

## ***Bergey's Manual of Systematic Bacteriology*** **Instructions for Authors**

Authorship in *Bergey's Manual* is by invitation only. Due to the nature of this publication, unsolicited manuscripts cannot be accepted. However, if you believe a taxonomic group has been overlooked, please contact the Editorial Office.

If you are an invited author, please use the instructions below as you prepare your chapter(s).

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### **Basic Checklist**

In order to expedite communication between the authors and the Editors, we are using email to correspond wherever possible.

**Please email your Editor and cc the Editorial Office with the manuscript prepared as follows:**

- Supply a single Microsoft Word, WordPerfect, or Rich Text Format (RTF) file
- Insert any figures at the end of the document along with the figure legends and any tables.
- *Note: you will be expected to provide high-resolution images in electronic form or hard copy on acceptance of the chapter*

### **Editorial review**

All manuscripts will be sent by the Editors to other authorities in the field for review and comment. Reviewers will be acknowledged in a special section of the *Manual*. Although final decisions concerning the disposition of a reviewer's comments will usually be left to the discretion of the author(s), it is essential to have these comments and criticisms before a final version of a chapter is prepared for publication.

### **Word-processing instructions**

- Formatting of bold and italic terms should be done through your word-processing program.
  - Include author(s), taxon name and page number on each page (for example, by including them automatically in the header or footer provided by Microsoft Word).
  - See Tables, for advice on table preparation.
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### **Sample chapters**

- Please download PDF files of a single-taxon chapter [here](#) and a multi-taxa chapter [here](#).
  - Please contact the Editorial Office if you need the relevant chapter from the First Edition in order to prepare the revised treatment.
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### **Textual conventions**

- **Spelling and capitalization**  
For general spellings use *Webster's Unabridged Dictionary*, 3rd edition (U.S.-style English, i.e., color, favor, organize, sulfur, etc.) and for alternative spellings use the first quoted. For technical terms use *Stedman's Medical Dictionary*, 26th edition. Avoid the use of laboratory jargon.
  - **Numerals**  
Use numerals for units of measurement, time, and number of objects. Also, use numerals in all instances when a number is greater than or equal to 10.
  - **Measurements**  
Use the metric system and only standard abbreviations for units of measurement. Periods are unnecessary after abbreviations such as ml, mg, and cm.
  - **Abbreviations**  
Abbreviations should be kept to a minimum. Use only standard abbreviations for technical terms. The term should be spelled out the first time and thereafter can be abbreviated. Some terms will be used so frequently that they need not be spelled out, e.g., DNA, RNA, mol% G+C, h (not hr),  $\mu\text{m}$  (not um), PCR,  $T_m$ , DNA-DNA similarity, 16S rRNA, etc.
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### **Illustrations**

Authors are encouraged to use illustrations wherever necessary to clarify a description or a key. All illustrations, both line-drawings and continuous tone images, will be incorporated into the text. Continuous gray-scale images can be prepared from color graphics. Authors will receive proofs of each illustration to ensure accuracy in labeling.

## Line drawings

- Physical artwork  
Submit two original prints as glossy photographs prepared from the finished drawings, if no additional typesetting or artwork is required.
- Computer-generated graphics  
Output from a high-quality laser printer is also acceptable. You must provide:
  - Copies of all graphics files on disk in the native file format (e.g. PowerPoint, CorelDraw), plus EPS or TIF files
  - The name and version of the graphics program and computer platform used to generate them
  - TWO prints as 8" x 10" figures at a minimum resolution of 600 dpi

## Photographs and micrographs

- Raw Output from scanners, high-resolution CCD cameras, and other devices that generate graphic files should be supplied; resolution should be 1200 dpi or greater.
- Submit TWO unmounted original prints, without lettering, of high quality and high contrast on glossy photographic paper. Use any of the following formats: 5 x 7", 3-1/2 x 5", 2-1/2 x 3-1/2", or 35 mm slides or film strips.
- Lettering, arrows, etc., should be marked-up on a separate photocopy of the photograph or micrograph. These will be added during the editorial process to ensure consistency and expedite the publication process.
- Art labels should be completely filled out and affixed to the back of each print. Please make sure to include your last name, genus name, figure number and, in cases where it may not be obvious, the top edge of the illustration.

## Figure legends

Legends should appear at the end of each chapter. Number figures consecutively as they appear in the text. In preparing legends, avoid repetition of information provided in the text. In addition, specify preparative details and provide a scale marker on each micrograph.

