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Editorial



Support for the use of Binomial Nomenclature in the Taxonomy of Viruses

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Two contrasting opinions about virus taxonomy or, more precisely, about virus nomenclature, appeared in the first 2004 issue of *Emerging Infectious Diseases* [1,2]. These differing ideas about scientific (vs. common) names of viruses are part of a long disagreement among virologists that can be tracked to the early 1950s [3,4].

The three really major progressive steps of virus nomenclature (and taxonomy as well) achieved in the last decades have involved the acceptance of the taxa: 1) "family" and "genus" (the names are written in italics, the initial letter being capitalized); 2) "species" [5,6]; 3) the **binomial nomenclature**. However, the last step has been carried out in an inappropriate way, contradicting the rules of general biological (i.e. Linnean) nomenclature as Mark Eberhard [2] points out absolutely correctly. Linnean binomial nomenclature does namely use Latinized (Latin, Greek) but not English common names for specific epitheta, and the specific epitheton (written in italics with the first letter noncapitalized) must always be situated after the generic name (written with the first letter capitalized), not in the reverse order as it has been lately suggested by the International Committee on Taxonomy of Viruses (ICTV). It is a pity that the standard Latinized binomial nomenclature has not been generally adopted by the ICTV for viruses although it does work well in all other areas of life science. Because virologists have already accepted the fact that viruses belong to the field of biology, they have to follow the rules of general, i.e. Linnean biological nomenclature instead of constructing another system that is incompatible with other biological specialties. It is incorrect to object that it might be very difficult to coin Latinized names for an estimated 1,600 [7] virus species. For instance, such binomials might be proposed without great difficulties for 50 or so arboviruses that occurred in Europe in the 20th century [8]: the names have been based on generic names accepted by ICTV [9] and on the concept of virus species [4-6,10]. The

examples of the proposed arbovirus names could include, e.g., in the *Togaviridae* family: Sindbis virus - *Alphavirus sindbis* but not written as *Sindbis Alphavirus* (this new name has recently been approved by ICTV in MSL38 list of spp.); in the *Orthoflaviviridae*: West Nile virus - *Flavivirus nili* but not *West Nile Flavivirus* (recently approved by ICTV as *Orthoflavivirus nilensis*); dengue virus - *Flavivirus dengue* but not *Dengue Flavivirus* (recently approved by ICTV as *Orthoflavivirus nilensis*); tick-borne encephalitis virus - *Flavivirus ixodetis* (recently approved by ICTV as *Orthoflavivirus encephalitis*); in the *Peribunyaviridae*: Batai virus - *Bunyavirus batai* (recently approved by ICTV as *Orthobunyavirus bataiense*); sandfly fever Naples virus - *Phlebovirus neapolis* (recently approved by ICTV as *Phlebovirus napolitense*); sandfly fever Sicilian virus - *Phlebovirus siciliensis* (recently approved by ICTV as *Phlebovirus siciliaense*); Toscana virus - *Phlebovirus toscanae* (recently approved by ICTV as *Phlebovirus toscanaense*); in the *Nairoviridae*: Crimean-Congo hemorrhagic fever virus - *Nairovirus congocrimae* (recently approved by ICTV as *Orthonairovirus hemorrhagiae*); in the *Reovirales*: bluetongue virus - *Orbivirus linguaecyanei*; Tribeč virus - *Orbivirus tribeci*.

It is obvious that the "Latinized" specific epitheta can be coined easily from the commonly used names, largely with only minor changes (at least in arboviruses whose names are usually formed according to the geographic site of original isolation). These scientific labels of viruses of course do not exclude at all the usage of the common English, German, French, Spanish, Russian, etc. names of viruses. However, the sort of combination of Latin (generic) and English (specific) names in the binomes as suggested by the previous ICTV report (species report MSL 37) is controversial and hardly acceptable from the Linnean binomenclature point of view. However, the rules of the last species report of ICTV, i.e. MSL 38, are compatible with that nomenclature.

Remark: The text of this contribution was originally presented at the ICTV Discussion Forum in 2008 online [11] but without current virus species names as added now here from the MSL 38 report of ICTV. However, this paper has as yet not been published in any scientific journal.

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