

# Synopsis of proposals on fungal nomenclature: a review of the proposals concerning Chapter F of the *International Code of Nomenclature for algae, fungi, and plants* submitted to the XI International Mycological Congress, 2018

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**Abstract:** A commentary is provided on the seven formally published proposals to modify the provisions of the *International Code of Nomenclature for algae, fungi, and plants* (ICN) that will be dealt with by the Fungal Nomenclature Session (FNS) of the 11th International Mycological Congress (IMC11) in July 2018. The proposals deal with four issues: (1) clarification of the meaning of “original material” in relation to the typification of sanctioned names; (2) indication of the nomenclatural status of sanctioned names in author citations; (3) use of DNA sequences as nomenclatural types; and (4) use of repository identifiers as an alternative to author citations. Information is also provided on the composition and role of the Fungal Nomenclature Bureau and the operation of the FNS and the pre-Congress Guiding vote.

**Key words:** Author citations, DNA types, ICN, Governance, Guiding vote, Identifiers, Nomenclature, Sanctioned names, Typification.

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## INTRODUCTION

Following new procedures adopted at the Nomenclature Section of the XIX International Botanical Congress in Shenzhen (Hawksworth *et al.* 2017), formal proposals to amend the *International Code of Nomenclature for algae, fungi, and plants* (ICN) in regard to provisions solely related to fungi were published in *IMA Fungus* 9: (i)-(vii) on 1 April 2018 (Hawksworth 2018). The new procedures are set out in the *Shenzhen ICN* (Turland *et al.* 2018) and state that such proposals are to be dealt with by the Fungal Nomenclature Session (FNS) of an International Mycological Congress. This Synopsis presents the proposals along with a commentary, following the established practice for proposals presented to International Botanical Congresses (Turland & Wiersema 2017).

An innovation in the *Shenzhen Code* is that all articles and recommendations that relate solely to organisms treated as fungi have been separated in a new “Chapter F”. It is the material in Chapter F that can be modified or augmented by the FNS of an IMC. The *Shenzhen Code* is currently in press, but it is anticipated that printed copies will be available prior to the FNS.

This synopsis has been prepared in our capacities as the appointed Secretary (TWM) and Deputy Secretary (SAR) for the upcoming Fungal Nomenclature Session in Puerto Rico (*see below*).

## Fungal Nomenclature Session

The proposals discussed below will be formally considered at the Fungal Nomenclature Session (FNS) of the XI International Mycological Congress to be held on Thursday 19 July 2018 in the plenary hall of the Puerto Rico Convention Center, San Juan, Puerto Rico. All persons registered for at least that day of the Congress are eligible to attend and vote in the FNS. Each person eligible to attend has one vote, and there are no institutional votes.

Procedures for the FNS are set out in Provision 8 of Division III of the *Shenzhen Code*. These procedures include: a qualified

majority (60 %) is required for accepting proposals and for referring items to the Editorial Committee; while a 50 % majority is required for accepting an amendment to a proposal, for choosing between two alternative proposals, and for establishing and referring items to a Special-purpose Committee. Note that changes to wording of particular proposals may be moved as amendments during the FNS, either as a friendly amendment [when accepted by the original proposer(s)] or otherwise when introduced by an eligible attendee of the FNS and seconded by five other eligible attendees.

The FNS may authorize one or more Special-purpose Committees, with a specific mandate, to be appointed by the Nomenclature Committee for Fungi in consultation with the General Committee, that report back to the FNS of the next IMC. An example of a previous Special-purpose Committee is the Special Subcommittee on Governance of the *Code* with Respect to Fungi, appointed following the Melbourne IBC, that produced proposals to amend the *Code* that were ultimately adopted at the Shenzhen IBC (May 2016; Hawksworth *et al.* 2017).

For the main body of the *Code*, an Editorial Committee is elected by the Nomenclature Section of an IBC, and that Committee finalizes the *Code* arising from that Congress. For changes to Chapter F, there will be an “Editorial Committee - Chapter F” that will incorporate any required changes into the on-line version of the *Code* (in consultation with the Editorial Committee for the *Shenzhen Code*). Proposals concerning examples are automatically referred to the Editorial Committee.

