

Proposal for long-term funding of the ICTV Online Report through journal partnership

Aims and Summary. We are applying for long-term funding to support the continued production and expansion of the ICTV online Report and associated bioinformatic and metadata resources. To date, publication and maintenance of the ICTV Online Report and summary Taxonomy Profiles (TPs) has been possible initially from a Wellcome Biomedical Resource grant and latterly by direct funding from the Microbiology Society for the employment of a Managing Editor (Dr. Donald Smith). To further these aims, we propose the development of a comprehensive publication package that places a partner journal as the official Journal of Record for the ICTV. In addition to the Taxonomy Profiles, the package would incorporate general taxonomy-related commentaries and reviews that currently make up the Virology Division News (VDN) section of Archives of Virology, as well as comprehensive Annual Summaries of all TPs ratified by the ICTV. The latter would create, for the first time, a citable and searchable published record of new and replaced taxon names, complete records of taxonomy changes and additions that cross-link to the ICTV Master Species List and associated bioresources. We believe that the extensive citation of Taxonomy Profiles, and the enhanced community awareness and engagement that this publication package would engender, justify the funding required to support the Managing Editor post that is essential for these outputs.

Planned package outputs.

a) ICTV Report and Taxonomy Profiles. The Journal of General Virology (JGV) currently publishes ICTV Virus Taxonomy Profiles that provide descriptive summaries of virus families and higher taxa. These Open Access Profiles act as citations for individual chapters in the ICTV Report (<https://ictv.global/report/about>) that are written by the same authors and are the authoritative and continuously updated source of information about viruses and their taxonomy for the virology and wider community.

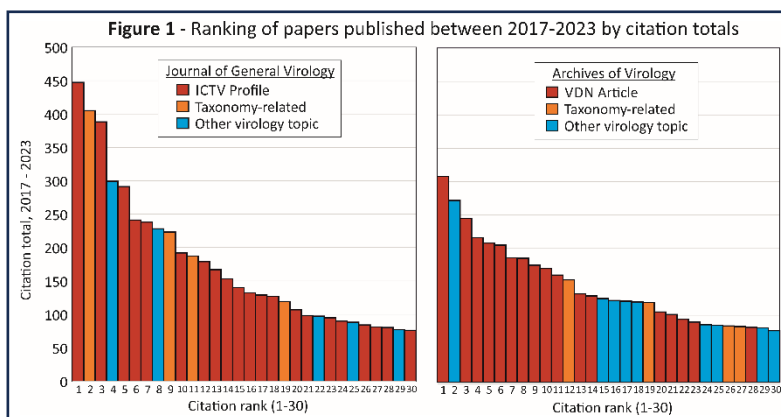
b) Virology Division News (VDN). Archives of Virology (AoV; Springer Nature) publishes the VDN, with an ICTV Executive Committee (EC) member as section editor. This is a free to read (although not Open Access) collection of reviews, opinions and descriptions of proposed new taxa and an annual summary of taxonomy updates and changes. These ICTV-related articles are traditionally well-sought by the readership and highly cited.

c) Taxonomy Proposal (TP) Annual Summaries. We propose the development of a new publication format, comprising eight or more annually published multi-authored summaries of taxonomy changes and additions resulting from each ratified TP (see Appendix for a detailed description of its proposed organisation and content). These would be published by the current seven subcommittees of the ICTV. Their publication and indexing would become the primary citation source for advances in virus taxonomy and transform the visibility, transparency, attribution and citation of changes and additions to virus classification.

Impact of an ICTV / Journal partnership. We believe that the publication of comprehensive taxonomy information by a designated partner journal of the ICTV will have a transformational effect on the accessibility, completeness and integration of authoritative taxonomy and bioinformatic information for the scientific community.

Authority. The partner journal would act as the primary and community-recognised source of information on virus classification, taxonomy changes and general virus descriptions. The journal would possess a unique authority and reference point in these areas. Profiles published in JGV (MS) are rapidly becoming the standard reference for statements of classification information in published virology papers.

Citation metrics¹. Publications on taxonomy represent the most highly cited category of articles in journals engaged with the ICTV. ICTV Taxonomy Profiles published in JGV make up over 2/3rds of their top 30 most cited papers over the 2017-2023 period (Fig. 1, left panel). Rankings are similarly skewed towards ICTV-related articles in the Virology Division News in AoV (right panel), many of which are annual summaries of taxonomy changes for different virus groups that partly pre-figure the content of the planned formal TP Annual Summaries.

