



## ICTV Newsletter #15 (2018)

This newsletter is aimed at keeping all who are interested in the International Committee on Taxonomy of Viruses (ICTV) up to date on recent developments. It is available publicly on the ICTV website and is sent to all those who have joined the ICTV discussion site. To register on this site, navigate to [ictv.global](http://ictv.global) and click the "Login/Join" tab. Once registered, sign in using the name and password that you provided. If you are already registered, **please make sure your contact information is up to date**. You can do this by clicking on "Profile" via the login icon in the upper right-hand corner. Comments and suggestions on the newsletter are welcome. This edition, which covers the period from July 2017, and previous editions are [here](#).

### Executive Committee (EC) activities

#### EC49

The 49<sup>th</sup> annual EC meeting was held on 14-16 July 2017 in Singapore and was hosted by Dr Frank Eisenhaber, Executive Director of the Bioinformatics Institute, A\*Star. This was the third regular meeting of the EC that had been elected at the ICTV plenary meeting in Montreal, Canada in August 2014. All nineteen EC members attended the two-and-a-half-day meeting, as well as Donald Smith, the Managing Editor of the ICTV Report, who is supported by a Wellcome Trust (WT) bioresources grant. In addition to a healthy raft of taxonomic proposals, the agenda included ICTV finances, the means of processing taxonomic proposals, continuing development of the ICTV web site (presented by Elliot Lefkowitz, Data Secretary), publishing taxonomy papers in the Virology Division News (VDN) section of Archives of Virology (Jens Kuhn, VDN Editor), and new arrangements for distributing the ICTV newsletter (Alexander Gorbalenya, Vice-President and Newsletter Editor). Moreover, there was extensive discussion of a working paper detailing the pros and cons of introducing a uniform, possibly binomial, format for virus species names (Mike Adams, Business Secretary). The EC confirmed that members would take the initiative in organizing one-day symposia at the annual conference of the Microbiology Society in April 2018 (Birmingham, UK) and the annual meeting of the American Society for Virology in July 2018 (College Park, Maryland, USA).

The EC elected Arcady Mushegian as Business Secretary, and six members as Subcommittee (SC) chairs (see below). It also recommended that the Virology Division of the International Union of Microbiological Societies (IUMS) appoint Sead Sabanadzovic (Elected Member) to the position of VDN Editor. The meeting concluded with reflections and thanks from outgoing EC members, each of which had provided outstanding service to the ICTV and the virology community: Alexander Gorbalenya (Vice-President), Mike Adams (Business Secretary) and Hélène Sanfaçon (Chair, Plant Viruses SC). The EC also noted with sadness the passing of Hans-Wolfgang Ackermann, a Life Member of the ICTV.

### EC membership and elections 2017

The new EC was constituted as follows.

|                                               |                   |
|-----------------------------------------------|-------------------|
| President                                     | Andrew Davison    |
| Vice-President                                | Stuart Siddell    |
| Business Secretary                            | Arcady Mushegian  |
| Proposals Secretary                           | Andrew King       |
| Data Secretary                                | Elliot Lefkowitz  |
| Chair, Animal DNA Viruses and Retroviruses SC | Balázs Harrach    |
| Chair, Animal dsRNA and ssRNA– Viruses SC     | Jens Kuhn         |
| Chair, Animal ssRNA+ Viruses SC               | Nick Knowles      |
| Chair, Bacterial and Archaeal Viruses SC      | Andrew Kropinski  |
| Chair, Fungal and Protist Viruses SC          | Peter Simmonds    |
| Chair, Plant Viruses SC                       | Murilo Zerbini    |
| Elected member                                | Bas Dutilh        |
| Elected member                                | Robert Harrison   |
| Elected member                                | Sandra Junglen    |
| Elected member                                | Mart Krupovic     |
| Elected member                                | Max Nibert        |
| Elected member                                | Luisa Rubino      |
| Elected member                                | Sead Sabanadzovic |
| Elected member                                | Arvind Varsani    |

An encouragingly large number of nominations had been submitted for the Elected Member positions that were to become vacant following EC49. At the ICTV plenary meeting, the EC Nominations Subcommittee nominated eight people as Elected Members: four existing Elected Members (Robert Harrison, Mart Krupovic, Sead Sabanadzovic and Arvind Varsani) for a second term, and four others (Bas Dutilh, Max Nibert, Luisa Rubino and Sandra Junglen) for a first term. The EC nominated Andrew Davison for a second term as President and Stuart Siddell for a first term as Vice-President. All of those nominated were duly elected.