## Fungal Nomenclature Bureau

The Fungal Nomenclature Bureau (FNB) of an International Mycological Congress is responsible for running the FNS and the pre-Congress Guiding vote. The FNB consists of the Chair, up to five Deputy Chairs, Secretary, Deputy Secretary, and Recorder. These roles in the FNB are the equivalent of the President, Vice-president, Rapporteur-général, Vice-rapporteur and Recorder in the Bureau of Nomenclature of an International Botanical Congress

(IBC). Subject to confirmation by the General Committee (in train at present for the Chair and Deputy Secretary positions), the officers of the FNB will be: Amy Rossman (Corvallis, USA; Chair), David Hawksworth (Richmond and London, UK; Emeritus Deputy Chair), Tom May (Melbourne, Australia; Secretary), Scott Redhead (Ottawa, Canada; Deputy Secretary) and Lorenzo Lombard (Utrecht, The Netherlands; Recorder). Further details on the election and duties of members of the FNB can be found in Hawksworth *et al.* (2017). In his role as Rapporteur-général for the Rio IBC, Nicholas Turland (Berlin, Germany) has kindly agreed to an invitation from the International Mycological Association to attend the Fungal Nomenclature Session in San Juan as an observer.

In the lead up to each IBC, it is traditional for the Rapporteur-général and the Vice-rapporteur to present a synopsis of the proposals, as background for the pre-Congress vote and for the Nomenclature Section of the IBC. As Secretary and Deputy-Secretary of the FNB, we follow that tradition here for proposals that are to be dealt with by the FNS of IMC11. The Synopsis is not intended as a vehicle for the personal opinions of the secretaries, but rather is an opportunity to draw together all the proposals and examine technical aspects such as clarity of wording, ramifications for other articles, and unexpected consequences, as well as indicate opinions of relevant international committees.

Given the short time frame between the introduction at the Shenzhen Congress of new procedures for governance of the nomenclature of names of fungi and the inaugural Fungal Nomenclature Session at IMC, all seven formal proposals to amend Chapter F were published together in April 2018 in *IMA Fungus* 9 in the section MycoNames (Hawksworth 2018).

## Guiding vote

A pre-Congress Guiding vote will take place subsequent to the publication of this Synopsis, until 17 June 2018, as a non-binding but nevertheless indicative assessment for the FNS on the published proposals. Any proposal that has a “No” vote that is equal to or greater than 75 % in the Guiding vote is automatically rejected by the FNS, unless a proposal to discuss it is moved by a registered attendee of the FNS and seconded by five other registered attendees.

Participation in the Guiding vote is open to authors of proposals, members of the Nomenclature Committee for Fungi, and members of a range of organizations as set out in Division III of the *Code*, specifically the International Mycological Association and its Member Mycological Organizations. We acknowledge that the geographic and sector balance of the eligible organizations could be improved, but no organizations contacted us by the deadline specified by Hawksworth *et al.* (2017). Nevertheless, the FNB has proactively approved the following additional eligible organizations, all with an international or continental scope: African Mycological Society, La Asociación Latinoamericana de Micología, International Association for Lichenology, and International Commission on the Taxonomy of Fungi.

Organisations whose members are eligible to participate in the Guiding vote are listed on the IMA website:

<http://www.ima-mycology.org/nomenclature/guiding-vote>.

Results of the Guiding vote will be available on the IMA website prior to the IMC at the same link.

Because the proposals relating to fungi follow the numerical sequence of articles in the *ICN*, they have not been re-numbered,

and the Guiding vote will also use the numbering of the proposals as published (*F-001* etc.).

It is recommended to read this Synopsis in parallel with the original proposals (Hawksworth 2018) before completing the Guiding vote — see *IMA Fungus* 9: (i)-(vii) <<http://www.imafungus.org/Issue/91/MYCONAMES.pdf>>.

