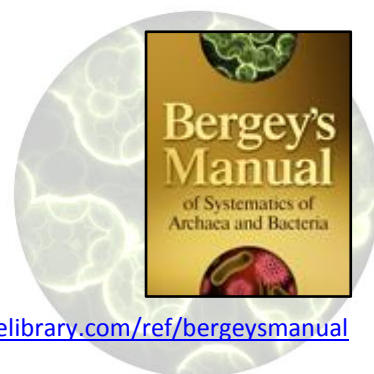


BERGEY'S MANUAL OF SYSTEMATICS OF ARCHAEA AND BACTERIA



<http://wileyonlinelibrary.com/ref/bergeysmanual>

Contributor Guidelines

Version 1.11

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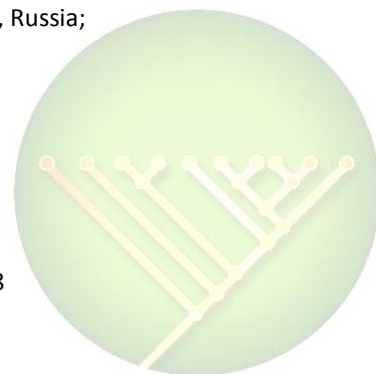
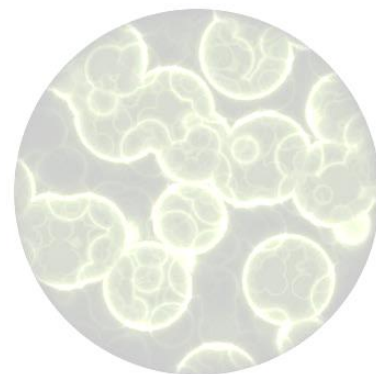
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2. OVERVIEW

2.1 BACKGROUND

Since its formation in 1936, the Bergey's Manual Trust has provided comprehensive and authoritative descriptions of bacteria and archaea through the publication of its Manuals on determinative and systematic bacteriology. The result of a collaboration between the Trust and nearly one thousand microbiologists from all over the world, the Manuals have provided extensive descriptive information of the taxonomy, systematics, physiology, ecology and habitats of individual prokaryotic groups as well as a natural classification of prokaryotes that reflects their evolutionary history.

This new, online edition, *Bergey's Manual of Systematics of Archaea and Bacteria*, is intended to continue that tradition by providing up-to-date descriptions of the taxonomy, systematics, ecology, physiology and other biological properties of all named prokaryotic taxa. It replaces and expands upon the second edition of *Bergey's Manual of Systematic Bacteriology*, a 5-volume set completed in 2012.

The Manual is prepared for a wide audience, including bacteriologists, clinicians, and other professionals as well as scientists from outside of microbiology. Its goals are to provide detailed and authoritative descriptions of each of the prokaryotic groups prepared by experts who have first-hand experience with these microorganisms as well as an introduction to the literature for nonspecialists. An additional goal of this new edition is to integrate new information about specific prokaryotic groups with our existing knowledge and provide a new synthesis of our understanding of prokaryotic life. In this way, it will provide a panoramic overview of prokaryotic biology and the richness of prokaryotic life

2.2 PUBLISHING STRATEGY

The content of the second edition of *Bergey's Manual of Systematic Bacteriology* (approximately 1,750 individual entries) will be published in the online environment of Wiley Online Library in the early summer of 2015 with an entirely new look, including hyperlinking within and between entries. It will be published by John Wiley & Sons, Inc, in association with the Bergey's Manual Trust. New and updated peer-reviewed articles will be added to this content four times a year on an ongoing basis, and will be downloadable in both HTML and PDF formats.

There are 5 different classes of articles (Phylum, Class, Order, Family and Genus), and they will be displayed within the taxonomic hierarchy on Wiley Online Library (<http://wileyonlinelibrary.com/ref/bergeysmanual>).

3. SUBMISSION OF MANUSCRIPTS

3.1 SCHOLARONE MANUSCRIPTS

All submissions for the Manual should come via ScholarOne Manuscripts (ScholarOne). ScholarOne is the leading system for web-based manuscript submission, peer review, and tracking. It integrates manuscript invitation, submission, file conversion, correspondence, tracking, reviewer management and decision making, and interfaces with the production process.

Authorship in Bergey's Manual is generally by invitation. However, if you believe a taxonomic group has been overlooked, please contact the Editorial Office.



3.2 PRESENTATION

Manuscripts should be typed (in at least 12 point size) with double spacing between all lines of text, tables, figure captions, and references. There should be reasonable margins (at least 2.5 cm) at the top, bottom, and left- and right-hand sides. All pages should be numbered consecutively in the top right-hand corner; this includes pages containing references, tables, figure captions and figures, which should be grouped in that order after the text pages.

There will be approximately 800 words (or the equivalent in tabular or illustrative material) on the final printed page. An average double-spaced manuscript page, in 12-point Times New Roman font, typically contains about 250 words. Thus, one printed page equates to approximately 3 double-spaced A4 manuscript pages.

Your Copyright Transfer Agreement will detail the desired length of your article. The contracted page extent includes figures and tables. A full page figure will therefore take the equivalent of 800 words, a half-page figure will take the equivalent of 400 words and so on. Please contact the Wiley publishing assistant if your article will be greatly different from the length specified in your Copyright Transfer Agreement.

3.3 PREPARATION OF ELECTRONIC MANUSCRIPT

If you are using a PC, Macintosh or workstation, then please use a standard word processing program, preferably Word, TeX or LaTeX. Please do not use layout programs such as Quark Xpress, FrameMaker or PageMaker.

If you prepare your manuscript in TeX or LaTeX, it is vital that you submit the PDF of your article, along with source, font and class files, and any other associated macros and files.

If you do use TeX/LaTeX please be aware that the typesetter will reformat your files to produce typeset pages following the style we have adopted for this work.

3.4 SUBMISSION OF DRAFT MANUSCRIPT

Please submit your manuscript by the contracted due date (refer to your Copyright Transfer Agreement) and in accordance with the terms and conditions of your Copyright Transfer Agreement.

