization or lack thereof is identical to the headlines in the code] [3].

In contrast to the International Code of Zoological Nomenclature (ICZN Code; <http://iczn.org>), the International Code of Nomenclature of Bacteria (ICNB; <http://www.ncbi.nlm.nih.gov/books/NBK8817/>), and the International Code of Botanical Nomenclature (ICBN; <http://ibot.sav.sk/icbn/main.htm>), the ICVCN is rather short and still relatively imprecise. This article is the first of a series of manuscripts that outlines suggestions and proposals that would make the ICVCN a more precise instrument for virus taxonomy, while at the same time decreasing currently existing confusion among laboratory virologists regarding the use of the Rules put forth in the Code.

Proposal to delete Rule 3.41

ICVCN Rule 3.41 is the last Rule of the Code, located in Subsection IX (“Rules for Orthography”) of Section 3 (“Rules of Classification and Nomenclature”). It states

“In formal usage, the name of the taxon shall precede the term for the taxonomic unit”

and is followed by a comment that is not part of the official rule:

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Table 1 Usage of taxon names and taxonomic units

	Correct usage of taxon names and taxonomic units according to Rule 3.41 (ignoring the Comment that explains it)	Correct usage of taxon names and taxonomic units according to the Comment that explains Rule 3.41 (ignoring the actual Rule)	Incorrect usage of taxon names and taxonomic units according to both Rule 3.41 and the Comment that explains it
Orders	<i>Xyzvirales</i> order - e.g. <i>Caudovirales</i> order - e.g. <i>Mononegavirales</i> order - e.g. <i>Nidovirales</i> order	order <i>Xyzvirales</i> - e.g. order <i>Caudovirales</i> - e.g. order <i>Mononegavirales</i> - e.g. order <i>Nidovirales</i>	(the) <i>Xyzvirales</i> - e.g. (the) <i>Caudovirales</i> - e.g. (the) <i>Mononegavirales</i> - e.g. (the) <i>Nidovirales</i>
Families	<i>Xyzviridae</i> family - e.g. <i>Filoviridae</i> family - e.g. <i>Picornaviridae</i> family - e.g. <i>Tymoviridae</i> family	family <i>Xyzviridae</i> - e.g. family <i>Filoviridae</i> - e.g. family <i>Picornaviridae</i> - e.g. family <i>Tymoviridae</i>	(the) <i>Xyzviridae</i> - e.g. (the) <i>Filoviridae</i> - e.g. (the) <i>Picornaviridae</i> - e.g. (the) <i>Tymoviridae</i>
Subfamilies	<i>Xyzvirinae</i> subfamily - e.g. <i>Densovirinae</i> subfamily - e.g. <i>Picovirinae</i> subfamily - e.g. <i>Pneumovirinae</i> subfamily	subfamily <i>Xyzvirinae</i> - e.g. subfamily <i>Densovirinae</i> - e.g. subfamily <i>Picovirinae</i> - e.g. subfamily <i>Pneumovirinae</i>	(the) <i>Xyzvirinae</i> - e.g. (the) <i>Densovirinae</i> - e.g. (the) <i>Picovirinae</i> - e.g. (the) <i>Pneumovirinae</i>
Genera	<i>Xyzvirus</i> genus - e.g. <i>Arenavirus</i> genus - e.g. <i>Begomovirus</i> genus - e.g. <i>Ictalurivirus</i> genus	genus <i>Xyzvirus</i> - e.g. genus <i>Arenavirus</i> - e.g. genus <i>Begomovirus</i> - e.g. genus <i>Ictalurivirus</i>	<i>Xyzvirus</i> - e.g. <i>Arenavirus</i> - e.g. <i>Begomovirus</i> - e.g. <i>Ictalurivirus</i>
Species	<i>Xyz virus/Xyz abcvirus/Xyzvirus X</i> species - e.g. <i>Aichi virus</i> species - e.g. <i>Marburg marburgvirus</i> species - e.g. <i>Rotavirus A</i> species	species <i>Xyz virus/Xyz abcvirus/Xyzvirus X</i> - e.g. species <i>Aichi virus</i> - e.g. species <i>Marburg marburgvirus</i> - e.g. species <i>Rotavirus A</i>	<i>Xyz virus/Xyz abcvirus/Xyzvirus X</i> - e.g. <i>Aichi virus</i> - e.g. <i>Marburg marburgvirus</i> - e.g. <i>Rotavirus A</i>

“Comments: For example, the correct formal descriptions of various taxa are ... the family *Herpesviridae*, ...the genus *Morbillivirus*, the genus *Rhinovirus*, the species *Tobacco necrosis virus D*, and so on”.