Options on the Guiding vote, for each proposal will be: **No, Yes, Special-purpose Committee, Editorial Committee, and Abstain**. A “Yes” vote only implies approval in principle of the proposal, not necessarily of its exact wording. An “Editorial Committee” vote (unless otherwise indicated) instructs the Editorial Committee - Chapter F to consider inclusion in the *Code* of material in the proposal, but does not require it to do so.

## Opinions of committees

Proposals to amend Chapter F of the *Code* were submitted to the Nomenclature Committee for Fungi (NCF) for their opinion and *Prop. F-005* was also submitted to the International Commission on the Taxonomy of Fungi (ICTF). Voting within these committees is reported as the number of votes for the options: Yes – No – Special-purpose Committee – Editorial Committee. In the ICTF, 18 of the 23 members voted, and in the NCF all 20 members voted. Percentages are of the members voting. A given committee is stated to support a proposal when the “Yes” vote is 50 % or more.

## Proposals to conserve, protect or reject and requests for binding decisions

It is important to note that proposals to conserve, protect or reject names or to suppress works and requests for binding decisions (such as on confusability of names) should continue to be submitted to the General Committee (GC) for examination by the relevant Specialist Nomenclature Committee, which for fungi is the Nomenclature Committee for Fungi (NCF). The means of submitting proposals and requests to the GC is *via* publication in the journal *Taxon*, except for lists for protection or rejection, prepared by working groups established under Art. F.2 or F.7, which are published in *IMA Fungus*. Recent reports of the NCF have been published simultaneously in *Taxon* and *IMA Fungus* (e.g. May 2017) and reports of the GC appear in *Taxon*; both series of reports will now be published annually. **The proposals and requests dealt with by the NCF (and ultimately the GC) are not part of the business of the FNS.**

## PROPOSALS TO AMEND CHAPTER F OF THE CODE

This Synopsis repeats the exact wording of the proposed changes to Chapter F, along with reference to the published justification. Numbering of articles and recommendations and the quoted text follows the *Shenzhen ICN* (Turland *et al.* 2018), with new material inserted in sequence in the appropriate position. When existing articles are quoted, new text is in **bold**, deleted text is in ~~strikethrough~~. Proposals below relate to Articles (Art.), Recommendations (Rec.) and Examples (Ex.) of the *Code*.

## Article F.3 - concerning elements from the context of sanctioning works

*Prop. F-001* [Parra & Zamora in *IMA Fungus* 9(1):(i)-(iii)] Reword Art. F.3 Note 2

“Note 2. For names falling under Art. F.3.9, both elements from the context of the protologue are original material and those from the context of the sanctioning work are considered as equivalent to original material.”

*Prop. F-002* [Parra & Zamora in *IMA Fungus* 9(1):(i)-(iii)] Reword Art. F.3 Note 2

“Note 2. For names falling under Art. F.3.9, an elements from the context of the protologue are original material and those from the context of the sanctioning work are considered as equivalent to original material a sanctioning work may be chosen as lectotype when no original material is available, except when a neotype has been previously designated for the same name.” [Revised from the original proposal to show deleted text.]

The proposers note that If *F-002* is accepted, it will be necessary to amend Art. 9.13: “If no original material is extant or as long as it is missing, a neotype may be selected. A lectotype always takes precedence over a neotype, except as provided by Art. 9.16, 9.19(c) and F.3 Note 2.” [Revised from the original proposal, where a reference to the need to change Art. 9.12 was also included by mistake.]

**Secretaries’ comments** When typifying names that are sanctioned, the current wording of the *Code* is that the type of a sanctioned name “may be selected from among the elements associated with the name in the protologue and/or the sanctioning treatment” (Art. F.3.9). Note 2 to Art. F.3.9. explains that “elements from the context of the protologue are original material and those from the context of the sanctioning work are considered as equivalent to original material”. The proposers provide historical background to the evolution of this article from the wording in the *Vienna Code*. They note that due to variant interpretations of previous editions of the *Code*, in some cases where material associated with the protologue was no longer extant, but there was extant material associated with the relevant sanctioning work, a neotype was chosen. Under the current wording of the *Code* (or at least the intent of the wording), such neotypes should be superseded.