Articles commissioned for the *Bergey's Manual of Systematics of Archaea and Bacteria* will be submitted and reviewed using the online article management system, ScholarOne. When you accept an invitation to contribute an article, a user account will be created and the login information emailed to you. To submit your manuscript online, point your browser to <http://mc.manuscriptcentral.com/bergeys>. Once you log in, click on the 'Contributor Center' icon to send us your submission. Please note that you will be required to upload your signed Copyright Transfer Agreement in order to complete submission of your manuscript.

Detailed instructions on using ScholarOne can also be found under the 'User Tutorials' button on the right-hand side of the login screen.

Please be sure to study the instructions given at the site carefully and then let the system guide you through the submission process. You will be able to exit and re-enter the system at any stage before finally submitting your work. All submissions are kept strictly confidential. You can log in periodically and check your Contributor Center to monitor the movement of your manuscript through the review process.

3.5 SUBMISSION OF REVISED/FINAL MANUSCRIPT

Your manuscript will be reviewed by your Editor, who will send you, through ScholarOne, any suggestions for amendments or improvements. The revised version of your manuscript must then be uploaded to ScholarOne within **four weeks**.



Should further amendments be required, you will receive feedback through ScholarOne. Otherwise, your (revised or original) manuscript will be approved by the Editor.

When your article is finalized for publication, the manuscript will enter the production process (see Section 22 below).

It is important that any necessary copyright permissions (see Section 23 below) are also uploaded to ScholarOne at this time or sent to the Publishing Assistant (bergeys@wiley.com).

Any changes of postal and/or e-mail address, whether temporary or permanent, should be notified to the Publishing Assistant (bergeys@wiley.com), giving dates when they are effective.

3.5.1 AUTHORSHIP RULES FOR UPDATED ARTICLES

Your name(s) (as author(s) of the article): For articles that are revisions of previous articles by other authors, the listing of authors is at the discretion of the editor. In general, the following authorship rules are recommended:

If 10% or less of the article is updated:

- Except for very extensive articles, the updating author/s name will **not** be added to the author list at the beginning of the chapter.
- Update details will be displayed in an end note in the following style:
"This article is based on Logan, N. A. and Vos, P. D. 2015. *Bacillus*. Bergey's Manual of Systematics of Archaea and Bacteria and has been updated by Whitman, W.B."

If 11%-30% of the article has been updated:

- The updating author/s name will be added to the author list at the beginning of the chapter.
- Update details will be displayed in an end note in the following style:
"This article is based on Logan, N. A. and Vos, P. D. 2015. *Bacillus*. Bergey's Manual of Systematics of Archaea and Bacteria and has been updated by Whitman, W.B."

If 31%-100% of the article has been updated:

- The updating author/s will be solely listed at the beginning of the chapter and the original authors will be removed.
- Update details will be displayed in an end note in the following style:
"This article is based on Logan, N. A. and Vos, P. D. 2015. *Bacillus*. Bergey's Manual of Systematics of Archaea and Bacteria and has been updated by Whitman, W.B."

4. DUE DATE

Contributors must adhere to the due date specified in their contracts for the initial submission of their manuscript to Wiley. Contributors who are unable to meet the due date should inform the Publishing Assistant at the earliest opportunity. Please note that the Publisher cannot guarantee acceptance of manuscripts submitted after the due date.

5. UNIQUE ARTICLE IDS

The Publisher has assigned to your article a unique identifying number ('unique ID') comprising three letters followed by five digits, in the following format:

Phylum articles = pbm00000

Class articles = cbm00000

Order article = obm00000

Family articles = fbm00000

Genus articles = gbm00000

Other (e.g. essays, taxonomic outlines) = bm00000



This reference number should be quoted in all correspondence with Wiley and with the Project Management company dealing with production (see Section 22 below).

6. ARTICLE COMPONENTS

The required article components vary depending upon the type of article being written. However, all articles must contain the following components:

- Article title (see Section [7](#) below)
- Contributor details (see Section [8](#) below)
- Keywords (see Section [9](#) below)
- Abstract (see Section [10](#) below)
- Defining publication (see Section [11.1](#) below)
- Etymology (see Section [11.2](#) below)
- Type (see Section [11.4](#) below)
- Bibliography (see Section [17](#) below)

Additionally, Genus articles (with the ID syntax gbm00000) should contain most of the following sections:

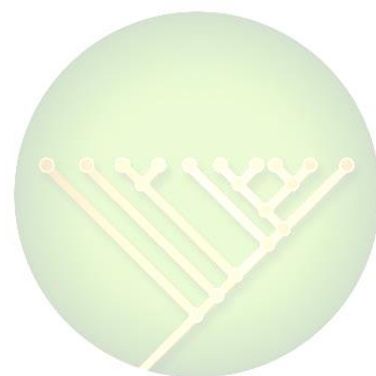
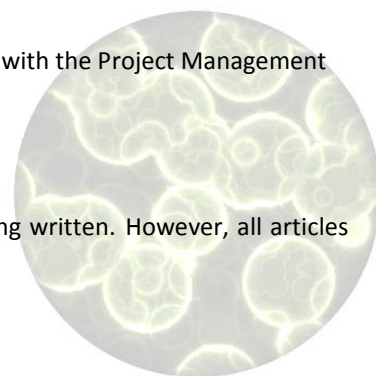
- Defining publication (see Section [11.1](#) below)
- Etymology (see Section [11.2](#) below)
- Generic definition (see Section [11.3](#) below)
- Type species (see Section [11.4](#) below)
- Family classification (see Section [11.5](#) below)
- Further descriptive information (see Section [11.6](#) below)
- Enrichment/isolation procedures (see Section [11.7](#) below)
- Maintenance procedures (see Section [11.8](#) below)
- Procedures for testing special characters (see Section [11.9](#) below)
- Differentiation from other closely related genera (see Section [11.10](#) below)
- Taxonomic comments (see Section [11.11](#) below)
- Miscellaneous comments (see Section [11.12](#) below)
- Tables to the species (see Section [11.13](#) below)
- Diagnostic table (see Section [11.13.1](#) below)
- Descriptive table (see Section [11.13.2](#) below)
- Phylogenetic tree (see Section [11.14](#) below)
- List of species (see Section [11.15](#) below)
- Infrasubspecific divisions (see Section [11.16](#) below)
- Species incertae sedis (see Section [11.17](#) below)
- Other organisms (see Section [11.19](#) below)

