

## IMC9 Edinburgh Nomenclature Sessions

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**Abstract:** The proceedings of the 3–5 August 2010, IMC9 Edinburgh Nomenclature Sessions are briefly summarized. The final resolution approved by the General Assembly endorses the recommendations by the Nomenclature Sessions regarding transfer of the governance of fungal nomenclature from botanical to mycological congresses, mandatory pre-publication deposit of nomenclatural information for valid publication of new fungal names, and the acceptability of English as an alternative to Latin in the valid publication of fungal names. Complete results from the IMC9 nomenclature questionnaire are also provided.

**Key words:**

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### INTRODUCTION

Three successive groundbreaking two-hour long nomenclatural sessions were held August 3–5, 2010, during this summer's International Mycological Congress (IMC9) in Edinburgh, Scotland. Convener/Rapporteur David Hawksworth (Spain/UK), who supervised preparation of the IMC9 nomenclatural booklet + questionnaire, was assisted by Chair Ron Petersen (USA), Vice-Chair Scott Redhead (Canada), Nomenclature Committee for Fungi (NCF) Secretary Lorelei Norvell (USA), and Advisor & International Botanical Congress Rapporteur-général John McNeill (UK). IMC delegates attending each day's session voted on nomenclatural proposals to recommend actions to next year's International Botanical Congress (IBC) Nomenclature Section in Melbourne. Attendance was relatively high, particularly in view of the conflict caused by scheduling the three nomenclature and three (of four) poster sessions for the same 2–4 pm time periods. As each poster session presented authors and posters for only one day, this was an unfortunate conflict that influenced attendance numbers at the nomenclatural sessions. However, the questionnaires, distributed to all IMC9 delegates for return to the registration desk by the end of the Congress, permitted each delegate a chance to express an opinion, even if unable to attend any or all of the Nomenclature Sessions.

Originally the entire proceedings, which proved to be lively, informative, and often amusing, were to be recorded.

Due to an unfortunate communications failure, no recordings survive. The overly brief summary below has therefore been extracted from secretarial notes, the nomenclature booklet, and the returned questionnaires.

### Background

When initially formed in 1971, the International Mycological Association (IMA) established a Nomenclature Secretariat to address issues of concern to mycologists. This led to a series of proposals on starting points and other matters that were adopted by the International Botanical Congress in Sydney in 1981, after which it was disbanded, having completed its tasks. Since that time, discussions of nomenclatural issues at IMCs have been confined to occasional debates on particular topical issues. However, at IMC8 in Cairns in 2006, some delegates spoke strongly in favour over a separate Code for fungi. Subsequently, proposals that could fundamentally change aspects of fungal nomenclature have been published; these are to be voted on at the forthcoming International Botanical Congress (IBC) in Melbourne in July, 2011. As IBCs occur only every six years, and decisions made there generally come into force 1–2 years later, any issues not decided in 2011 would have to wait until 2018 or 2019 to be implemented. The Nomenclature Sessions at IMC9 were convened to: (1) enable a broad spectrum of mycologists to express their views on a wide range of topics and also to vote on proposals already made; and (2) establish that IMCs can incorporate effective Nomenclatural Sessions.

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## Session 1: Governance of fungal nomenclature

Approximately 100 delegates attended the first session convened by Hawksworth at 2 pm on August 3. After Chair Petersen set forth the “rules of engagement” for audience participation during all sessions, two introductory background presentations were given. Vincent Demoulin (Belgium, Chairman of the Committee for Fungi) spoke in defense of retaining governance of fungi within the Botanical Code and Hawksworth reported on the progress being made toward one unified code for all organisms. (See Appendix 1, below.)

The floor was then opened to discussion of the formal proposals for the governance of fungal nomenclature, the composition of the Nomenclature Committee for Fungi, and a (very) brief discussion of the proposed exclusion of *Microsporidia* from the ICBN. At the close of the two-hour session, those remaining in the auditorium were polled as to their preferences, summarized as follows:

PROPS. 016–020 (Hawksworth *et al.* 2009) all passed. Votes were actually counted for the first two proposals: both PROP. 016 (to amend the current Botanical Code to establish more clearly that it covers fungi, including changing the name to the “International Code of Botanical and Mycological Nomenclature”) & PROP. 017 (to replace “plants” by “plant(s) or fungus/fungi” throughout) passed with 87 yes and 4 no votes. Thereafter, due to time pressures, only the ‘no’ votes (out of 91 total) were counted, with 3 voting against PROP. 018 (to provide for the election of the Permanent Nomenclature Committee for Fungi by an International Mycological Congress), 3 voting against PROP. 019 (to relegate decision-making on proposals relating solely to organisms treated as fungi to an IMC), and 1 against PROP. 020 (to insert a new Div. III.5 requiring the presence of the Secretary for the Committee for Fungi or Committee alternate on the Editorial Committee).