The proposers present *Prop. F-001* and *F-002* as alternatives. Although arguments for both proposals are put forward, the proposers in fact strongly prefer *Prop. F-002* (Juan Carlos Zamora pers. comm.). Their intent with *Prop. F-002* is to allow past neotypifications of sanctioned names to stand when such neotypifications were carried out even when material from the context of the sanctioning work was available; and they also wish to allow such a practice to continue.

The Nomenclature Committee for Fungi supports *Prop. F-002* (13 - 6 - 1 - 0) over *Prop. F-001* (4 - 16 - 0 - 0). However, Nicholas Turland (Rapporteur-général for the IBC) has pointed out that to enforce the intent of either, the proposals need to refer to Articles rather than Notes. Also, with the current wording of *F-001* adjustments would be required to a number of other Articles, and for *Prop. F-002* the possibility that a neotype is lost or destroyed needs to be taken into account. A potential re-wording of Art. F.3.9 that matches the intent of *Prop. F-002* is: “The lectotype of a name of a species or infraspecific taxon adopted in one of

the works specified in Art. F.3.1, and thereby sanctioned, may be selected from among the elements associated with the name in the protologue and/or the sanctioning treatment. **If no elements associated with such a name in the protologue exist (or as long as they are missing) and no lectotype exists, a neotype may be selected. As long as a neotype exists, selection of a lectotype is precluded**”.

For *Prop. F-002*, mycologists participating in the Guiding vote should vote “Yes” if they support the intent of the wording put forward by the proposers (the wording of the proposal can be amended during the FNS).

## Recommendation F.3A - concerning indication of sanctioned status

*Prop. F-003* [Hawksworth in *IMA Fungus* 9(1):(v)] Amend Rec. F.3A

“F.3A.1. After a sanctioned name (Art. F.3.1), either “-Fr.” or “-Pers.” (to indicate the sanctioning author Fries or Persoon) or the abbreviation “nom. sanct.” (nomen sanctionatum) should may be added in a formal citation, together with the citation of the place of sanctioning if when it is considered desirable useful to indicate the nomenclatural status of the name. In a formal citation of a new combination based either on a sanctioned name or on the basionym of a sanctioned name, “-Fr.” or “-Pers.” should be added within the parentheses after the author(s) of the basionym (Art. 49.1).1 [footnote]1 In this Code and its Appendices, sanctioning is indicated by “-Fr.” or “-Pers.””

*Prop. F-004* [Hawksworth in *IMA Fungus* 9(1):(v)] Revise Examples 1 and 2 in Rec. F.3A

Ex. 1. *Boletus piperatus* Bull. (Herb. France: t. 451, fig. 2, 1790) was adopted in Fries (Syst. Mycol. 1: 388. 1821) and was thereby sanctioned. It can be cited as either *B. piperatus* Bull. -Fr. or *B. piperatus* Bull., nom. sanct. **when it is useful to indicate the nomenclatural status of the name.**

Ex. 2. *Agaricus compactus* [unranked] *sarcocephalus* (Fr.) Fr. was sanctioned when adopted by Fries (Syst. Mycol. 1: 290. 1821). That status can be indicated by citing it as either *A. compactus* [unranked] *sarcocephalus* (Fr. : Fr.) Fr. : Fr. or *A. compactus* [unranked] *sarcocephalus* (Fr.) Fr., nom. sanct. The designation “-Fr. nom. sanct.” is not to be added when citing its basionym *A. sarcocephalus* Fr. (Observ. Mycol. 1: 51. 1815) **and nor to ;but it can be added when citing subsequent combinations such as** *Psathyrella sarcocephala* (Fr. : Fr.) Singer (in Lilloa 22: 468. 1949).