Family articles (with the ID syntax fbm00000) should contain most of the following sections:

- Synonymy (see Section [16.5](#) below)
- Description (see Section [12.3](#) below)
- Phylogenetic tree (see Section [12.5](#) below)
- Further comments (see Section [12.6](#) below)
- Table to constituent subgroups (see Section [12.7](#) below)

Higher-level articles (with the ID syntax pbm00000, cbm00000 and obm00000) should contain most of the following sections:

- Synonymy (see Section [16.5](#) below)
- Description (see Section [13.3](#) below)
- Phylogenetic tree (see Section [13.4](#) below)
- Further comments (see Section [13.5](#) below)
- Table to constituent subgroups (see Section [13.6](#) below)

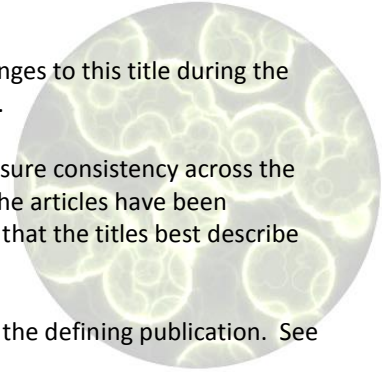


7. ARTICLE TITLE

This should be the title specified in the Copyright Transfer Agreement. Any changes to this title during the writing and review phases should be agreed with your Editor and the Publisher.

The Publisher may recommend amending the title of your article in order to ensure consistency across the Manual. The Supervising Editor may also decide to amend the title once all of the articles have been submitted. This will avoid duplication of titles throughout the book and ensure that the titles best describe the topic of the article itself.

For descriptions of specific taxa, the article title normally contains reference to the defining publication. See 11.1 below for examples.



8. CONTRIBUTOR DETAILS

8.1 NAME(S)

Please include your name and the names of all other contributors to your article, beneath the title of the article. You should include your first name, middle initial(s) and family name e.g. 'John A. Smith'.

8.2 AFFILIATION

Beneath each author's name, you should include the author's basic affiliation.

This should take the following form:

Department/Institution

University

Town/City

US State abbreviation/spelled-out Canadian or Australian state (if applicable)

Country (USA/UK, otherwise the spelled-out name)

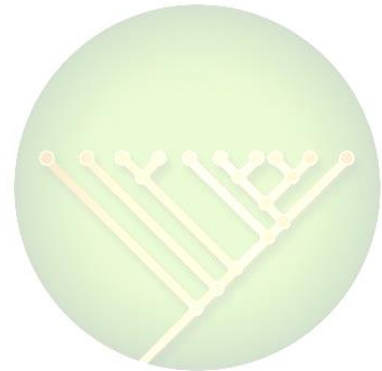
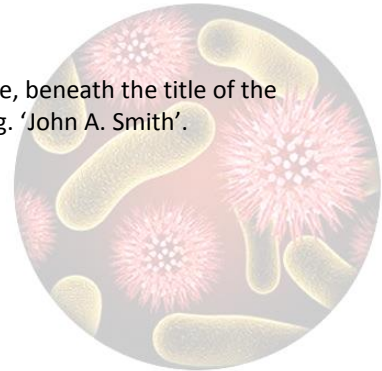
e.g.

Department of Microbiology

University of Newcastle

Newcastle upon Tyne

UK



9. KEYWORDS

To make the manual more searchable, please choose 7-10 keywords when uploading your article into ScholarOne. Please use words from the list below as much as possible. You may also add up to two additional key words of your own choosing. Your keywords will not appear in the PDF but will be displayed in the online version of the article for use in optimizing the visibility of the Manual to external search engines.

Please use keywords even if they only apply to some members of the taxon. For example, for a genus composed of mesophiles and thermophiles, please use the keyword thermophile. For a genus composed of thermophiles and hyperthermophiles, use both keywords.

List of possible keywords:

Habitat: Marine, freshwater, wastewater, foodborne, soil, subsurface, plant-associated, rhizosphere, phyllosphere, animal-associated, human-associated, clinical, cosmopolitan

Energy metabolism: Lithotroph, phototroph

Carbon source: Autotroph, mixotroph

Relationship to oxygen: Strict anaerobe, facultative anaerobe, aerobe, microaerophile



Temperature optimum: Psychrophile (optimum <15 °C), thermophile (optimum 45-80 °C), hyperthermophile (optimum >80 °C)

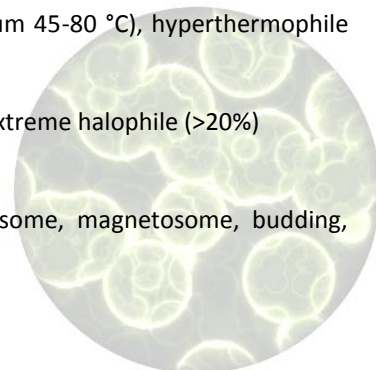
pH optimum: Acidophile (<5.0), alkaliphile (>8.5)

Salinity optimum: Slight halophile (1.7-4.7%), moderate halophile (4.8-20%), extreme halophile (>20%)

Biotic relationship: Mutualistic, endosymbiotic, pathogenic

Resting stage: Endospores, cysts, akinetes, exospores, myxospores

Other characters: Aerial mycelium, gliding motility, gas vesicle, annamoxosome, magnetosome, budding, luminescence

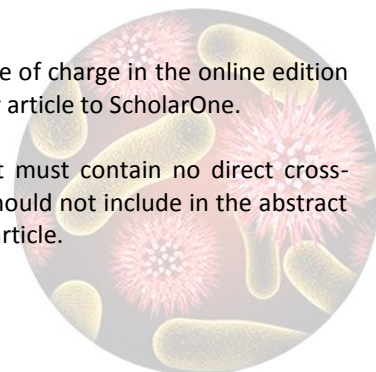


10. ABSTRACT

In order to increase the Manual's visibility to search engines such as Google, you should include a short abstract (150-200 words) for your article. Note that the abstracts for all the articles previously published in print in *Bergey's Manual of Bacteriology* have been automatically generated, but all new and updated articles for the Manual should have written abstracts.

The abstract will not be displayed in article PDF, but will be made available free of charge in the online edition of the Manual. You will be asked to upload your abstract when submitting your article to ScholarOne.