Unanimous support was given to retaining the current members of the Committee for Fungi until the 2014 IMC10 in Bangkok, provided that the 2011 International Botanical Congress in Melbourne accepts the fungal governance proposals above.

PROPS. 048–051 (to exclude the governance of the phylum *Microsporidia* from the Code; Redhead *et al.* 2009) passed with only one dissenting vote, but as the vote was held as delegates were leaving the session, it may not accurately reflect the wishes of the majority. Demoulin has since submitted PROP. 190 to limit Art. 45.4 (Demoulin 2010).

## Session 2: Mandatory pre-publication deposit in a nomenclatural repository, electronic publication, type cultures, and illustrations

After opening introductions, Paul Kirk (UK) provided an overview of the current strides made in data-basing taxonomic names of all organisms worldwide. (See Appendix 1, below.)

A fluctuating audience (estimated at 97 total for the 2-hour session) discussed at length and eventually recommended PROPS. 117–119 (Hawksworth *et al.* 2010). PROP. 117 (to require deposition of names and required nomenclatural

information in a recognized repository (such as MycoBank) for valid publication) received 58 yes, 5 no, and 1 abstaining votes. PROPS. 118 (to recommend deposit of minimal information elements, accession identifiers, and bibliographical details for valid publication) and 119 (to require citation of a repository identifier for valid publication) received almost universal support, with 1 and 2 abstentions respectively. Kirk also announced that it would be possible to deposit names via *Index Fungorum*, although the mechanism (still in progress) was not detailed.

An informal poll showed no clear consensus for or against valid electronic publication of names.

PROP. 138 (Nakada 2010), which seeks to add Rec. 8B.3, including the phrase “permanently preserved in a metabolically inactive state” or its equivalent when designating a culture as a type) likewise showed no clear consensus with the majority abstaining.

The session concluded with a second informal poll (showing 4 for, 25 against, and the majority abstaining) regarding the addition of illustrations as a requirement for valid publication.

## Session 3: Moving to one name for one fungus and ending the requirement of Latin diagnoses for valid publication

Approximately 145 delegates attended the final (and most controversial) “Article 59” session on August 5. Background on attempts to modify dual nomenclature was provided by Redhead (Secretary for the Special Committee on Names of Fungi with a Pleomorphic Life History), followed by a presentation by Walter Gams (Netherlands), who spoke on the limitations of “teletypifying” fungal names according to Art. 59.7. (See also Appendix 1, below.)

Emotions ran high in this session, and discussion was lively, entertaining, lengthy — and inconclusive. No formal proposals were before the Session, so no vote was scheduled on Art. 59. It was assumed that Congress participants would mark their opinions on their questionnaires.

Due to the lengthy Art. 59 debate, the scheduled discussion and vote on whether to end the requirement of a Latin diagnosis for the valid publication of scientific names (also to be considered in 2011 at Melbourne) became a side issue. Entrants crowding the doors for the next scheduled mycological session dictated Chair Petersen’s decree for adjournment, which drowned out the plaintive cry from the back of the hall, “Why can’t we vote to abolish Latin?” and a call to hold a vote on Art. 59.

## Final resolution approved by the General Assembly — and a note of caution

At the close of the first Nomenclature Session, 103 questionnaires had already been returned. By the evening of the final session, Hawksworth and Norvell had tabulated 167 results and identified three clear preferences for presentation to the delegates during the IMC9 closing ceremonies on August 6. The General Assembly voted by acclamation to approve the resolution below:

This General Assembly of the IMA endorses the decisions of the Nomenclature Session convened during IMC9 with respect to

- the transference of the governance of the nomenclature of fungi from the International Botanical to International Mycological Congresses,
- the mandatory pre-publication deposit of nomenclatural information in a recognized depository for the valid publication of new fungal names,
- the acceptability of English as an alternative to Latin in the valid publication of fungal names,

and requests the permanent Nomenclature Committee for Fungi, the special Committee on the names of Pleomorphic Fungi, the International Commission on the Taxonomy of Fungi, and the next International Botanical Congress to take note of the results of the questionnaire completed by delegates of IMC9.

In summary, we must emphasize that these are recommendations and not approved changes. Currently fungal names are still governed by the International Code of Botanical Nomenclature, and — until changed — a Latin description or diagnosis is still required, as are other established requirements for valid publication as set forth in the current International Code of Botanical Nomenclature (McNeill *et al.* 2006). Nonetheless the interest shown in nomenclature at IMC9 was gratifying, and we are optimistic that many of the innovations supported by most mycologists will be made.