## Credits for figures

If you are borrowing an illustration or using a previously published illustration, insert the appropriate credit line in parentheses at the end of the figure legend (see also the section on Permissions below).

- For **non-published material** cite:  
(for example, Printed with permission from Smith, A.). If A. Smith is not an author of the section, obtain a letter of permission to be submitted with the manuscript.
- For published material from a **book** cite:  
(Reprinted with permission from Smith, A. and Jones, B. Title of book. Publisher, City, year). Permission forms are required.
- For material from a **journal** cite:  
(Reprinted with permission from Smith, A. and Jones, B. Title of journal, year, Volume: pages). Permission forms are required.
- On occasion publishers will specify a special credit line which should be substituted for the above.

## References

- There will be a single list of references at the end of each volume. Please provide references in alphabetical order. Arrange multiple references by the same author in chronological order. *You are responsible for checking the accuracy and completeness of your references.*
- Please use EndNote or Reference Manager to prepare your references and supply the manuscript file with the links (i.e. do not unlink the library)
- Trust reference style is:  
author(s), date of publication, title of article, name of the publication, volume number, pagination (first and last pages).
- Journal abbreviations will be standardized according to Serial Sources for the BIOSIS Previews Database (BioSciences Information Service, Philadelphia 2000).
- Cite the references in the text by author(s) name(s) and year of publication. Use et al., after first author when there are three or more names. Any reference mentioned in the text must be included in the reference list.

## Examples

- **Journal article**  
Aslam, Z., J.H. Lim, W.-T. Im, M. Yasir, Y.R. Chung and S.-T. Lee. 2007. *Salinicoccus jeotgali* sp. nov., isolated from jeotgal, a traditional Korean fermented seafood. Int. J. Syst. Evol. Microbiol. 57: 633-638.
- **Book**  
Gerhardt, P., R.G.E. Murray, R.N. Costilow, E.W. Nester, W.A. Wood, N.R. Krieg and G.B. Phillips. 1981. Manual of Methods for General Bacteriology. Am. Soc. Microbiol., Washington, DC.
- **Chapter in a book**  
Yu, X. and D.H. Walker. 2005. Genus I. *Rickettsia* da Rocha Lima 1916, 567<sup>AL</sup>. In Brenner, Krieg, and Holt (Editors), Bergey's

Manual of Systematic Bacteriology, 2nd Ed., Vol. 2C, Springer-Verlag, New York, pp. 96-114.

- **Patent**

Olson, S., inventor, 2000. Method of swinging on a swing. U.S. Patent 6368227 (November 17).

## Permissions and Copyright

You need to obtain written permission from the original author and the copyright holder (usually the publisher) for:

- published materials (typically illustrations)
- direct quotations over 50 words

As specified by the original publisher, give credit, usually in the legends (see above), for borrowed figures. If the materials you will use appeared in the First Edition of the *Manual*, no additional permissions are required.

Submit to the Editorial Office all letters granting permissions for the use of previously published materials and all waivers. These documents will be retained in the publisher's permanent files. Download the permission request form here. In addition, please complete and sign the Copyright Transfer Statement and return it to the Editorial Office.

## Citing a defining publication

Citations of defining publications appear in chapter headings and species lists. Please include all author names and the page on which the species (or genus, family, etc.) description appears (not the first page of the article).

- **For a name on the Approved Lists:**

*Clostridium thermosaccharolyticum* McClung 1935, 200.<sup>AL</sup>

- **For a validly published name published in the IJSEM (formerly IJSB):**

*Rhodococcus marinoascens* Helmke and Weyland 1984, 137.<sup>VP</sup>

- **For a name that has been changed:**

*Pseudomonas aeruginosa* (Schroeter 1872) Migula 1900, 884<sup>AL</sup> (*Bacterium aeruginosum* Schroeter 1872, 126.)

- **For a name published elsewhere but validated in IJSEM/IJSB:**

*Rhodococcus chubuensis* Tsukamura 1983, 896<sup>VP</sup> (Effective publication: Tsukamura 1982, 1116.)

- **For a revived name:**

*Streptococcus thermophilus* (ex Orla-Jensen, 1919) Schleifer, Ehrmann, Krusch, Neve 1991, 387.<sup>VP</sup>

- **For a name not validly published:**

"*Pseudomonas hydrogenovora*" Igarashi, Kodama and Minoda 1980, 1278.