**Secretaries’ comments** *Prop. F-003* follows from a proposal made at the Shenzhen Congress to replace the colon as an indication of sanctioned status by the term “nom. sanct.” At that Congress, rather than replace the colon, an amended proposal was accepted that allowed either the colon or the use of “nom. sanct.” The current proposal seeks to remove the option of using the colon. Because *Prop. F-003* relates to a recommendation, should it be accepted, use of the colon would not be forbidden. However, if accepted, in the *Code* and its Appendices, the indication of sanctioning would be changed from the colon (as used at present) to “nom. sanct.” An advantage of the proposal is that sanctioned status would be indicated only for the name as sanctioned, which mirrors existing recommendations of the *Code* in relation to other indications of nomenclatural status, such as “nom. cons.” (Rec. 50E.1) or “nom.

rej.” (Rec. 50E.2). In addition, confusion is possible with the colon when the rank of the name as sanctioned is not the same as either the basionym (where the sanctioned name is a combination), or otherwise a later combination that is also a change in rank. On the other hand, the colon has been widely used as a method to indicate sanctioned status since its introduction in the *Sydney Code*. Should *Prop. F-003* be accepted, the suggested revisions to the examples in *Prop. F-004* would be logical. Because *Prop. F-004* concerns examples, it will automatically be referred to the Editorial Committee - Chapter F. Within the NCF, there is support for the two proposals (14 - 5 - 1 - 0).

## Article F.4.2 (new) - concerning DNA sequence data to serve as type of name

*Prop. F-005* [Hawksworth *et al.* in *IMA Fungus* 9(1):(v)–(vi)]  
Insert a new Article after Art. F.4.1

“F.4.2. In fungi, when DNA sequence data corresponding to a new taxon have been detected, but no physical specimen has been found to serve as the type of the name of the new taxon (Art. 8.1–8.4), the type may be composed of DNA sequence data deposited in a public repository.”

*Prop. F-006* [Hawksworth *et al.* in *IMA Fungus* 9(1):(v)–(vi)] Add a new Recommendation F.4A

“F.4A.1. When the type is composed only of DNA sequence data (Art. F.4.2), the new taxon should be described with reference to a published phylogenetic analysis; both the phylogenetic tree and the DNA sequence alignment that was used to create the phylogenetic tree should be deposited in a publicly accessible repository.”

“F.4A.2. A new taxon typified only by DNA sequence data should be represented by multiple sequences obtained in independent studies, of which one is designated as the holotype.”

“F.4A.3. DNA sequence data used for typification should be drawn from the molecular regions that are appropriate for delimiting species, based on prevailing best practices as determined by the relevant taxonomic communities.”

**Secretaries’ comments** *Prop. F-005* allows for typification of the name of a fungus by a DNA sequence, when there is no physical specimen. The recommendations in *Prop. F-006* add some non-mandatory requirements. In addition to publications mentioned in the proposal, two of the proposers (Lücking & Hawksworth 2018) have prepared a detailed analysis of the “promises and pitfalls” related to “formal description of sequence-based, voucherless Fungi”.

Proposals with the same wording as *Prop. F-005* and *F-006* were submitted to the Nomenclature Section of the 2017 Shenzhen International Botanical Congress (Hawksworth *et al.* 2016). During that Nomenclature Section, an amendment was suggested to extend the core proposal (*Prop. 308*, corresponding to *F-005*) to all organisms covered by the *Code*. The proposal as amended was not accepted, but the option of a Special-purpose Committee on DNA Sequences as Types was accepted (Turland *et al.* 2017). This Special-purpose Committee will report to the 2023 International Botanical Congress. The existence of this Special-purpose Committee does not preclude decisions on *Prop. F-005* and *F-006* being made at the San Juan IMC, as these proposals are limited to names of fungi.

We note that the recommendations in *Prop. F-006* relate to taxonomic practice (such as requiring a phylogenetic analysis) more so than in any other existing Articles of the *Code*. Such taxonomic practices are seen as essential by some mycologists in order for them to support *Prop. F-005*, but such practices (if desirable) would be better enforced through other mechanisms that are both mandatory (rather than recommendations) and linked to external bodies that could effectively regulate the taxonomic aspects. There are examples of existing provisions of the *Code* that reference external bodies, such as the recognized repositories that issue identifiers for nomenclatural novelties of fungi (Art. F.5) and the “appropriate international bodies” that are involved in the setup of working groups that prepare lists for protection (Art. F.2.1).