As the abstract will be made available independently of the main article, it must contain no direct cross-references to elements contained in the rest of the article. For example you should not include in the abstract cross-references to figures, tables, or references which appear only in the full article.



11. GENUS ARTICLES: ADDITIONAL COMPONENTS

For an example of a Genus-level article, please see

<http://onlinelibrary.wiley.com/doi/10.1002/9781118960608.gbm00530/full>

(If this link does not work, please copy and paste into your browser)

11.1 DEFINING PUBLICATION

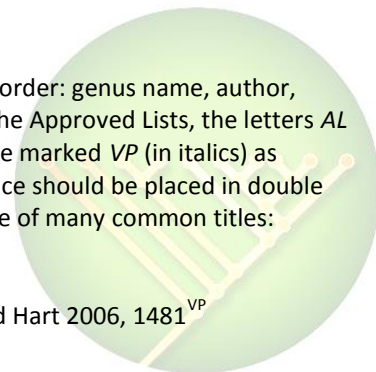
(see [Citing a defining publication](#))

The title normal includes reference to the defining publication in the following order: genus name, author, date, page of description in defining 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. The following examples are representative of many common titles:

Bacillus subtilis Cohn 1872, 174^{AL}.

Bacillus tequilensis Gatson, Benz, Chandrasekaran, Satomi, Venkateswaran and Hart 2006, 1481^{VP}

"**Bacillus xerothermodurans**" Bond and Favero 1977, 159



See also section 16.4 for more examples of citations to defining publications.

11.2 ETYMOLOGY

Follow the format used in the Second Edition of *Bergey's Manual of Systematic Bacteriology*.

Examples:

Arthrobacter woluwensis

wo.lu.wen'sis. N.L. masc. adj. *woluwensis* of or belonging to Woluwe, a town near Brussels, Belgium, where the type strain was isolated from a patient.

Candidatus Pasteuria usgae

us'gae. N.L. gen. n. *usgae* of U.S.G.A., the acronym for the United States Golf Association, in gratitude for their financial support to study this potential biological control agent against *Belonolaimus longicaudatus* in turfgrass ecosystems. (see section 11.18 for more discussion of *candidatus* names.



Corynebacterium diphtheriae

diph.the.ri'a.e. Gr. n. *diphthera* leather, skin; N.L. fem. n. *diphtheria* a disease in which a leathery membrane forms in the throat; N.L. gen. n. *diphtheriae* of diphtheria

11.3 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. Use the following order of presentation of features: morphology, Gram reaction, flagellar arrangement, relationship to oxygen, cultural characteristics, physiology, nutrition, chemotaxonomic markers, habitat, and any other special features that might be of importance. Indicate the DNA base ratio (with method of determination and the type species as separate paragraphs immediately after the description. **Indicate with boldface type the most important features of the genus.**

11.4 TYPE SPECIES

List the type species of the genus with the author, year, and page of description (See Citing a defining publication). Once the article is published online, the type species will link to the type species name in the List of Species.

After listing the type species, please insert the line:

“Number of species with validated names: x”

Where x is the number of validly published species in this genus, not including any species that might be listed under ‘Other Organisms,’ ‘Species Incertae Sedis,’ ‘Misclassified species,’ etc.

11.5 FAMILY CLASSIFICATION

Identify the family classification with a cross reference to the family article in the Manual (see section 20).

11.6 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 presentation and include illustrations where needed. If special media or growth conditions are mentioned, please prepare these as separate articles (see below for the format) which are then cited in this work.

- Cell morphology
- Cell wall composition; Fine structure
- Colonial or cultural characteristics; life cycles
- Nutrition and growth conditions
- Metabolism and metabolic pathways

If genome sequences are available for a genus, discuss the quality of genomic sequences available for group and their authenticity. Accession numbers for genomic sequences of type strains of the species will be identified in the species descriptions and should not be given here. Include when available descriptions of the core and pangenome for the genus.

- Overview of genetics methods available within this genus
- Antigenic structure
- Antibiotic or drug sensitivity
- Pathogenicity of species or strains including susceptible organisms
- Ecology and habitat of genus
- Miscellaneous (not covered in above categories) includes other topics that are important for this genus



11.7 ENRICHMENT/ISOLATION PROCEDURES

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

11.8 MAINTENANCE PROCEDURES

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

11.9 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 or various species. Include any special "tricks of the trade". (Note: This should include information regarding probe sequences and specificity, PCR amplification conditions, etc.).

11.10 DIFFERENTIATION FROM OTHER CLOSELY RELATED GENERA

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

11.11 TAXONOMIC COMMENTS

This section should include discussion of the following:

- Circumscription of the genus and its species
- Phylogeny
- Rank or position of genus or its species
- 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.

11.12 MISCELLANEOUS COMMENTS

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

11.13 TABLES TO THE SPECIES

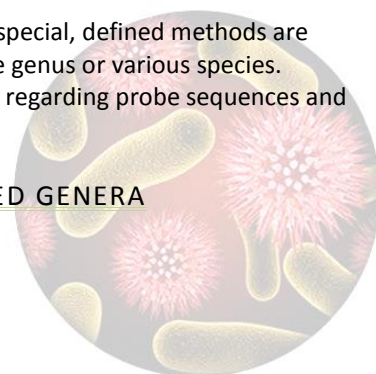
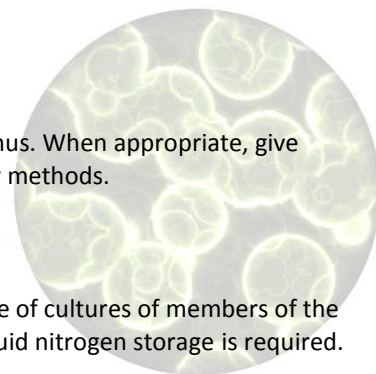
Use the following order for tables, and include at least one diagnostic table and one descriptive table. See the sample multitaxa article.

11.13.1 DIAGNOSTIC TABLE

This table should contain only those features used to identify the constituent species. It may include phenotypic or genetic data or both. **It should be kept short.**

11.13.2 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.



11.13.3 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 rRNA gene 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.