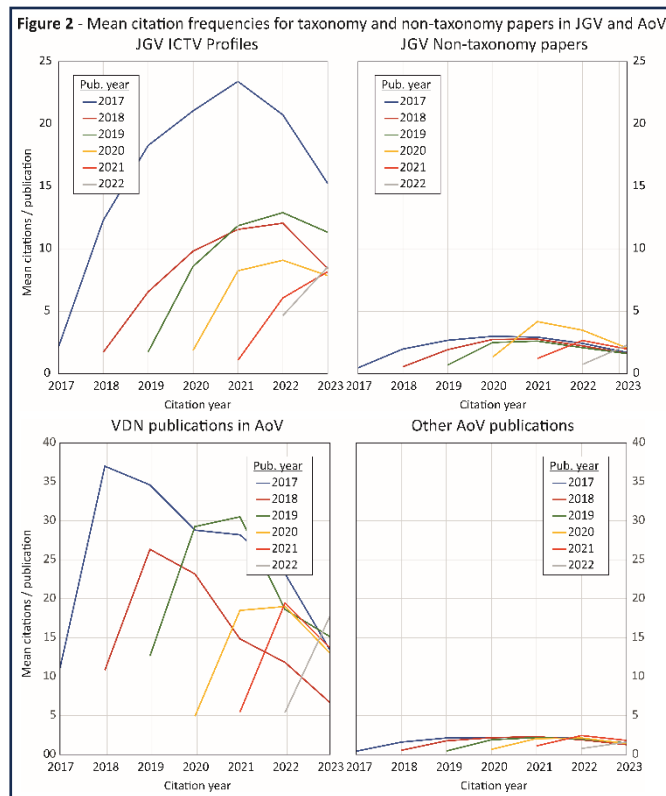


¹ Figures based on publication and citation data provided by ISI Web-of-Science, downloaded 11/12/2023

Profiles and VDN articles are far more cited than non-taxonomy papers of both journals (Fig. 2); mean citation frequencies since 2017 were 9.5 and 17.8/year for Profiles (JGV) and VDN (AoV) articles respectively, compared to 2.0 and 1.6/year for non-taxonomy papers. The JGV Profiles in particular show a remarkably sustained annual citation rate reflecting their long-term value for the virology and wider scientific community (Fig. 2); when well-cited Profiles are updated to reflect taxonomic changes, these will further enhance publication metrics.

Community access and involvement. We believe that opening a publication route for Taxonomy Proposals will encourage and empower the wider virology community to engage with virus classification. At the same time, their involvement with TP Summaries will create a vast number of new stakeholders in the journal and lead to greater familiarity with the ICTV partner. This may positively impact the brand recognition of the journal and promote the wider perception of the journal serving the virology community.

Publication projections. We believe that citations for the ICTV Profiles will continue to increase annually (n=1280 for the last complete year – 2022), as the virus family portfolio approaches completion and with increasing community awareness of the resource. We predict that the TP Annual Summaries will accrue far more citations than the current incomplete and fragmented VDN annual summaries (n=766 in 2022), through their completeness and greater authority. Collectively, the addition of upwards of 3000 citations / year for the package provided to the partnership and perhaps substantially more than 5000 / year as they become established will significantly increase the journal impact factor and its wider recognition.



For JGV, this is particularly relevant at a time of rapidly declining non-taxonomy submissions to the journal (292 published papers in 2017 compared to 88 in 2022 and only 37 to date in 2023). A downward trend is also observed in AoV, with 490 non-VDN papers published papers in 2017 compared to 354 in 2022 and 314 in 2023.

Requested resources. Management of the ICTV Report (soliciting chapters, editing and review, uploading on the ICTV website and publication of Profiles), technical management of the VDN section and the proposed TP Annual Summaries requires paid staff resources in addition to the extensive voluntary involvement and oversight provided by Executive Committee (EC) members of the ICTV. Several EC members act as sub-editors (mostly at the subcommittee level) and coordinate published outputs with ICTV databases and bioinformatic resources provided on the ICTV website. We request part-time (60% FTE) Band 8 salary costs that will enable Donald Smith to continue in his current role as Managing editor of the ICTV Report while also taking on the expanded range of responsibilities described in the package. Commercial organisations funding this post will incur a further University overhead charge to be negotiated.