## Synonyms

Synonyms of generic names will be used only if they are on the Approved Lists or have been subsequently validly published. Likewise, with species the basonym will be used along with any valid synonyms, and, in rare cases, an invalid synonym that would be important to workers in the field. Authors are free to use their name of choice, but should provide a brief history of nomenclatural changes since 1980.

## New names and combinations

The Board of Trustees will allow the publication of some new names and combinations in the *Manual*. Authors must be aware of the rules for valid publication in the 1990 edition of the Bacteriological Code (Rules 27-32b). These rules require that notice of a new name or combination must be published in the *International Journal of Systematic and Evolutionary Microbiology* (IJSEM), formerly *International Journal of Systematic Bacteriology* (IJSB), for a name to be validly published. The Editor-in-Chief will be responsible for these notices. Also, it is preferable that newly described genera or species be first published in the IJSEM or another journal rather than the *Manual*. The Trust does prefer that new names appearing in the *Manual* be restricted to combinations or names of taxa above the rank of genus.

## Revival of old names

If you are proposing a description under a name which was published prior to 1980 but that did not appear on the Approved Lists of

Bacterial Names, then the name must be revived according to Rule 28a of the Bacteriological Code. Names that were published before January 1, 1980 need to be validated in a list in IJSEM/IJSB before the *Manual* goes to print.

## Tables

Data presented in tabular form is preferred over textual presentation, even if only one taxon is involved. There are two main categories of tables: tables that differentiate taxa and tables of descriptive data. Differentiation tables should contain only the most important differentiation data. See Volumes 1 or 2 of the Second Edition of the *Manual* for examples or the sample articles mentioned above.

### Standardized symbols

Without footnotes, the following symbols mean:

Symbol	Meaning
+	90% or more of the strains are positive
-	10% or less of the strains are positive
d	11-89% of the strains are positive
v	strain instability (not equivalent to "d")
D	different reactions in different taxa (species of a genus or genera of a family)

Do not provide descriptive matter in tables unless the result is a more compact presentation of the data. Descriptive data should comprise one- or two-word descriptions of a character state that would be less clear if expressed in symbols.

### Table preparation

If tables are formatted consistently and properly, we can avoid considerable delays at the editorial and pre-production stage.

- Tables should be prepared in Microsoft Word using the Table editor, rather than tabs and spaces
- Allow text to wrap automatically within cells, rather than using the 'Return' key
- Provide tables at the end of your main document.

Tables spanning multiple pages should be kept to a minimum. If multiple-page tables are necessary, please use the Heading Rows Repeat function in Word's Tables editor to indicate repeated headings.

### Column headings

Use taxonomic names as column headings, type species first and additional species following in alphabetic order.

## Genus chapters

### Defining publication

(see Citing a defining publication )

Genus name, author, date, page of description in effective publication, and if the name comes from the Approved Lists, the letters *AL* (in italics) as superscripts. Names validly published since January 1980 should be marked *VP* (in italics) as superscripts, and a name neither in the Approved Lists nor validly published since should be placed in double quotation marks wherever it occurs.

Authors are encouraged to check the procaryotic checklist maintained at the Bergey's web site to ascertain the proper form.

**Your name(s)** (As author(s) of the chapter)

### Etymology

Follow the format used in Volumes 1 and 2 of the Second Edition of *Bergey's Manual*.

### Generic definition

This should be a **brief paragraph** that gives the important features that describe the genus and that separate it from all other genera. Make sure that the definition matches the key to the genera in the family, order, and higher divisions. Use the following

order of presentation of features: morphology, Gram reaction, flagellar arrangement, relationship to oxygen, cultural characteristics, physiology, nutrition, DNA base ratio (with method of determination), key aspects of the 16S rDNA sequence (if available), and signature sequence (if available). **Indicate with boldface type the most important features of the genus.** Minimize the number of features that are not shared by all species.

## Type species

List the type species of the genus with the author, year, and page of description (See Citing a defining publication ).

## Further descriptive information

This section should contain a full description of the genus, including characteristics that are not necessarily shared by all the species. Please use the following order of feature groups and include illustrations where needed. If special media or growth conditions are mentioned, include formulae and other pertinent information in a brief footnote.