11.14 PHYLOGENETIC TREES

Phylogenetic trees should be presented for complex taxa or to illustrate relationships among multispecies genera. Generally, trees should be included at the appropriate taxonomic rank, ie. trees of genera at the family level and trees of species at the genus level.

Examples of phylogenetic trees are provided in the sample articles:

<http://onlinelibrary.wiley.com/book/10.1002/9781118960608/homepage/SampleContent.html>

In constructing trees, authors should include **all members of a taxon with validly published names** for which quality, **nearly full length sequences** are available (for the 16S rRNA this would be >1300 bp with <3% ambiguity; for many species curated sequences are available at the SILVA and STRAININFO databases). In general, sufficient detail of the method should be provided to allow another investigator to reproduce the results. Trees should also include representatives of sister taxa. Outgroups that are used in the calculation of the tree should not ordinarily be included in the final tree presented. However, outgroups, including the sequences accession numbers, should be identified in the figure legend. It is also important that phylogenetic trees be presented in a consistent fashion and include bootstrap values and a bar or scale indicating evolutionary distance. Trees must include the names of organisms, their strain name or number (as stated by the depositor of the sequence, with type strains indicated where appropriate by a superscript capital T) and sequence accession number. If the trees are composed entirely of sequences from type strains, this fact should be noted in the figure legend, and the superscript T may be omitted.

Authors are free to include other trees in their articles should they wish to do so, especially where there are 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.

11.15 LIST OF SPECIES

Each species with standing in nomenclature should be listed in alphabetical order (i.e., the name has appeared on the Approved Lists or has been subsequently validated). 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. When available include a description of the core and pangenome for the species.
- DNA base ratio, include method of analysis (e.g., Tm, LC, BD)
- Type, neotype, reference strains. Once the article is published online, the type strain will link to the appropriate entry within the database www.straininfo.net.
- GenBank/EMBL/DBJ accession number of 16S sequence of type strains. Refer to the best sequence available, which is not necessarily the earliest. Once the article is published online, the type strain will link to the appropriate entry/entries within Genbank.
- GenBank/EMBL/DBJ accession number of genomic sequence of type strains. Refer to the best sequence available, which is not necessarily the earliest. Once the article is published online, the type strain will link to the appropriate entry/entries within Genbank.



11.16 INFRASUBSPECIFIC DIVISIONS

Terms that will be used for infrasubspecific subdivisions are shown in the table below, 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 is reiterated in the introduction to the *Manual*.

- **Name**
- **Synonyms**
- **Notes**
 - Biotype, physiological type = Biovar
 - 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
 - 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
 - Forma specialis = Special form
 - 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
 - Ribotype = strains with the same or similar 16S rRNA sequence
 - 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.

11.17 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 in alphabetical order and give author, year and page of description.

11.18 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). Briefly, *candidatus* organisms have been described but can't be deposited in culture collections, usually either because they have not yet been cultured or they are not pure. For that reason, they are not formally named and follow the *candidatus* conventions. Nevertheless, many are extremely interesting and important, and the *Manual* should include them.

Candidatus names are usually in the format "*Candidatus* Somethinglatin", with the italics on the *candidatus* and not the name and the name in quotes. Sometimes this will appear as *Candidatus* "Somethinglatin". In Bergeys, we do not use quotation marks because they are redundant with the *candidatus* designation. Bergeys will also use italics on *Candidatus* but NOT the name. Bergeys will also use *Ca.* and not *Cand.* as the abbreviation for *candidatus*. However, the abbreviation should not be used in the title of a chapter or in the species list.

Candidatus taxa may have type strains, but their names are not validly published. Therefore, the sentence "Number of species with validated names:" should be replaced with "Number of *candidatus* species:" If a genus contains a mixture of validated and *candidatus* names, both sentences should be used.



In the species list, neglect the *candidatus* designation during alphabetization. Thus, in a mixture of *candidatus* and validly published names, the name of the species and not the word “*candidatus*” will determine the order.

Candidatus names have defining publications, but they are not designated by a superscript. Because they are not validly published, the superscripts ‘VP’ and ‘AL’ should not be used.

In other regards, the description of *candidatus* taxa should closely resemble that of validly named taxa.

11.19 OTHER ORGANISMS

Listed here with a brief description are organisms whose names have not been validly published or are unnamed and are of sufficient importance to warrant inclusion and have some affiliation with the genus.

11.20 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.

12. FAMILY-LEVEL ARTICLES: ADDITIONAL COMPONENTS

For an example of a Family-level article, please see

<http://onlinelibrary.wiley.com/doi/10.1002/9781118960608.fbm00011/full>

Authors are encouraged to discuss any regions within the outline where they or others disagree. For each family, there should be the following order of presentation (after the common components listed in Section 6):

12.1 DEFINING PUBLICATION

See Section [11.1](#)

12.2 ETYMOLOGY

See Section [11.2](#)

12.3 SYNONYMY

See Section [16.5](#).

12.4 DESCRIPTION

This should be brief and include morphological, cultural, physiological, genomic and ecological characteristics along with any supporting phylogenetic evidence (range of sequence similarities within and between members of the taxon and sister taxa). Include in the text the names of the genera in the family with cross references to the Manual article (see section 20).

12.5 PHYLOGENETIC TREE

A 16S rRNA gene phylogenetic trees should be presented for complex taxa or to illustrate relationships among multigenera families. Generally, trees should be included at the appropriate taxonomic rank, ie. trees of genera at the family level. Generally, trees should contain the type strain of the type species of each genus within the family. When other strains are also included, the type strains should be indicated by a superscript



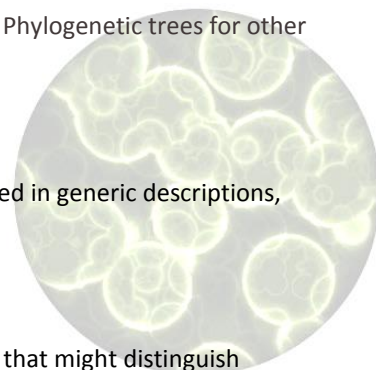
capital T. Otherwise, please follow the instructions above for “Genus articles”. Phylogenetic trees for other genes may also be presented if deemed appropriate.

12.6 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.