Within the NCF there was strong opposition to *Prop. F-005* and *F-006* (2 – 15 – 3 – 0), with a 75 % No vote (and only 10 % Yes). Opinions on *Prop. F-005* were also sought from the ICTF, within which there was also strong opposition to the proposal as published (2 – 12 – 4 – 0), with a 67 % No vote (and only 11 % Yes). In addition, there is a recent publication with around 300 authors (Zamora *et al.* 2018), opposing the proposals.

In discussion of the formal proposal in the ICTF two procedural options for handling DNA-based names were raised: that names typified on DNA sequences alone must be: (1) published in specified journals (that adhere to a taxonomic code of practice); or (2) approved post-publication by a Subcommittee on DNA-based names. Further refinements discussed included: DNA-based names are allowed but (3) do not compete for priority with names based on specimens; (4) must be based on at least a certain number of sequences; (5) cannot be introduced in known genera unless all known species are sequenced; and/or (6) have epithets or authorship indicating the nature of their type, such as by including “DNA-” at the start of the epithet. All these options or refinements received less than 50 % support within the ICTF, except for the last, for which there was a 50 % Yes vote. A few ICTF members indicated that combinations of the options and refinements might be acceptable. It must be stressed that the options and refinements discussed in the ICTF were not formal proposals, and any support for them must be interpreted in relation to the strong negative vote within the Commission on proposal *Prop. F-005* as published.

Some designations for fungi have already been introduced that are based on DNA sequences as “type specimens” (De Beer *et al.* 2016; Lücking & Moncada 2017). For “*Lawreymyces*” and its constituent intended species, Lücking & Moncada (2017) argued that depictions of the sequence of bases of DNA were “illustrations” and consequently could serve as types under Art. 40.5. However, a new example to Art. 40.5 in the *Shenzhen Code* specifically indicates that such representations of DNA sequences “are not illustrations under Art. 6.1 footnote because they are not depictions of features of the organisms, and consequently the intended names were not validly published” (Turland *et al.* 2018). Therefore, all attempts so far to formally name fungi based on DNA sequences as types are invalid. However, the designations introduced in the format of generic and specific names remain available for informal use or later validation by those who would like to refer to the organisms from which the sequences were obtained.

Use of an informal category that is not regulated by the *Code* is another option that could be considered. For Prokaryotes, the category “*Candidatus*” was introduced by Murray & Schleifer (1994). The *International Code of Nomenclature of Prokaryotes* (Parker *et al.* 2015) includes an appendix outlining use of the

“Provisional Status *Candidatus*”, but names introduced with this status have no nomenclatural standing. Nevertheless, attaching an indication such as “*Candidatus*” to designations of fungi based on DNA sequences rather than type specimens would be one way that names could be referred to and included in name databases (with the names being explicitly invalid).

Given the contentious nature of the proposals coupled with the fact that issues around naming fungi for which specimens are not readily available will persist, a Special-purpose Committee may be an appropriate option, reporting to the next International Mycological Congress in 2022. Such a Committee would be a forum in which mycologists interested in the issues could continue discussion, especially as sequencing technologies and means of isolating fungi from environmental samples evolve.

### Recommendation F.10 (new) - concerning use of identifier for citation of author of name

*Prop. F-007* [Rambold *et al.* in *IMA Fungus* 9(1):(vi)–(vii)] Add a new Recommendation and examples under a new section in Chapter F under the heading “Citation of Authors of Fungal names”

“Rec. F.10A. For names of organisms treated as fungi, the identifier for the name of a taxon issued by an ICN-recognized registration repository (see also Art. 22.1 and 26.1) may be used in place of the author citation of the name (but not to replace the name itself). The identifier should be preceded by a hash (#) and enclosed in square brackets. In electronic publications this identifier should be directly linked out to its stable representation (Universal Resource Indicator) in one of the registration repositories.”