- Phylogenetic treatment
- Cell morphology
- Cell wall composition
- Fine structure
- Colonial or cultural characteristics; life cycles
- Nutrition and growth conditions
- Metabolism and metabolic pathways
- Genetics - 16S rDNA sequence analysis, DNA-DNA similarity, other molecular data
- Mutants, plasmids, phages and phage typing, bacteriocins
- Antigenic structure
- Antibiotic or drug sensitivity
- Pathogenicity
- Ecology
- Miscellaneous (not covered in above categories)

## Enrichment/isolation procedures

Briefly summarize current methods used in the isolation of members of the genus. Give methodology for one or two of the best methods, and cite references for other methods.

## Maintenance procedures

Briefly summarize methods or conditions necessary for the proper maintenance of cultures of members of the genus, e.g., best media for subculturing, whether they lyophilize well or if liquid nitrogen storage is required. Give methodology, if brief, or cite pertinent references.

## Procedures for testing special characters

Briefly summarize methods needed to test for the presence of features where special, defined methods are required. The features tested should be ones important for identification of the genus of various species. Include any special "trick of the trade". (Note: This should include information regarding probe sequences and specificity, PCR amplification conditions, etc.).

## Differentiation from other closely related taxa

This material, if given, may be either in a narrative form or a small table.

## Taxonomic comments

This section should include discussion of the following:

- Circumscription of the genus and its species
- Phylogeny
- Rank or position
- Subdivision of the taxon
- Nomenclatural problems
- Nomenclatural types
- Historical notes
- Anticipated future changes in classification

Where alternative taxonomic viewpoints exist they should be discussed, even if the author does not accept them.

## Miscellaneous comments

or "Further comments". Include here comments not covered by the above categories.

## Acknowledgements

(e.g., sources of strain material, subcommittee members, technical help).

## Further reading

For an overview of the genus or special attributes of the genus. Limit this to a few references.

## Tables to the species

Use the following order for tables, and include at least a diagnostic table and a descriptive table. See the sample multitaxa chapter.

- **Diagnostic table**  
This table should contain only those features used to identify the constituent species. **It should be kept short.**
- **Descriptive table**  
This table should be a complete listing of all the characteristics for **all of the species in the genus**. It is not intended to be diagnostic but is a summary of data and so should be exhaustive. Authors are encouraged to review the procaryotic checklist maintained at the Bergey's web site to ensure inclusion of all currently recognized species.
- **Special tables or summaries**  
If necessary, you may wish to include tables of DNA-DNA similarities, antigenic schemes, signature sequences, etc. Line drawings, various plots, and dendrograms are also acceptable (when the number of species is meaningful for such a treatment). Large matrixes of 16S rDNA similarity data are of limited value and should be avoided. If you need to include specific similarity or evolutionary distance, use ranges of values and refer readers to where the larger matrixes exist in electronic form.

## Phylogenetic Trees

In constructing trees, authors should include **all validly named members of a taxon** for which quality, **full length sequences** are available (> 1300 nts and < 3% ambiguity). Trees should also include representatives of sister taxa. It is also important that phylogenetic trees be presented in a consistent fashion and include bootstrap values and a bar (scale) indicating evolutionary distance. Authors should also be reasonable in their selection of outgroup members. **All phylogenetic trees should be accompanied by a separate file containing a list of taxa and accession numbers used.** These will be used in creating an index that includes references to trees.

Upon request, the Editorial Office can provide each author with a suitable tree for inclusion in their respective chapters. These trees will be drawn using aligned sequences from the **RDP** based upon maximum likelihood. All masks used in constructing the trees will be specified.

Authors are free to include other trees in their chapters should they wish to do so, especially where there may be areas of ambiguity or disagreement. They should, however, be prepared to provide the reader with a clear understanding of their reasoning. Any aligned sequences used in such trees should be made publicly available so that readers may explore the alternative models on their own, should they choose to do so.

## List of species

Each validly named species should be listed (i.e., the name has appeared on the Approved Lists or has been subsequently validated). Assign each species a number, beginning with the type species, and arrange additional species in alphabetic order. If species without valid names are included, place them at the end of the species list. Include the following in this order:

- Name, author, year, page of description (See Citing a defining publication )
- Synonymy
- Etymology
- Descriptive information not included in the tables or special information that explains uniqueness. If this section is extensive, then use the same order as the genus description.
- DNA base ratio, include method of analysis (e.g., Tm)
- Type, neotype, reference strains
- GenBank/EMBL/DDBJ accession number of 16S sequence of type strains

## Infrasubspecific divisions

Terms that will be used for infrasubspecific subdivisions are shown in the table, following the Revised Code of Nomenclature. The "-var" or "-form" suffix will continue to be used to replace "-type". This eliminates confusion with the strict use of the term "type" to mean nomenclatural type. This concept will be reiterated in the introduction to the *Manual*.

