

A top-down view of a petri dish containing a bacterial culture on a red agar medium. The culture shows several distinct, dark, vertical streaks of growth. The text is overlaid on the center of the dish.

**How to  
Describe New Species**  
*from sampling to data management  
and everything in between*

**The International Commission on the  
Taxonomy of Fungi (ICTF)**

# ICTF “How to” series

## Sigler & Hawksworth 1987

[Home](#) > [Mycopathologia](#) > Article

### International Commission on the Taxonomy of Fungi (ICTF) code of practice for systematic mycologists

Published: July 1987  
Volume 99, pages 3–7, (1987) [Cite this article](#)

## Seifert & Rossman 2010

IMA FUNGUS · VOLUME 1 · NO 2: 109–116

### How to describe a new fungal species

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ARTICLE

## Aime et al. 2021

Aime et al. *IMA Fungus* (2021) 12:11  
<https://doi.org/10.1186/s43008-021-00063-1>

IMA Fungus

 **NOMENCLATURE** **Open Access**

### How to publish a new fungal species, or name, version 3.0



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# Considerations for Publication

A top-down view of a petri dish containing a bacterial culture. The medium is a reddish-brown color. Several vertical streaks of dark, fuzzy bacterial growth are visible, starting from the top and extending downwards. The streaks vary in density and width, with some appearing more confluent than others. The petri dish is set against a light gray background.

**Formal Requirements – Nomenclature  
Best Practices**

**Taxonomy (species concepts & delimitation)**

**Publication (descriptions & images)**

**Data accessibility (vouchers, digital data)**

## Checklist for publishing new species

(REQUIRED actions in orange, DESIRED actions in blue):

### 1. Journal:

- Peer-reviewed.
- Meets requirements for effective publication.

### 2. Manuscript:

- Include “X new taxa” in keywords (where “X” is the number of new taxa in paper).
- Methods include details of taxon sampling for phylogenetic data, appropriate attribution for use of other author’s data, and details for collection of other data. Includes a statement about the species concept applied.

### 3. Requirements for valid and legitimate publication of new species:

- Provide adequate description and/or diagnosis in Latin or English.
- Ensure that the name is unique (both among fungi, checking Index Fungorum or MycoBank and among prokaryote or protozoan names, checking Catalogue of Life) and unlikely to be confused.
- Obtain an identifier from a recognised repository.
- Indicate the name as a new species, new combination, new status (with basionym and citation), or new name (with replaced name).
- Include a Code-compliant holotype designation. The place where the single holotype specimen is deposited must be clearly indicated, preferable in an accessible biorepository (fungarium/herbarium/culture collection) and designated as “metabolically inactive” if a culture.

### 4. Best practices for publication of new species:

- Taxon authors comprise those involved directly in determination and follow conventions for author names.
- Include an informative etymology indicating the person, locality, substrate or morphological character to which the epithet refers.
- Designate a holotype that represent the taxon with adequate material and is of good quality.
- Designate additional isotype(s), paratypes, or ex-type cultures, wherever possible, in accessible biorepositories.
- Indicate a DNA barcode(s) deposited in a public INSDC repository, clearly annotated with voucher information.
- Include a brief diagnosis that will allow discrimination from other similar taxa.
- Include a detailed description for confirmation of identity.
- Include a photo plate and/or illustrations to indicate morphological/phenotypic features clearly supporting descriptions.
- Include notes for identification of the new taxon against related, similar, or co-distributed taxa with which it may be confused.
- For new combinations, include notes justifying classification in the new genus and cite the basionym.

## Checklist for publishing new species (continued):

### 5. Delimitation data:

- Includes more than one type of data (e.g., gross morphology, taxon-specific data, host/ecology, phylogenetic data).
- Taxonomic decisions are taken in consideration of causing fewest number of nomenclatural novelties.
- In the case of phylogenetic data:
  - i. include more than one collection/isolate; if only a single collection available and justified, then based on repeated sequencing of each locus.
  - ii. include more than one locus; if only a single locus applied, this has been demonstrated to have sufficient resolving power for the group.
  - iii. include appropriate taxon sampling for context.

### 6. Data deposition:

- Use an INSDC database (GenBank/EBI/DBJ).
- Trim low quality sequence ends.
- Clearly communicate whether the deposit is a new taxon.
- Ensure vouchers are correctly annotated in records and use same text as in publication.
- Inspect final records to confirm correct organism labels are attached.
- Populate specimen metadata fields in online voucher specimen databases.

### 7. Post-publication:

- Data repositories (e.g., Fungal Names/Index Fungorum/MycoBank, NCBI, MyCoPortal, fungaria/culture collections) should be updated and provided with a PDF so that names are released, and data records are accurate.
- Ensure type material is correctly annotated in NCBI Taxonomy by verification of species entry in the NCBI TaxBrowser.

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