12.7 TABLE TO CONSTITUENT SUBGROUPS

Provide a descriptive table for the constituent subgroups emphasizing features that might distinguish members of the taxon.

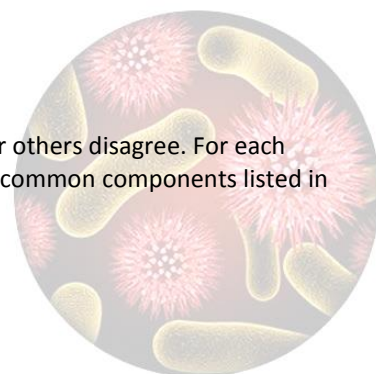


13. HIGHER-LEVEL ARTICLES: ADDITIONAL COMPONENTS

For an example of a higher-level article, please see

<http://onlinelibrary.wiley.com/doi/10.1002/9781118960608.obm00057/full>

Authors are encouraged to discuss any regions within the outline where they or others disagree. For each taxonomic rank, there should be the following order of presentation (after the common components listed in Section 6):



13.1 SYNONYMY

See Section [16.5](#).

13.2 ETYMOLOGY

See Section [11.2](#)

13.3 DESCRIPTION

This should be brief and include morphological, cultural, physiological, genomic and ecological characteristics along with any supporting phylogenetic evidence (range of sequence similarities within and between members of the taxon and sister taxa). Include in the text the names of the next lowest taxonomic rank. For the order descriptions, include citations to the Manual articles for the families.



13.4 PHYLOGENETIC TREE

A 16S rRNA gene phylogenetic trees should be presented for complex taxa or to illustrate relationships among the taxon. Generally, trees should be included at the appropriate taxonomic rank, ie. trees of families at the order level. Generally, trees should contain the type strain of the type species of the type genus within each family or other higher taxon. When other strains are also included, the type strains should be indicated by a superscript capital T. Otherwise, please follow the instructions above for “Genus articles”. Phylogenetic trees for other genes may also be presented if deemed appropriate.

13.5 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.

13.6 TABLE TO CONSTITUENT SUBGROUPS

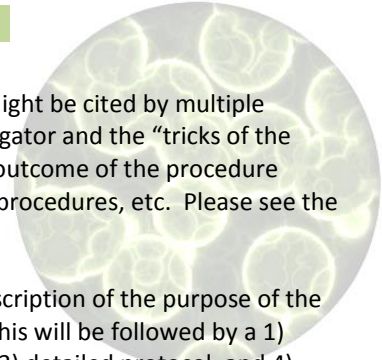
Provide a descriptive table for the constituent subgroups emphasizing features that might distinguish members of the taxon or be of particular biological importance.



14. ARTICLES DESCRIBING MEDIA AND SPECIAL METHODS

These articles are intended to serve as independent sources of methods that might be cited by multiple authors. They should include sufficient detail for use by an experienced investigator and the “tricks of the trade” that would be useful to new investigators. Factors known to affect the outcome of the procedure should be included, such as source of reagents, type of glassware, sterilization procedures, etc. Please see the sample article for medium preparation.

In general, the article should include an introductory paragraph providing a description of the purpose of the medium or method, citations to the original source, and features of interest. This will be followed by a 1) description of any specialized glassware or instruments, 2) list of the reagents, 3) detailed protocol, and 4) troubleshooting or potential problems.



15. GENERAL EDITORIAL GUIDANCE

Please adhere to these guidelines as closely as possible for all article types and consult with your editor for questions.

15.1 HEADING LEVELS

You should divide your article into sections and sub-sections up to a maximum of three levels of section heading.

To help the copyeditor correctly identify your section headings, please use the following style:

- H1 **1 NUMBERED BOLD CAPS LIKE THIS**
- H2 **1.1 Numbered Title Case and Bold Like This**
- H3 *1.1.1 Numbered lower case, and italic like this*

Each section heading should start on a new line.

H1 and H2 headings should be preceded by 2 line spaces and followed by 1 line space.

H3 headings should be preceded by 1 line space and followed by 1 line space.

The article should begin with a first level heading, i.e. there should be no "free-standing" text before the first heading.

Please note that the headings “Acknowledgements”, “References” and “Further Reading” should all be presented as unnumbered H1 headings in bold capitals.



15.2 MATHEMATICAL EQUATIONS

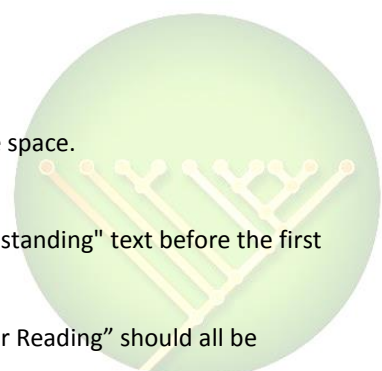
These should be numbered consecutively using Arabic numerals enclosed in parentheses, written to the right of the equation, i.e.

$$x + y = 5 \qquad (5)$$

Each equation should be cited in the text using the form:

...equation (5) describes... or Equation (5) describes

but not ...eqn (5) describes... or Eqn (5) describes.



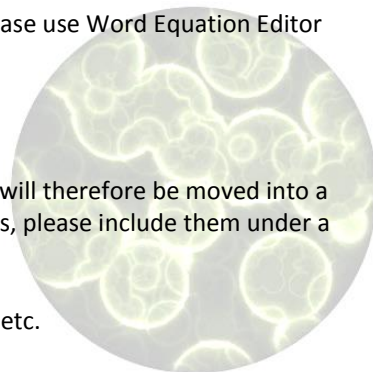
Each equation should be placed in the appropriate position within the text. Please use Word Equation Editor or MathType wherever possible.

15.3 NOTES

It is not possible to include footnotes in the body of the articles. Any footnotes will therefore be moved into a section at the end of the article to be titled 'End Notes'. If you wish to add notes, please include them under a heading entitled 'End Notes' at the end of the article before 'References'.

Note citations should take the form of a lower case, superscript letter, e.g. ^{a, b, c} etc.

In the online edition, the note citation will form a clickable hyperlink taking the user directly from the citation to the note.



16. EDITORIAL STYLE

16.1 SPELLING

You should prepare your manuscript following American spelling and usage, e.g. -ize endings not -ise (characterized not characterised) -yze not yse (analyze not analyse) behavior, color, neighbor, modeling

Our preferred dictionary is Merriam–Webster Collegiate Dictionary, 11th Edition.