## Appendix 1: IMC9 Nomenclature Session presentation abstracts

**FEWER NOMENCLATURE CODES, NOT MORE, IS WHAT WE NEED (Demoulin):** At the first IMC (Exeter, 1971) the idea of a nomenclature code especially for fungi was discussed and a nomenclature committee was created under the auspices of the IMA. This committee reported at the 2<sup>nd</sup> IMC in Tampa, FL, 1977. At that congress, the idea of a mycological code was abandoned in favour of more involvement by mycologists in the elaboration of the Botanical Code, which has ruled the nomenclature of fungi since its origin. A consequence was the important change in the starting point system adopted at the 13<sup>th</sup> International Botanical Congress (Sydney, 1981).

**PROGRESS TOWARDS A BIOCODE (Hawksworth):** In October 2009, the General Assembly of the International Union of Biological Sciences (IUBS) decided to re-activate the initiative to produce a unified Code of nomenclature for all organisms, by updating the DRAFT BIOCODE (Greuter *et al.* 1998). This is being taken forward by the International Committee for Bionomenclature of the IUBS/IUMS (International Union of Microbiological Societies). The need for, and route towards, a revised and agreed BIOCODE is reviewed as a background to the Session's deliberations.

**A WEB OF DATA FOR FUNGAL BIOLOGY RESEARCH — THE REGISTRATION QUESTION (Kirk):** Why do we give names to fungi? It's a simple question with a simple answer - to allow us to effectively communicate about the fungi, for the name is the link to all that is known about the organism. But in this answer

the word 'us' is already of secondary importance. The web is the primary means of communication today and increasingly that means computer to computer communication. In addition, the current version of the web - a web of information - is rapidly being replaced by a web of data (the Semantic Web, especially Linked Data using RDF triples of entity-attribute-value) which will allow more rapid (real time) advances in synthesis, analysis, hypothesis, etc. The founder of the web Tim Berners-Lee, amongst others, is pushing for this to happen and we can be part of this effort. This short presentation will describe how name registration can operate, how associated data can be made available, what the barriers are, and how it all fits into existing and developing major global initiatives. It will indicate how fungal taxonomist and nomenclaturalists can be part of this with respect to the names we give to fungi.

**HOW DO MYCOLOGISTS WISH TO TREAT NAMES BASED ON ANAMORPHS? (Redhead):** Fungal nomenclature dates back to Linnaeus (1753) when the use of microscopes was limited and the existence of sexual life cycles amongst them was unknown. Nearly 200 years later (1935) mycologists realized they had been naming different parts of fungal life-cycles as new species or genera, and formalized nomenclature rules giving priority to names for pleomorphic fungi based upon perfect states. Exceptions and refinements were instituted in 1950 and continue today. Many fungi only produce anamorphs, many generic names are based upon anamorphs, and many fungi are better known under anamorph names. However, complications in merging and then prioritizing names have created a nightmare situation that has divided the mycological community and now acts as a roadblock. Proposals to block the deliberate generation of alternative names and smooth the transition to normal nomenclature were partially approved for Article 59 in the International Code of Botanical Nomenclature (McNeill *et al.* 2006) while remaining issues were referred to a Special Committee by the IBC. After >4 years this Committee was unable to reach consensus upon changes. Some mycologists have decided to ignore existing rules or to take nomenclatural risks. Genetic sequence phylogenetic analyses have revealed many new relationships leading to binomial recombinations and even a PhyloCode. Having reached an impasse it can be asked if mycologists wish to eliminate dual nomenclature? If the answer is yes, it may be asked how to resolve conflicts, and then to create a process or body capable of dealing with such conflicts.

**TELEOTYPIFICATION OF FUNGAL NAMES AND ITS LIMITATIONS (Gams):** This presentation was submitted without a formal abstract and too late to be included in the printed program. Gams discussed the effects of 'teleotypification,' which permits — after a teleomorph discovered for a fungus previously known only as an anamorph (and for which there is no existing legitimate name for the holomorph) — designation of an epitype exhibiting the teleomorph stage for the hitherto anamorphic name, even when there is no hint of the teleomorph in the protologue of that name. Several examples were forwarded to show that teleotypification is not the same as ordinary epitypification. For further information, see PROPS. (172–174; Gams *et al.* 2010).

