



Department of Wine, Food & Molecular Biosciences

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Dear Chairmen and Secretaries of Taxonomic Subcommittees

I am writing to you in my capacity as Secretary for Subcommittees, in light of concerns that have been raised by members of the Executive Board of the International Committee for Systematics of Prokaryotes (ICSP).

The Executive Board regards subcommittees as precious entities within the ICSP and hopes that you will understand our reasons for writing to you. The work we all do is, in my view, important to advance the field and provide clarity to the wider scientific community. It must, however, be conducted within the operating framework of the body that allows us to exist in the first place.

The ICSP is, of course, the governing body to which all Subcommittees belong. As such, Subcommittees are bound by a number of rules and conventions described and enshrined in its Statutes (<https://doi.org/10.1099/ijsem.0.003117>). We would like to remind you that the work of Taxonomic Subcommittees involves promotion and practice of taxonomic research into microorganisms of interest to the respective taxa, but Article 6(5) of the ICSP Statutes states, “Subcommittees on Taxonomy shall work within the framework provided by the International Code of Nomenclature of Prokaryotes (ICNP)”.

That is, the work of the Taxonomic Subcommittees requires compliance with the International Code of Prokaryotic Nomenclature (ICNP) rules of nomenclature, recently updated (<https://doi.org/10.1099/ijsem.0.005585>). According to Article 3 the ICSP has a statutory responsibility to ensure the proper application of the ICNP. While this is the main function of the ICSP, according to Article 5(b)(9), its Executive Board has a statutory responsibility to ensure the “proper functioning of the organizations and officers of the ICSP”. For this reason, we are contacting you to ensure that the consequences of the framework of regulations under which you are operating are properly understood.

There are two topics we feel need to be addressed, i.e., the publication of the “Code of Nomenclature of Prokaryotes Described from Sequence Data” (“SeqCode”) and the practical consequences of the differences between nomenclature and taxonomy or classification.

### **The SeqCode contravenes the ICNP**

As opposed to the mere description of species, the distinction between the nomenclatural status of names of prokaryotes (validly published vs. not validly published, legitimate vs. illegitimate, correct

vs. synonym, etc.) is one of the key tasks of the ICNP, as detailed in the ICNP itself (e.g., Principle 6, Rule 23a; see also <https://doi.org/10.1099/ijsem.0.005782>).

The SeqCode implements a proposal by Whitman and others to allow for DNA sequences as nomenclatural types of names of species and subspecies with validly published names. This directly contravenes the ICNP (<https://doi.org/10.1099/ijsem.0.005754>). General Consideration 5 of the ICNP clarifies that the ICNP applies to all prokaryotes. That is, all naming of prokaryotes is “naming under the International Code of Nomenclature for Prokaryotes”, and the ICNP then determines the status of each of the resulting names. The SeqCode contravenes the ICNP by assigning a competing nomenclatural status to names. Moreover, the ICSP has intensely discussed and then explicitly rejected (with a clear majority) the proposal by Whitman *et al.* (<https://doi.org/10.1099/ijsem.0.004303>).

The authors of the SeqCode could have chosen other ways to achieve their goals. There was, in fact, no need to challenge the ICNP. Chaos in prokaryotic nomenclature may easily be caused by the establishment of a second code of nomenclature that logically contradicts the ICNP. Such confusion simply cannot be seen as beneficial to the wider scientific community – whom we are charged to serve.

### **The SeqCode is not a code for the uncultivated**

Fundamentally, the SeqCode does not offer any control over whether: (i) cultures were in fact not available for a species or subspecies; or (ii) cultures were available but could not be deposited; or (iii) cultures were available and could have been deposited but the authors just choose the easier way to only deposit a DNA sequence in INSDC for “validly publishing” the name of the corresponding species or subspecies under the SeqCode. In this and other ways, the SeqCode undermines scientific standards, as well as the ICSP and ICNP.