## Study Groups (SGs)

The SGs have a particular responsibility for keeping up to date with the emergence of new viruses and proposing new taxa to accommodate them in the ICTV classification. Following EC49, the SC Chairs set up the SGs for 2017-2020 by appointing the SG Chairs. The SG Chairs were appointed for a three-year term and are responsible for assembling the SGs, the current membership of which can be accessed [here](#). If you are an SG member, please send any changes to your contact information to your SG Chair and Elliot Lefkowitz (elliottl@uab.edu).

## EC50

The 50<sup>th</sup> annual EC meeting was held on 11-13 July in Washington DC, USA and was hosted by Arcady Mushegian. This was the first regular meeting of the EC that had been elected at the ICTV plenary meeting in Singapore in July 2017. The two-and-a-half-day meeting was attended by sixteen EC members, as well as by Donald Smith, Managing Editor of the ICTV Report, and Richard Orton, Technical Editor of the ICTV Report, who are both supported by a Wellcome Trust (WT) bioresources grant. In addition to a sizeable number of taxonomic proposals, the agenda included ICTV finances, the means of processing taxonomic proposals, the ICTV Report (presented by Elliot Lefkowitz and Donald Smith), the ICTV web site (Elliot Lefkowitz), the Virus Metadata Resource (VMR; Stuart Siddell), a review and clarification of the procedures for changing the Statutes and Code (Arcady Mushegian), and revised procedures for processing taxonomic proposals (Andrew Davison). Moreover, the EC discussed the scope and practicalities of online proposal submission systems, following presentation of a prototype by Richard Orton. Finally, the EC discussed general issues relating to ethics and propriety and the impact of recent EU General Data Protection regulations, and agreed to set up a working group chaired by Jens Kuhn to explore further the possibility of adopting a uniform, possibly Linnaean-style, binomial species-naming format.

The EC appointed Stuart Siddell as newsletter editor, and agreed to propose Mike Adams to the ICTV as a Life Member.

## Since EC50

In August 2018, Andrew King stood down from the EC, having been a prominent contributor to the work of the ICTV, latterly as a tremendously effective Proposals Secretary. The EC expresses here its immense gratitude to him for his many years of unstinting service. Peter Walker (University of Queensland) was recently elected by the EC as Proposals Secretary until the next plenary meeting in 2020.

## Recent progress with taxonomic proposals

### Ratification of proposals

All proposals approved by the EC need to be ratified by the entire voting membership of the ICTV for final acceptance. The ICTV membership includes the National Representatives, the members of the SCs (predominantly the SG chairs), and the Life Members.

A total of 91 taxonomic proposals (TPs) from 2017 were ratified in e-votes by the ICTV membership in February 2018. The EC is pleased to note, once again, that the processing of TPs by fast-track approval of good-quality proposals (for details see ICTV Newsletter #10) considerably shortened the processing time required for a large number of proposals, and, as a result, a larger volume of proposals was processed. An article reporting the taxonomic changes ratified in 2018 is available [here](#). It is noteworthy that a change was made to the International Code of Virus Classification and Nomenclature to allow the use of the names of people in taxon names under appropriate circumstances.

**Table 1.** Summary of taxonomic changes submitted in 2017 and ratified in February 2018

| <b>Change</b>      | <b>Orders</b> | <b>Families</b> | <b>Subfamilies</b> | <b>Genera</b> | <b>Species</b> |
|--------------------|---------------|-----------------|--------------------|---------------|----------------|
| New                | 1             | 9               | 11                 | 69            | 451            |
| Moved              | 0             | 4               | 2                  | 75            | 341            |
| Moved/renamed      | 0             | 0               | 0                  | 1             | 18             |
| Abolished          | 0             | 0               | 0                  | 1             | 2              |
|                    |               |                 |                    |               |                |
| Total <sup>1</sup> | 9             | 131             | 46                 | 803           | 4853           |

<sup>1</sup>Total numbers of taxa now recognized and shown in the ICTV Master Species List

The latest version of the official virus taxonomy can be downloaded as the ICTV [Master Species List MSL32](#).

### New EC-approved proposals

After prolonged discussion at both EC49 and EC50, the EC approved several proposals that introduce and utilise a significantly increased number of taxonomic ranks available for classification, as well as major changes to the taxonomy of positive- and negative-sense RNA viruses. These proposals are awaiting ratification but are highlighted here to the virology community.

The proposal on additional ranks would increase the number available from the current five (order, family, subfamily, genus and species) to 15 (realm,

subrealm, kingdom, subkingdom, phylum, subphylum, class, subclass, order, suborder, family, subfamily, genus, subgenus and species). This would facilitate TPs aimed at encompassing the entire spectrum of virus diversity by accommodating taxa at any level from the very narrow (species) to the extremely wide (realm).