“Ex. 1. *Astrothelium meristosporoides* [#816706]; the link out for the latter identifier would be [www.mycobank.org/MB/816706](http://www.mycobank.org/MB/816706) or, alternatively, <http://www.indexfungorum.org/Names/NamesRecord.asp?RecordID=816706>.”

“Ex. 2. *Lecanora varia* [#389546]; the link out for the latter identifier would be <http://www.indexfungorum.org/Names/NamesRecord.asp?RecordID=389546> or, alternatively, [www.mycobank.org/MB/389546](http://www.mycobank.org/MB/389546).”

**Secretaries’ comments** *Prop. F-007* suggests utilizing the stable identifiers for names as issued by registration repositories as a replacement for citation of authors. The proposers note that with multiple authors becoming more common for taxonomic novelties, the author citation can contain many authors, especially in new combinations where there are multiple authors of both the basionym and the combination. Being only a recommendation, use of the proposed method of indicating authorship would be advisory but not binding. We note that it is already recommended to shorten strings of more than two authors to the first and followed by “*et al.*” (Rec. 46C.2). Author citations are optional anyway under existing provisions (Art. 46.1), to be used as an option only in publications “dealing with taxonomy and nomenclature”. In the proposal the identifier for the name is provided after the name, and includes a link out to a registration repository, but we note that an alternative method of providing a link to repository data (which contains not only the authorship but also the publication details) would be to embed the link in the name itself. The NCF does not support this proposal (7 – 11 – 2 – 0). Nevertheless, the use of links from names and authors to external data is certainly a concept that should be actively explored and discussed, especially looking ahead

to the possibility of simultaneous publication and registration of nomenclatural novelties in fungi.

### Further proposals

We are aware of several sets of further proposals that are in preparation. The short time frame between the establishment of the new procedures for governance of fungi nomenclature at the Shenzhen IBC in 2017 and the FNS at the 2018 IMC meant that some proposals were not ready for submission by the deadline of 1 March 2018.

In particular, there is a need to provide certainty about the validity or otherwise of nomenclatural novelties (new names and combinations) of fungi where identifiers have been obtained, but are mis-cited in the publication where the novelties are introduced. The opinion of the NCF was sought on the concept of treating mis-cited identifiers (when they had been obtained) as correctable, meaning that names introduced with miscited errors would be valid (but names where the identifier was omitted or not obtained would be invalid). The NCF strongly supports correctability of miscited identifiers (16 – 2 – 2 – 0) and a proposal to amend the *Code* to clarify this issue will be circulated prior to the FNS.

Proposals not covered in this Synopsis may be introduced “from the floor” during the FNS, once proposed by a registered attendee of the FNS and seconded by five other registered attendees. It is important to note that during the five-day Nomenclature Section of an IBC, proposals “from the floor” have not been treated as merely “any other business” at the end of the Section, but traditionally have been introduced when important issues have not been addressed by the deadline for publishing proposals prior to the Congress, or when proposals accepted earlier in the week are realized to have unintended consequences that need rectifying. At the Shenzhen Congress, motions from the floor were ruled as having to be submitted by the penultimate day of the Nomenclature Section.

Procedures during the FNS are laid out in the *Shenzhen Code*. At the commencement of the San Juan FNS, there will be a motion to accept the *Shenzhen Code* as the basis for discussion. We provide advance notice here that at the commencement of the FNS we will also table a motion that proposals from the floor must be in the hands of the Secretaries by the commencement of the Session (in a digital format). It is desirable that any proposals intended to be moved from the floor are distributed well in advance. Any new proposals submitted to the Secretaries prior to the IMC will be made available on the IMA website.