Terms of agreement. The ICTV would require that a journal partner publishes all outputs as full Open Access, without fees or page charges, and providing a commitment to fund the current ICTV Report Managing Editor post for a proposed initial period of 3-5 years, followed by review against objective and potential extension. The ICTV Report would remain the property of its authors, and copyright would not be transferred to the partner publisher. Pre-specified metrics of success (citation numbers, impact factor) and the provision of agreed exit clauses for both parties could be built into the partnership agreement to ensure that the journal achieves its publication aims and the ICTV obtains greater dissemination and attribution of virus taxonomy information.

Peter Simmonds, ICTV Proposals Secretary

Murilo Zerbini, ICTV President

12/12/2023

Appendix

Proposal for the publication of Taxonomy Proposal Annual Summaries.

Taxonomy proposals in the form of multi-authored and attributed summaries would transform the visibility and transparency of changes and additions to virus classification, as well as enhancing the recognition of those ICTV-associated and community virologists who are driving taxonomy forward. Such summaries would also serve to establish the partner publisher as a journal of record for the ICTV (and virus taxonomy generally).

Background. With the exception of viruses, biological taxonomy proceeds through the description and naming of species, deposition of type specimens and publication in an approved journal. For example, the MS publishes the principal journal for the publication of prokaryotic species description, the International Journal of Systematic and Evolutionary Microbiology (IJSEM). The journal is the official publication of the International Committee on Systematics of Prokaryotes (ICSP) and the Bacteriology and Applied Microbiology Division of the IUMS.

Virus taxonomy is developed through a quite different system of annual submission of formal Taxonomy Proposals (TPs). These are evaluated by the appropriate expert subcommittee and by the ICTV Executive Committee (EC). Ratification of proposals by ICTV members' vote leads to its official adoption and updating of the Master Species List and associated databases and bioinformatic resources. The system is internally highly effective, creates consistency and traceability in assignments and, uniquely for biological taxonomies, additionally supports a fully evaluated, official classification at ranks higher than genus and species. The ICTV structure has facilitated recent large-scale and coordinated changes to virus taxonomy, such as the adoption of higher ranks, binomial species nomenclature, and the formulation of clear policies for virus classification of viruses known from sequences alone. Disputes in many of these areas have convulsed bacterial, fungal and wider biological taxonomy for several years (for example: [3]), often without a clear pathway towards resolution.

However, the absence of an overt publication record for new species and other taxonomy additions and changes is a drawback of the ICTV framework. TPs are available on the ICTV website after ratification, but they are not indexed on PubMed, nor easily cited in the literature. Importantly, authors who submit TPs do not receive publication or citation credit for adopted proposals, and their "invisibility" in the published literature may thus disincentivise individuals from writing and submitting TPs and greatly hampers others from finding and appropriately citing sources for taxonomy statements. Perhaps as a direct result, almost all TPs are generated by members of the ICTV Study Groups, rather than by members of the wider virology community.

A summary of taxonomic changes is published each year in the Virus Division News section of Archives of Virology, but this is co-authored only by ICTV EC members, not the contributing authors [4]. The document is additionally often regarded as too general to serve as a citation source for an individual TP. One subcommittee, however, does publish a much more comprehensive annual description of taxonomy additions and changes for negative-strand RNA viruses, and importantly, this article is co-authored by all those who have contributed TPs to the annual round [1]. The Bacterial Viruses Subcommittee has also published taxonomy updates since 2016 that provided a more citeable source for major new taxa, explaining other large changes to the taxonomy and changes to subcommittee structure, e.g. [2]. However, these summaries from this subcommittee were co-authored by their members, not by the many originators and authors of the Taxonomy Proposals they describe.

Development of Taxonomy Proposal Annual Summaries. We propose the development of a new publication format that would enable ratified proposals for virus taxonomy changes to be published in a PubMed-indexed journal. This would represent a substantive improvement in the visibility and accessibility of virus taxonomy advances to the wider virology community. It would also give recognition to those making taxonomy proposals through citation attribution. Finally, it would create a published and fully traceable record of future ICTV additions and changes. The principles and practicalities of this publication format are described in the following sections. These should be read in conjunction with the example TP summary which was prepared for proposals originally submitted to the animal positive-strand RNA virus sub-committee and ratified in 2022.

