

## Virus nomenclature descending into chaos\*

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Taxonomy with its two faces, systematics and nomenclature, is the mother of sciences; we must know what we are talking about, and that is the function of names. Hence rules of nomenclature in biology at large, including virology, aim to promote the meaningfulness, reliability and stability of names. That is why it is surprising that the International Committee on Taxonomy of Viruses (ICTV) breaks two of the basic rules it promulgates in the recently published Revisions of the Code of Virus Classification and Nomenclature [6]. It is stated in the Foreword to this revision states that the Code “is revised occasionally to conform with accepted virological practice”, and in Rule 3.9 that “Existing names of taxa and viruses shall be retained whenever feasible”. Nonetheless the ICTV then issues edicts (new Rule 3.40) telling all virologists to italicize all ICTV-approved virus names, and to capitalize the first letter of all names of virus species (e.g. *Frangipani mosaic virus*). It thus insists that virologists should stop using the informative taxonomy-based non-Latinized binomial system of naming viruses (e.g. frangipani mosaic tobamovirus and *Iris fulva* mosaic potyvirus), that has been increasingly widely used since first proposed informally in the second ICTV report [4]. The new orthographic ‘rules’ thus change, in essence, all existing virus names, conflict with other Codes of biological nomenclature, hinder proper notation of scientific names of host species included in virus names (such as *Iris fulva*) and distinction between such names and geographic names [1, 3], and are contrary to currently “accepted virological practice”.

Thus the ICTV breaks the rules it advocates, but nonetheless has given no cogent reasons for doing so. Van Regenmortel [9] states that non-Latinized binomials have been widely accepted by plant virologists, but opposed by animal virologists, but he gives no details of how this opinion has been gauged nor, if true, why the views of the former are less important than those of the latter. It seems strange that he can give no more compelling reason for virology to become unique among the biological disciplines by returning to pre-Linnaean monomials, even though they are to be superficially dignified by italicization to draw attention to the ICTV [10]. Plant virologists, who have a greater call on nomenclature than most working animal virologists, and widely use the vernacular binomials, are to be ignored. Furthermore a quick glance at Bos’s latest textbook [2] shows the great value of the

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\* Editor’s note: As the author makes a number of criticisms of, and comments about, the workings of ICTV, a reply will be made in a VDN article in the near future.

present binomial system of plant virus names for non-specialist readers; adherence to the ICTV's 'rules' would have filled the book with either a mound of meaningless monomials or endless awkward full taxonomic names, neither particularly helpful.

The issue of viral orthography is not the only example of increasing chaos being generated by the ICTV. Firstly it has continued in the 1998 Revision to arrange and name viruses hierarchically (Revised Code Rules 3.21–3.34). This ignores the fact that recombination is/has been a major force at all taxonomic levels in the evolution of viruses, in clear distinction to the evolution of cellular organisms. Secondly the ICTV, which continues to be dominated by molecular biologists, is progressively sub-dividing virus taxa on biochemical differences of unknown, and probably minor, biological relevance and, as a result, generating more smaller taxa.

I believe that the root cause of these problems is that ICTV has become isolated from its broader 'electorate' of virologists and no longer represents their interests. This is because:

1. Although the ICTV has its own WWWebsite, it is barred to all but members of the ICTV, and has not been used by the ICTV to promote discussion of the proposals produced by its specialist Study Groups either within the ICTV or among the broader virological community;
2. There is only limited turnover among those working on the committees of the ICTV, few nowadays have the time to participate;
3. ICTV Study Groups, some comprised of a single interested individual, usually produce their proposals for taxonomic change just before the four yearly ICTV Report is collated, or before the Executive Committee is to meet. These proposals are sent to the Chairperson of the appropriate ICTV Sub-Committee, little or no discussion of the proposals ensues within the Sub-Committee before it votes on the proposal. The proposals are then passed up the chain of the decreasingly informed, but increasingly 'powerful', decision-making structure of the ICTV;
4. Key decisions, like that on orthography, are frequently made by the Executive in a rush at the very end of a meeting in some corner of the world with the airport taxis waiting outside;
5. Only one short meeting of the ICTV is held with the rest of the virological world every four years, and that is at the International Congress of Virology. The most recent of these, in Sydney, was a total charade. It was very poorly advertised, a list of nomenclatural proposals were 'agreed to' by a small and unrepresentative group of virologists, and the senior officers left early for another engagement!!!
6. The senior officers of the ICTV Executive show no intention to heed constructive public criticism but instead to flex organizational authority [7–9] and support this by their editorial control of the journal used by the ICTV as its 'organ' [5].

My advice therefore is that, until the Executive Committee of the ICTV has opened modern lines of communication with the broader virological community, consulted with them and listened to their comments, all virologists should ignore the ICTV, and its 1998 Revised Code. The most obvious way for those lines of communication to be opened is for the ICTV to organize and advertise a WWWebsite open to all, especially virologists and taxonomists. There all taxonomic proposals (including, retrospectively, all those in the 1998 'Revised Code') should be made available for public comment for a minimum of six months. The WWWebsite should openly record all correspondence on each proposal

received during that period, so that all can learn from, and contribute to, the discussion, whether they are members of the ICTV or not. Only after six months of public comment should the voting structure of the ICTV be activated. Further, the Editorial Board of the Archives of Virology needs to establish explicit rules for the use of its 'virology division news' section by members of the ICTV. Were the views expressed by van Regenmortel [9] those of the ICTV President advocating the agreed views of the ICTV, those of the Senior Editor of the journal, or those of a sometimes confused scientist?

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