An official proposal (“TaxoProp”) to delete this Rule (TaxoProp No. 2012.001aG.U.v1.delete_Rule_3.41.pdf) was submitted on July 5, 2012, to the ICTV and provisionally approved (http://talk.ictvonline.org/files/proposals/taxonomy_proposals_general1/m/gen02/4333.aspx) for three reasons.

First, the Comment contradicts the Rule it is supposed to explain. The Rule states that the name of the taxon should precede the term for the taxonomic unit, but the comment suggests the opposite (Table 1).

Second, it is unnecessary in a set of taxonomic rules since it is purely stylistic. To the best of our knowledge, there is no difference in meaning between, for instance, “the *Xyzviridae* family”, “the family *Xyzviridae*” and “(the) *Xyzviridae*” (with *Xyz* being a placeholder for any ICTV-accepted family name). In fact, the term “family” in this context is redundant and therefore stylistically unpleasant because the formal suffix, *-viridae*, denotes family. The same is true at all taxonomic levels (Table 2). Formal taxon suffixes are widely accepted and well known

Table 2 Taxon-specific suffixes accepted by the ICTV

Taxon	Taxon-specific suffix	General usage	Examples
Order	<i>-virales</i>	<i>Xyzvirales</i>	<i>Caudovirales</i>
Family	<i>-viridae</i>	<i>Xyzviridae</i>	<i>Filoviridae</i>
Subfamily	<i>-virinae</i>	<i>Xyzvirinae</i>	<i>Densovirinae</i>
Genus	<i>-virus</i>	<i>Xyzvirus</i>	<i>Arenavirus</i>
Species	<i>virus</i>	<i>Xyz virus</i>	<i>Aichi virus</i>
	<i>-virus</i>	<i>Xyz abcvirus*</i>	<i>Marburg marburgvirus</i>
	<i>-virus</i>	<i>Xyzvirus X</i>	<i>Rotavirus A</i>

* with *abc* being a placeholder for the word stem of the name of the genus that includes the species

among virologists. It is therefore self-evident that *Xyzvirales* refers to an order, *Xyzviridae* refers to a family, *Xyzvirinae* refers to a subfamily, *Xyzvirinae* refers to a genus and *Xyz virus* refers to a species.

Third, the Rule is not observed in any consistent manner by the general virology community, including members of ICTV Study Groups and possibly even ICTV members. Sentence fragments such as “the *Xyzvirales/Xyzviridae/Xyzvirinae/Xyzvirus/Xyz virus*” (name of the taxonomic unit, “order/family/subfamily/genus/species,” is missing)

and “the *Xyzvirales/Xyzviridae/Xyzvirinae/Xyzvirus/Xyzvirus* order/family/subfamily/genus/species” and “the order/family/subfamily/genus/species *Xyzvirales/Xyzviridae/Xyzvirinae/Xyzvirus/Xyzvirus*” are found in the published literature equally often. None of these three usages differ in information content from the others.

In conclusion, the deletion of Rule 3.41 will bring the Code into line with current practice without adversely affecting taxonomic precision. Deletion of the Rule is also straightforward, as other parts of the Code are not adversely affected by doing so. Since Rule 3.41 is the last Rule of the Code, its deletion would not require renumbering of other Rules and would only require deletion of a reference to it in the Comment to Rule 3.2 (“The universal virus classification system shall employ the hierarchical levels of Order, Family, Subfamily, Genus, and Species”). Once the Rule is deleted, numerous manuscripts will be

retrospectively in compliance with the Code, and errors will be avoided prospectively.

References

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