A set of seven proposals on RNA viruses would introduce major changes to the taxonomy of one order of positive-sense RNA viruses (the *Nidovirales*) and two orders of negative-sense RNA viruses (the *Mononegavirales* and the *Bunyavirales*).

Any virologist can make proposals to the ICTV via the appropriate SC Chair, preferably in consultation with the relevant SG. New proposals that have been submitted recently for discussion at EC51 can be examined [here](#). All TPs were prepared using substantially revised templates that now include a summary table of taxonomic changes ([available here](#)).

## ICTV publications

### The ICTV web site

The ICTV is charged with the task of developing, refining and maintaining a universal virus taxonomy. This task encompasses classifying virus species and higher-level taxa, naming the taxa, maintaining a database detailing the currently approved taxonomy, and providing the database, supporting proposals and other virus-related information from an open-access, public web site.

The ICTV web site, [ictv.global](http://ictv.global), provides access to the current taxonomy database in online and downloadable formats, and maintains a complete history of virus taxa dating back to the first release in 1971. The current ICTV taxonomy (released 12 March 2018) is available online [here](#). The following reference can be used to cite the taxonomic proposals that have been ratified in 2018:

Changes to taxonomy and the International Code of Virus Classification and Nomenclature ratified by the International Committee on Taxonomy of Viruses (2018)

King, A.M.Q., Lefkowitz, E.J., Mushegian, A.R. et al. Arch Virol (2018) 163: 2601. PMID: 29754305.

### The ICTV Report and chapter summaries

This ICTV Report ([here](#)) is published online as a completely open-access, continuously updated publication, and provides a comprehensive description of all virus taxa covering virus structure, genome structure, biology and

phylogenetics. Currently, the ICTV Report includes about 40 chapters that update chapters published in the previous ICTV Report (the 9<sup>th</sup>, 2011), and further chapters are being added at a rate of approximately two per month. The Report is expected to include up-to-date articles on all virus groups by the end of 2019.

In addition, summaries of the ICTV Report chapters are published in a special section of the Journal of General Virology, ICTV Virus Taxonomy Profiles ([here](#)). These profiles provide concise, review-type articles of individual chapters from the online Report. Written by ICTV Study Groups, these reviews provide overviews of the classification, structure and properties of individual virus orders, families and genera. The summaries are linked to the ICTV Report chapters and are indexed in PubMed.

### Virus Metadata Resource (VMR)

The VMR is a downloadable spreadsheet that provides information on exemplar viruses for each species. This information includes GenBank and RefSeq accession numbers for exemplar viruses, and isolate and common names for viruses belonging to a species. It can be accessed [here](#)

### Virology Division News (VDN)

The VDN section of Archives of Virology remains an important open-access vehicle for freely communicating ICTV news to the virology community and beyond. Reports and articles that deal with the development of virus taxonomy should be sent to VDN, with a clear indication of whether the article presents changes officially recognised by the ICTV, the substance of taxonomic proposals currently being considered by the ICTV, or informal suggestions for discussion. Many articles of taxonomic interest have been published in VDN in 2018, and can be viewed [here](#).

## Meetings and symposia

The ICTV has recently co-sponsored a number of meetings that address current developments in virus taxonomy. These include:

- Advances in Virus Taxonomy, 14 July 2017, Bioinformatics Institute, A\*Star, Singapore (co-organizer, Arcady Mushegian)
- The Global Virome – the Scope, Causes and Consequences of Viral Diversity, 10 April 2018, annual conference of the Microbiology Society, Birmingham, UK (co-organizer, Andrew Davison)
- A World of Viruses: Exploding Diversity and Its Impact on Classification, 14 July 2018, American Society for Virology, College Park, Maryland, USA (co-organizers: Max Nibert and Robert Harrison)

These meetings were very successful, and the ICTV would like to develop this aspect of its work further by partnering with academies and societies that are concerned with virology, including developments in virus taxonomy. Please contact Stuart Siddell (stuart.siddell@bristol.ac.uk) with any suggestions.

## Funding

The ICTV is very grateful to IUMS Virology Division, the American Society for Virology, the Microbiology Society, and the Wellcome Trust for generous support.

## Important links

[Main Website for ICTV](#)

[ICTV virus taxonomy database: current classification and history of each taxon since 1971](#)

[The current MSL](#)

[The current VMR](#)

[Templates for taxonomic proposals](#)

[The ICTV Report](#)

## Problems, comments and questions

As always, comments and suggestions are welcome. To ensure efficient distribution of this and other information, we again ask you to keep your personal information up to date at the ICTV web site. In particular, **if you are a National Representative**, please make sure that all the appropriate information is on the web site, and also send a note to Arcady Mushegian (mushegian2@gmail.com) to inform him of any changes.

**Editor:** Stuart Siddell