It is unwarranted to establish a second code of nomenclature solely based on the difference between cultivated and uncultivated organisms:

- As mentioned above, the ICNP covers all prokaryotes.
- Upon cultivation, the kind of organism remains the same. That is, an organism can be converted from being uncultivated to being cultivated. Conversely, a cultivated organism can become uncultivated if all of its cultures are destroyed. However, for separating codes of nomenclature, the kinds of organisms covered would need to be different; compare, e.g., the zoological code with the botanical code.
- All currently cultivated prokaryotes were at some time point in the not too distant historical past been uncultivated. Studies that yield a new name validly published under the ICNP begin with an uncultivated organism – unless that cultivation was done in a previous study, which began with an uncultivated organism.

The Executive Board has considered the Seqcode carefully. We believe the SeqCode fundamentally undermines the scientific standard called, “valid publication of the name of a prokaryote”. By using an approach of name formation that makes names formed under the SeqCode *indistinguishable* from names formed under the ICNP and by also calling those names “validly published”, the SeqCode has created a nomenclatural status designed to be indistinguishable from the one used by the ICNP. This is inappropriate, since valid publication under the ICNP is more demanding. Thus, “validly published” under the SeqCode may even be understood to be a fake nomenclatural status devised to undermine the original. This may sound surprising, but publications in favour of the proposal by Whitman and others and of the SeqCode have expressed intentions that conform to the interpretation given here.

## The SeqCode is unnecessary to name or describe the uncultivated

Much of the support for the SeqCode in the literature and on social media appears to originate from the false assumption that the SeqCode would be necessary for naming or describing taxa of uncultivated prokaryotes. In reality, one does not need the SeqCode (or any other code, for that matter) to describe or name taxa, whether based on sequences or other data. While as of 2001 the valid publication of a name of a species or subspecies under the ICNP indeed requires the cultivation and deposition of the type strain in two culture collections, the ICNP does not hinder anybody to either:

- make an as-yet uncultivated prokaryote “available as pure culture” as a prerequisite for validly publishing the name under the ICNP, as was done for thousands of names in the past; or
- assign a name to an as-yet uncultivated prokaryote, preferably marked as *Candidatus*, as explained in detail in Appendix 11 of the ICNP, and proposed to be added to an IJSEM *Candidatus* List.

In fact, more than 65,000 *Candidatus* names have been “described based on genome sequences without cultures” in the IJSEM (<https://doi.org/10.1099/ijsem.0.005482>)!

The ICSP Executive Board (<https://doi.org/10.1038/s41564-022-01167-z>) has recently made the same point:

“... the ICNP only regulates the valid publication of names of prokaryotic taxa, not the publication of descriptions of microbial taxa. We emphasize that new names can be ‘effectively published’ (ICNP Rule 25a), and that researchers are free to disseminate their work ...”

The ICSP’s responses to Frequently Asked Questions (<https://doi.org/10.5281/zenodo.7758073>) also cover this topic:

“Does the ICSP hinder anyone proposing taxon names? – No. Scientific journals may have their own requirements for publishing descriptions of microbial taxa but, with the exception of the IJSEM, these journals are independent of the ICSP. The ICSP does publish the ICNP, and the ICNP regulates which taxon names have claim to recognition under its rules. However, this does not mean that a taxon name that does not (yet) have claim to recognition under the ICNP cannot be proposed. On the contrary, the proposal of a taxon name in a publication is a prerequisite for obtaining a claim to recognition under the ICNP. The ICSP does neither control, nor seek to control, the proposal of a taxon name.”

## Endorsing the SeqCode would contravene the ICSP Statutes

As mentioned above, according to Article 6(b)(5) of the ICSP Statutes (<https://doi.org/10.1099/ijsem.0.003117>), the Subcommittees on Taxonomy are obliged to work in adherence to the ICNP:

“Subcommittees on Taxonomy shall work within the framework provided by the International Code of Nomenclature of Prokaryotes (ICNP) ...”

Article 6(b)(5) further specifies the tasks of the Subcommittees on Taxonomy. Members of a Taxonomic Subcommittee may, in their personal capacity cover any topic, but when acting as this Subcommittee, they are confined to the responsibilities listed in the ICSP Statutes. Thus, recommending or endorsing the aforementioned proposal by Whitman *et al.* or the SeqCode is clearly inappropriate for a Taxonomic Subcommittee of the ICSP.