### Index of proposals

*F-001.* Treat material associated with the context of the relevant sanctioning work as original material. Reword **Art. F.3 Note 2.**

*F-002.* Allow neotypification for sanctioned names even when there is extant material associated with the context of the relevant sanctioning work. Reword **Art. F.3 Note 2.**

*F-003.* Simplify the indication of the status of sanctioned names by only using “nom. sanct.”. Revise **Rec. F.3A.**

*F-004.* Examples associated with simplification of the indication of the status of sanctioned names by only using “nom. sanct.”. Revise Examples 1 and 2 in **Rec. F.3A.**

*F-005.* Permit DNA sequence data to be used as types of names of fungi. New **Art. F.4.2.**

*F-006.* Recommendations associated with permitting DNA

sequence data to be used as types of names of fungi. *New Rec. F.4A*.

*F-007*. Recommend use of an identifier as an alternative to the citation of authors of fungal names. *New Rec. F.10A*.

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## REFERENCES

- De Beer ZW, Marinowitz S, Duong TA, Kim JJ, Rodrigues A, Wingfield MJ (2016) *Hawksworthiomyces* gen. nov. (*Ophiostomatales*), illustrates the urgency for a decision on how to name novel taxa known only from environmental nucleic acid sequences (ENAS). *Fungal Biology* **120**: 1323–1340.
- Hawksworth DL (ed.) (2018) Proposals for consideration at IMC11 to modify provisions solely related to fungi in the *International Code of Nomenclature for algae, fungi, and plants*. *IMA Fungus* **9**: (i)-(vii). <<http://www.imafungus.org/Issue/91/MYCONAMES.pdf>>
- Hawksworth DL, Hibbett DS, Kirk PM, Lücking R (2016) (308–310) Proposals to permit DNA sequence data to serve as types of names of fungi. *Taxon* **65**: 899–900.
- Hawksworth DL, May TW, Redhead SA (2017) Fungal nomenclature evolving: changes by the 19th International Botanical Congress in Shenzhen 2017, and procedures for the Fungal Nomenclature Session at the 11th International Mycological Congress in Puerto Rico 2018. *IMA Fungus* **8**: 211–218.
- Lücking R, Hawksworth DL (2018) Formal description of sequence-based voucherless Fungi: promises and pitfalls, and how to resolve them. *IMA Fungus* **9**: 143–166.
- Lücking R, Moncada B (2017) Dismantling *Marchandiomphalina* into *Agonimia* (Verrucariaceae) and *Lawreymyces* gen. nov. (*Corticaceae*): setting a precedent to the formal recognition of thousands of voucherless Fungi based on type sequences. *Fungal Diversity* **84**: 119–138.
- May TW (2016) Report of the Special Subcommittee on Governance of the Code with Respect to Fungi. *Taxon* **65**: 249–253.
- May TW (2017) Report of the Nomenclature Committee for Fungi – 20. *IMA Fungus* **8**: 189–203; *Taxon* **66**: 483–495.
- Murray RGE, Schleifer KH (1994) Taxonomic notes: a proposal for recording the properties of putative taxa of prokaryotes. *International Journal of Systematic Bacteriology* **44**: 174–176.
- Parker CT, Tindall BJ, Garrity GM (2015) International Code of Nomenclature of Prokaryotes. *International Journal of Systematic and Evolutionary Microbiology*. doi: 10.1099/ijsem.0.000778
- Turland NJ, Wiersema JH (2017) Synopsis of proposals on nomenclature – Shenzhen 2017: a review of the proposals concerning the *International Code of Nomenclature for algae, fungi, and plants* submitted to the XIX International Botanical Congress. *Taxon* **66**: 217–274.
- Turland NJ, Wiersema JH, Monro AM, Deng Y-F, Zhang L (2017) XIX International Botanical Congress: report of Congress action on nomenclatural proposals. *Taxon* **66**: 1234–1245.
- Turland NJ, Wiersema JH, Barrie FR, Greuter W, Hawksworth DL, et al. (2018) *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. [Regnum Vegetabile no. 159.] Glashütten: Koeltz Botanical Books.
- Zamora JC, Svensson M, Kirschner R, Olariaga I, Ryman S, et al. (2018) Considerations and consequences of allowing DNA sequence data as types of fungal taxa. *IMA Fungus* **9**: (in press).