16.2 SYMBOLS AND UNITS

It is important to distinguish between the letter "oh" and "zero", between the letter "ell" and "one", between the letter "kay" and "kappa", between the letter "vee" and "nu", etc.

SI units should be used throughout. Negative superscripts (i.e. kJ mol^{-1}) NOT the solidus (i.e. kJ/mol) should be used. For example:

cubic decimetre per mole-second is $\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$

16.3 ABBREVIATIONS AND ACRONYMS

Whenever you **first** use an abbreviation or an acronym, you must define it in full. In the event of the publishing of a print edition of the Manual, the Publisher will programmatically generate a list of abbreviations and acronyms which will appear in the Manual.

16.4 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.^{AL}

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

Rhodococcus marinoascens Helmke and Weyland 1984, 137.^{VP}

For a name that has been changed:

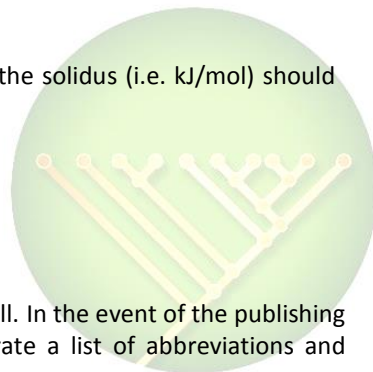
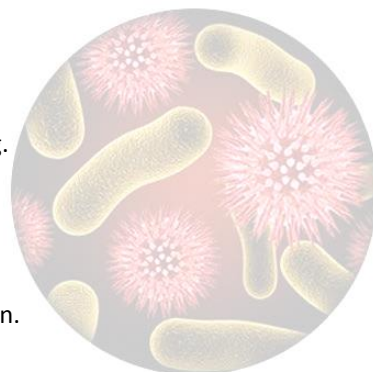
Pseudomonas aeruginosa (Schroeter 1872) Migula 1900, 884^{AL} (*Bacterium aeruginosum* Schroeter 1872, 126.)

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

Rhodococcus chubuensis Tsukamura 1983, 896^{VP} (Effective publication: Tsukamura 1982, 1116.)

For a revived name:

Streptococcus thermophilus (ex Orla-Jensen, 1919) Schleifer, Ehrmann, Krusch, Neve 1991, 387.^{VP}



For a name not validly published:

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

16.5 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. While authors are free to use their name of choice, the most recent name is preferred. In addition, authors should provide a brief history of nomenclatural changes since 1980.

16.6 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 Bacteriological Code (Rules 27-32b of the 1990 edition). These rules require that notice of a new name or combination must be published in the International Journal of Systematic and Evolutionary Microbiology (IJSEM) for a name to be validly published. The Editorial Office will be responsible for these notices. However, the author should notify the editor if names are being proposed that require validation. Also, it is preferable that newly described genera or species be first published in the IJSEM or another journal where the experimental methods and results are described fully rather than the Manual. The Trust would prefer that new names appearing in the Manual be restricted to combinations or names of taxa above the rank of genus.

16.7 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 (1990 edition) of the Bacteriological Code. Names that were published before January 1, 1980 need to be validated in IJSEM.

17. BIBLIOGRAPHY

References are to take the Harvard style (name and date). The Bibliography section at the end should therefore be in alphabetical order (i.e. in order of the surname of the first named author).

17.1 REFERENCES AND FURTHER READING

The Bibliography must contain only those references cited in the text (including table/figure captions). The Bibliography should appear at the end of the article beneath an unnumbered first level heading, e.g.

BIBLIOGRAPHY

If you want to include non-cited references in your article, you should present them in separate list beneath an unnumbered first level heading, e.g.

FURTHER READING

General reviews that might be of interests to students and workers from other fields are most appropriate for this section.

17.2 CITATION OF REFERENCES IN THE TEXT

All references should be cited in the text.

In the Harvard system references are cited by author's surname and year of publication and then listed alphabetically by author. The citation should take the form:

'Stackebrandt et al. (2002)' or '(Stackebrandt et al., 2002)' depending on context.



Where two authors are present, all should be named in the citation:

'(Cheshire and Cheyne, 1885)'

Where three or more authors are present give the first name followed by et al., for example:

'(Kanzawa et al., 1995)'

Where two or more references are cited at the same point they should be separated by semi-colons:

'Allan, 1991; Allan et al., 1993'

If two or more references by the same author(s) in the same year are cited, they should appear as:

'Deinhard et al., 1987a' and 'Deinhard et al., 1987b' in their order of appearance in the text. They should then be listed a, b, c order.

Distinct references by the same author(s) in different years can be cited, e.g.

'Fox et al., 1977, 1981'

17.3 CITATION OF JOURNAL IN THE BIBLIOGRAPHY

17.3.1 STANDARD JOURNAL REFERENCE

For a standard journal article with one author:

Knowles BH (1994) Mechanism of action of *Bacillus thuringiensis* insecticidal delta-endotoxin. *Adv. Insect Physiol* **24**: 275–308.

For a standard journal article with two or more authors:

Kim JM, Lim WJ, & Suh HJ (2001) Feather-degrading *Bacillus* species from poultry waste. *Proc Biochem* **37**: 287–291.

If a journal article has more than six authors, only the first six will be listed followed by "et al".

17.3.2 ONLINE JOURNAL REFERENCE

Lund T, De Buyser M-L & Granum P E (2000) *Molecular Microbiology*, doi: 10.1046/j.1365-2958.2000.02147.x.

17.4 CITATION OF A BOOK IN THE BIBLIOGRAPHY

17.4.1 AUTHORED BOOK REFERENCE

Logan NA (1994) *Bacterial Systematics*. Blackwell Scientific Publications, Oxford.

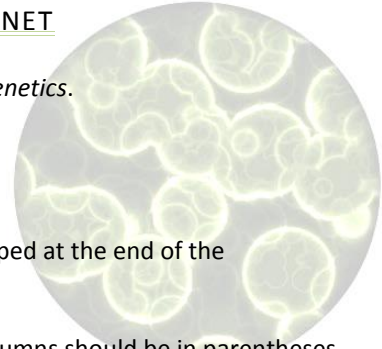
17.4.2 EDITED BOOK REFERENCE

Logan NA, Popovitch TJ & Hoffmaster A (2007) *Bacillus* and related genera. In *Manual of Clinical Microbiology*, 9th ed., vol. 1, Murray, Baron, Jorgensen, Pfallera and Tenover (eds). ASM, Washington; pp 455–473.