## Appendix 2: IMC9 Nomenclature questionnaire results

From August 1–10, IMC9 delegates returned questionnaires in which they were to circle a Y (yes) or N (no) to 24 questions on 4 topics. We discovered during our first tabulation that one number (#19) appeared twice, bringing the actual number of questions to 25, and have renumbered the text below accordingly. Of the 174 questionnaires received, 7 were declared 'spoiled' as the respondents had placed an X over an option so that we could not determine whether agreement

or rejection was intended. Both raw numbers and majority percentages are shown. We note that protocols followed at the 2005 International Botanical Congress in Vienna with respect to the preliminary mail-in ballots decreed that proposals receiving 60 % or higher support merited further discussion by the attending Nomenclature Section, while 75 % support virtually ensured passage for all but the most controversial proposals. In the results reported below, opinions showing 60 % (or greater) support are highlighted in bold.

### A. CODES OF NOMENCLATURE

(Fungal names are now governed by the International Code of Botanical Nomenclature)

1	One code for the future nomenclature of all organism names would be ideal y-72 n-71 .....	50 % (TIE)
2	Fungi should continue to be covered under the Botanical Code (ICBN) y-54 n-76 .....	58 % NO
3	Fungi should continue to be covered under the ICBN provided it is renamed the "Botanical and Mycological Code" y-97 n-40 .....	<b>71 % YES</b>
4	Fungi should be covered by a separate mycological Code (ICMN) y-51 n-91 .....	<b>61 % NO</b>
5	Under either ICBN or ICMN, decisions on fungal nomenclature should be voted at an International Mycological Congress (and not an International Botanical Congress), guided by a secure advanced web publication and mail/email votes y-133 n-21 .....	<b>86 % YES</b>

### B. LANGUAGE REQUIREMENTS FOR VALID PUBLICATION OF NAMES

6	Latin diagnoses/descriptions should continue to be required y-49 n-91 .....	<b>65 % NO</b>
7	English diagnoses/descriptions rather than Latin should be required y-69 n-69 .....	50 % (TIE)
8	Either Latin or English diagnoses/descriptions should be required y-88 n-56 .....	<b>61 % YES</b>
9	Diagnoses/descriptions in any language should be permitted y-4 n-135 .....	<b>97 % NO</b>

### C. NOMENCLATURAL INFORMATION DATABASING

10	Deposition of key nomenclatural information in one or more approved depositories (e.g. MycoBank) should be made mandatory for the valid publication of new fungal names y-134 n-21 .....	<b>86 % YES</b>
11	Historic names not included in <i>Index Fungorum</i> (after a set date) should no longer be treated as validly published y-55 n-68 .....	55 % NO
12	Deposited names should be automatically protected against any unlisted names after a date to be agreed y-90 n-39 .....	<b>70 % YES</b>
13	An accurate and free list should be prepared of names in use or available for use y-126 n-19 .....	<b>87 % YES</b>
14	Names with key information deposited (e.g. in MycoBank) should be automatically available provided other Code requirements are met y-105 n-22 .....	<b>83 % YES</b>
15	Electronic on-line only publication should be accepted without restriction y-24 n-126 .....	<b>84 % NO</b>
16	Electronic on-line only publication should be accepted only when key nomenclatural information has been deposited (e.g. in MycoBank) y-113 n-36 .....	<b>76 % YES</b>

- 17 For journals publishing online and printed copies, the dates of names should be those when the works are available in final form on-line  
y-101 n-40 ..... 72 % YES
- 18 For journals publishing online and printed copies, the dates of names should be those when the works are distributed in printed form  
y-63 n-73 ..... 54 % NO
- 19 Special Group Committees should be empowered to create lists of acceptable and rejected names in particular groups (e.g. *Fusarium*, *Trichocomaceae*, yeasts)  
y-102 n-31 ..... 77 % YES

#### D. NAMES FOR PLEOMORPHIC FUNGI (ANAMORPHS, TELEOMORPHS)

- 20 The established system allowing dual nomenclature for anamorphs and teleomorphs should continue via Art. 59  
y-67 n-71 ..... 51 % NO
- 21 Article 59 should revert back to its status prior to changes in the 2006 Vienna Code, i.e. keeping separate anamorph and teleomorph names  
y-43 n-82 ..... 66 % NO
- 22 A system of progressively establishing one name for each fungus should be enacted via modification of existing Articles (e.g. Art. 59)  
y-101 n-38 ..... 73 % YES
- 23 The historical practice of allowing valid names for different morphs of a species should be prohibited in the future via modification of existing Articles  
y-74 n-45 ..... 62 % YES
- 24 The ability to select a “teleotype” (a type of epitypification) with a sexual state for a fungus previously only known in the asexual state should be continued  
y-88 n-31 ..... 74 % YES
- 25 Article 59 (that permits the dual system) should be deleted provided other changes ensure this would not retroactively invalidate existing names  
y-66 n-47 ..... 58 % YES

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