Aims. A TP summary would produce a searchable and citeable source of taxonomy additions and changes, specifically enabling the source and provenance of taxa, their names and authors to be searchable through PubMed or other literature search engines.

- TP summaries would incentivise virologists to submit proposals to the ICTV and greater recognition of their contributions.
- Their publication would provide a major and potentially transformative addition to a journal's scope, citations and professional recognition, and would be an official partner journal to the ICTV (analogous to the relationship between MS and IJSEM).
- Their publication, in tandem with ICTV Taxonomy Profiles and other taxonomy outputs would establish a journal as the authoritative source of virus classification information.
- Extensive cross-referencing from published taxonomy proposals to the MSL, VMR and other bioinformatic and report resources on the ICTV website would greatly increase access and community understanding of the ICTV and its outputs.
- It would substantially increase the visibility of virus taxonomy to the virology and wider community.

How publication would work in practice has been extensively discussed by the EC and between the authors of this report in the last three months. The following is agreed upon:

Design. It would be impossible with current resources to follow a publication model of individual publications for each TP. TPs as currently submitted can be inconsistent, and often contain insufficient information and depth to constitute primary publications.

- The frequent absence of subject review and citation of the literature – combined with the often minimal content of TPs (*eg.* renaming a species) would make the majority of published TPs ineligible for PubMed indexing.
- At the same time, current TPs are generally adequate as records and reasons for proposed taxonomy changes. It would greatly dis-incentivise submitters to ask for more substantial content.
- A journal would likely be unwilling in any case to publish several hundred publications per year, with a likely median citation frequency of zero.
- There are insufficient outputs from the ICTV to warrant creation of a new journal; there would also be insufficient resources to run such a journal without substantial external, possibly commercial / for profit investment.
- As our objective is to obtain support for the ICTV Report Managing Editor, proposals for enhancing content cannot entail requirements for vastly increased staff, bioinformatic or publication resources.

On consideration, we propose the publication of annual summaries of all ratified TPs submitted to each subcommittee. The attached chapter produced from the TPs submitted to the animal positive-strand RNA virus subcommittee in 2022 (when Peter Simmonds was the SC chair) exemplifies this. The format is inspired by the summaries of taxonomy changes to negative-stranded RNA viruses published annually by SC chair Jens Kuhn, simplified to TP title and summary but with more comprehensive and systematic cross-indexing to ICTV resources.

Format. Each year would see the publication of a total of seven summaries based on TPs submitted to each of the seven ICTV subcommittees, and a eighth for general proposals.

- Rather than providing detailed primary content, the summaries will act primarily as signposts to the ICTV website. Links will take the reader to the full TPs and resulting taxonomy changes on the ICTV website.
- The SC Chair will be the first author, and editorially responsible for the contents of the paper.
- The papers will be co-authored collectively by all those associated with the TPs. Author lists for each individual TPs are additionally provided within the document.
- Sections within each summary will contain TP titles, submitting authors, summaries, table of taxonomy changes and links to the TP full text on the ICTV website and to the relevant ICTV Report.
- Each summary will have sufficient collective content for PubMed indexing.
- All new and replaced taxon names will be indexed and become findable within PubMed.
- The summaries will constitute the official citation for taxonomy changes in that year.
- Publication of summaries does not entail a change towards taxonomy assignments based on the principle of publication priority (as followed by the rest of biology). The ICTV remains the sole authority for taxonomy assignments.

Practicalities. The summaries must be simple to produce, accurate and to not add substantially to the workloads of the Report Managing Editor or the SC chairs.

- Almost all of the content of the summary can be derived from the information within the relevant TPs (apart from a free text Abstract and short Introduction written by the SC Chair).
- The process of increasing TP form standardisation and required information will allow the application of Python scripts to extract the required elements for insertion into the summary. These include generation of the author list and affiliations, author metadata for journal submission, title and summary of the TP, links to ICTV resources and tabulation of TP changes.
- Additions and changes to taxonomy will be tabulated in an abbreviated format from data extracted from the TP spreadsheet and inserted as tables within the text.
- Links will be inserted to point the reader towards the full text of the TP, and to the relevant ICTV Report chapter (whose contents will update automatically once ratification has taken place).
- Indexing all new and replaced taxon names so that they are searchable in PubMed is a complex issue that would need to be discussed with the journal publishers. It is however essential that each is indexed and findable.

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