17.5 REFERENCES TO REPORTS/DOCUMENTS ON THE INTERNET

Buckley M & Roberts RJ (2007) *Reconciling Microbial Systematics & Genetics*.
<http://www.asm.org/Academy/index.asp?bid=49252>



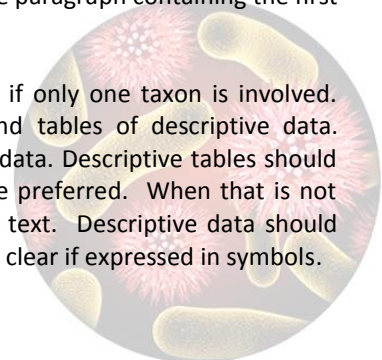
18. TABLES AND CAPTIONS

Tables should be numbered consecutively with Arabic numerals (1-n) and grouped at the end of the manuscript.

Each table should have a title and individual column headings. Any units for columns should be in parentheses after the column heading. Footnotes to tables should be designated by superscript lower-case letters.

All tables must be cited in the text. Please do not embed the table into the text, but include a 'table flag' (i.e. a piece of text enclosed in angle brackets: <Table x near here> at the end of the paragraph containing the first citation to the table.

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. Descriptive tables should strive to be complete. When possible, data obtained by a single method are preferred. When that is not possible, artifacts that might affect the reliability should be discussed in the text. Descriptive data should comprise one- or two-word descriptions of a character state that would be less clear if expressed in symbols.



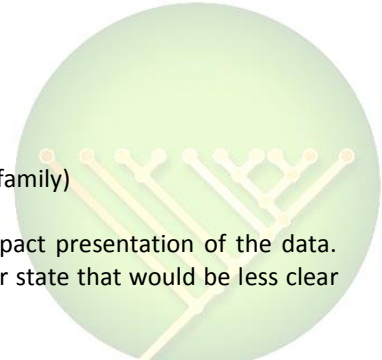
18.1 STANDARDIZED SYMBOLS

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")
- w weak reaction
- 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.



18.2 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 either as part of your word document or as Excel spreadsheets. Tables prepared in Microsoft Word should use 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.

18.3 COLUMN HEADINGS

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



19. FIGURES AND CAPTIONS

19.1 ELECTRONIC FORMAT/RESOLUTION

All illustrations (i.e. all figures, and any standalone structures/schemes) should be submitted in electronic format. Please supply your figures either as EPS files or as TIFF files. You should supply EPS files for line illustrations and TIFF files for photographs or other greyscale or tone illustrations. Each figure file should contain only one figure. If the figure is a composite figure, all parts of the figure should be supplied in the one file. Please do **NOT** supply 'thumbnails' or low resolution images such as GIF or JPEG files.

Line illustrations supplied electronically should not have a resolution less than 600 dpi. Tone illustrations (black and white and color photographs for instance) should have a resolution of around 300 dpi. Note that figures supplied in color will be reproduced in color online.

19.2 ILLUSTRATION SIZE

In order to ensure that the figure sizing is consistent across all the articles, we ask that you submit correctly sized illustrations. This means that illustrations should fit either a single column width (86 mm) or a double column width (179 mm). Figures should not exceed 200 mm in height. Labels and legends on figures should not be less than 8 pt and rules/lines should not be narrower than 0.5 pt.

19.3 FIGURES CITATION/NUMBERING

Each figure should be cited in the text and all should be numbered in sequence using Arabic numerals, e.g. "Figure 1" not "Figure 1.1"

All figures must be cited in the text and flagged, i.e. <Figure 1 near here> at the end of the paragraph containing the first citation to the figure.

19.4 FIGURE CAPTIONS

You must provide a descriptive caption for each illustration. Parts of composite figures should be clearly identified by (a) and (b) etc. labels placed at the top left corner of each figure part.

The caption for a composite figure should comprise a title or short description for the overall content of the figure and then a description of each part. All captions should be double-spaced as a separate list at the end of the manuscript.

20. CROSS-REFERENCES

Cross-references to other articles in the Manual will significantly enhance the value of each article, and will be one of the key features of any online edition of the Manual.

20.1 HOW TO CROSS-REFERENCE

Cross-references can be placed both in the body of an article ('inline cross references'), or at the end of the article ('Related Articles'). 'Inline cross references' refer the reader to other articles which give more detailed information on the topic under discussion at that point; 'Related Articles' is a simple list of other articles which you feel the reader would find of interest.

20.1.1 IN-LINE CROSS REFERENCES

In-line cross-references are cross-references in the main text of an article, in a paragraph, referring readers to other articles which give more detailed information on the topic under discussion at that point.



It is important that articles are cross-referred to by Unique ID, and not by article title or article number. This ensures that the title of the target article will be cited accurately in the final product, even if the article title changes between commissioning and going to press. The unique IDs are supplied in the spreadsheet **Bergey's_cross_ref_12_06_15.xlsx**, which accompanies this document, and can also be found on <http://onlinelibrary.wiley.com/book/10.1002/9781118960608/homepage/ForAuthors.html>

In your manuscript, an in-line cross-reference should take the form (example only, not actual article title):

"Members of this genus is often mistaken member of the genus *Methanococcus* (see XXX)"

rather than

" Members of this genus is often mistaken member of the genus *Methanococcus* (see *Methanococcus* chapter)"

where "XXX" is the Unique ID for the article "*Methanococcus*".

20.1.2 RELATED ARTICLES

The list of related articles should be presented immediately before the references:

Related articles:

gbm0002

gbm0003

21. COPYRIGHT, TRADEMARK AND PERMISSIONS

If you quote any lengthy passages *verbatim*, i.e. 400 words or over, from a book or journal, then you must obtain the permission of the copyright holder in writing. Permission must also be secured by the contributor for ANY table or illustration which you wish to reproduce from a previously published work, even if the material is redrawn.

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