Name	Synonyms	Notes

Biovar	Biotype, physiological type	Biochemical or physiological properties
Chemoform	Chemotype	Chemical constitution
Chemovar		Production or the amount of production of a particular chemical
Cultivar		A cultivated strain with special properties
Forma specialis	Special form	A parasitic, symbiotic or commensal microorganism distinguished primarily by adaptation to a particular host or habitat. Named preferably by the scientific name of the host in the genitive
Morphovar	Morphotype	Morphological characteristics
Pathovar	Pathotype	Pathogenic reactions in one or more hosts
Phagovar	Phagotype, lysotype	Reactions to bacteriophage
Phase		Restrict to well-defined stages of naturally occurring alternating variations
Serovar	Serotype	Antigenic characteristics
State		Colonial variants, e.g., rough, smooth, mucoid (may be defined antigenically)

The term "group" is informal and may be useful to designate a set of organisms on which further studies are desirable before giving it a formal name.

### Species Incertae Sedis

If a listing of species of uncertain affiliation is necessary for your treatment of a taxon, then only include those for which there is a name, a description, and a deposited culture. This section may include organisms whose names appear on the Approved Lists, Validation Lists, or have only been effectively published. There is no set format for this section, and the Bacteriological Code should be consulted for advice on the revival of old names. List species consecutively by number, and give author, year and page of description.

### Species Candidatus

Authors are encouraged to include taxa that have been accorded provisional status using the *Candidatus* category (Murray and Schleifer, IJSB 44: 176; Murray and Stackebrandt, IJSB 45: 186). Authors should conform to the guidelines set forth in the latter reference; however, for the sake of clarity, all features should be spelled out rather than abbreviated. As provisional names are not currently considered as valid, they should be enclosed in quotes. The order of features is as follows:

- Strain: *Candidatus*
- Vernacular epithet (When possible, authors are encouraged to include a brief treatment of the etymology)
- Author(s), date, page of description in effective publication (if any; description (See Citing a defining publication )
- Source of "isolate"
- Ecological data, host/host range
- Phylogenetic lineage and/or possible genus
- Cultivation status
- Gram stain reaction
- Cell morphology and dimensions (include method of size measurements)
- Growth temperature
- Metabolism and unusual features
- Basis of assignment - (e.g., nucleic acid sequence [sequence accession number], morphology, etc.)
- Specific identification of morphovar - probe identity

### Other organisms

Listed here with a brief description are un-named organisms that appear to be of sufficient importance to warrant inclusion and that appear to have some affiliation with the genus.

### Genera Incertae Sedis

Although 16S sequence analysis has proven highly useful in placing taxa into a consistent and useful taxonomy, there may yet be

genera that are insufficiently defined or whose relationship to other genera remains unclear. The determination of which genera are placed into this category will be decided jointly by the author of the genus and the Editors. The treatment of *Genera Incertae Sedis* should follow the same format used for other genera.

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## Higher taxa chapters

This section will vary with the taxonomic level and should follow the outline provided by the Editorial Office . Authors are encouraged to discuss any regions within the outline where they may disagree. For each taxonomic rank, there should be the following order of presentation:

- **Name, author, date, page description** top of page (See Citing a defining publication )
- **Your name(s)** (As authors of this chapter)
- **Synonymy**
- **Etymology**
- **Description**  
This should be brief and include morphological, cultural, physiological, and ecological characteristics along with any supporting phylogenetic evidence (range of sequence similarities within and between members of the taxon and sister taxa).
- **Further comments**  
If any further descriptive material is needed, use any of the same categories used in generic descriptions, following the same order of presentation.
- **Key or table to constituent subgroups**  
It is imperative that there be determinative devices provided for each taxon included in the chapter and that they contain all constituent taxa

It is especially crucial that some kind of key or table be included that includes the *Candidatus* genera and *genera incertae sedis*. If these genera are not well-defined, a synopsis may be more appropriate. *Candidatus* genera and *genera incertae sedis* cannot simply be placed at the end of a chapter.