Regarding the SeqCode; we would however advise you that changes to the ICNP may soon be proposed that we hope will improve the accommodation of taxonomists working with as-yet

uncultivated bacteria and, thus, better accommodate the needs of researchers who are proponents of the Seqcode, while also continuing to provide a much-needed single and comprehensive formal nomenclatural framework for the scientific community. Further details will follow in due course.

### **Taxonomic Subcommittees do not rule on classification**

The ICNP is a code of nomenclature. According to General Consideration 4,

“Rules of nomenclature do not govern the delimitation of taxa nor determine their relations. The Rules prescribe the procedures for creating and proposing new names and for assessing the correctness of the names applied to defined taxa.”

Subcommittees on Taxonomy have the right to express a taxonomic opinion and are explicitly encouraged to do so. However, they cannot “not recognise” a taxon name proposed in accordance with the rules of nomenclature. The relevant section of the Statutes here is Article 6(b)(5)(c), which states:

“A Subcommittee on Taxonomy cannot legislate on classification but may contribute materially towards the general acceptance of a classification”.

A Taxonomic Subcommittee may not necessarily like or approve of a taxonomic proposal, although whether or not the resulting name is validly published is another question. If a Taxonomic Subcommittee has appropriate grounds to challenge the taxonomic suitability of a proposal, then it should do so by a proposal to treat the resulting validly published name as, not the *correct name*, i.e., as a synonym of the correct name. The Judicial Commission has recently explained in detail the meaning and usage of the status values of taxon names defined in the ICNP (<https://doi.org/10.1099/ijsem.0.005782>).

### **Rejection of names is not meant for solving taxonomic controversies**

Placing a name or epithet on the list of *nomina rejicienda* can be done only by the Judicial Commission (JC). There may be nomenclatural reasons for doing so, but the purpose of rejecting names or epithets is not to resolve taxonomic controversies.

Most such controversies arise from species being proposed for placement in other genera, accompanied by the proposal and valid publication of new combinations. While such proposals are simply an expression of taxonomic freedom, the same taxonomic freedom allows others to prefer an older validly published name for the same species, thereby implying the position of the species in another genus. One of the most serious misunderstandings of the ICNP is the belief that, in a series of homotypic synonyms, the last validly published name must be treated as the correct name. This is not the case, and it is, therefore, wholly inappropriate to call for the rejection of a genus name and the names of all species within that genus simply because the taxonomic preference is for those species to be placed in a different genus. Such a move would also be ineffective, since once such a genus name was rejected, a new genus could immediately be proposed in its place, which would also yield validly published and legitimate names.

This issue has been explained in a number of publications and online resources:

- Guidelines issued by the JC: <https://doi.org/10.1099/ijsem.0.005782>
- Judicial Opinion 124: <https://doi.org/10.1099/ijsem.0.005708>
- Judicial Opinion 122: <https://doi.org/10.1099/ijsem.0.005481>
- The problems caused by automatically treating the last new combination as correct name: <https://doi.org/10.1016/j.ttbdis.2022.101994>

- An entry on the List of Prokaryotic Names with Standing in Nomenclature (LPSN): <https://lpsn.dsmz.de/text/faq#why-and-how-does-lpsn-assign-the-status-correct-name>
- An older IJSEM article about the topic: <https://doi.org/10.1099/00207713-49-3-1313>
- A BISMIS Live talk: <https://www.youtube.com/watch?v=RO0fSE4epXA>

## Summary

I hope that this letter will help all concerned to avoid any misunderstanding of the relevant rules. The new ICSP Executive Board, which has taken office in September 2023, looks forward to serving the ICSP. In view of the results achieved during the last period, the Executive Board expects that the ICSP and its institutions will be able to successfully continue and even improve their services to the microbiological community. Some of these invaluable services are provided by the Taxonomic Subcommittees and it is very promising that new Subcommittees continue to be established. The Executive Board will continue to provide advice and other support to the Taxonomic Subcommittees wherever possible. Should any further questions arise, please do not hesitate to contact me.

Kind regards



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Te Whare Wānaka o Aoraki

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