

Current text	Proposed new text	Comments	References
Names of Genera and Subgenera	Names of Genera and Subgenera	See the earlier comments about the rank of Subgenus.	
<p>Rule 10a The name of a genus or subgenus is a substantive, or an adjective used as a substantive, in the singular number and written with an initial capital letter. The name may be taken from any source and may even be composed in an arbitrary manner. It is treated as a Latin substantive.</p> <p>Examples: Single Greek stem, <i>Clostridium</i>; two Greek stems, <i>Haemophilus</i>; single Latin stem, <i>Spirillum</i>; two Latin stems, <i>Lactobacillus</i>; hybrid name, Latin-Greek stems, <i>Flavobacterium</i>; latinized personal name, <i>Shigella</i>; arbitrary name, <i>Afipia</i>, <i>Desemzia</i>, <i>Waddlia</i>, or <i>Cedecea</i>.</p>	<p>Rule 10a The name of a genus or subgenus is a substantive, or an adjective used as a substantive, in the singular number in the nominative case, and written with an initial capital letter. The name may be taken from any source and may even be composed in an arbitrary manner. It is treated as a Latin substantive.</p> <p>Examples: Single Greek stem, <i>Clostridium</i>; two Greek stems, <i>Haemophilus</i>; single Latin stem, <i>Spirillum</i>; two Latin stems, <i>Lactobacillus</i>; hybrid name, Latin-Greek stems, <i>Flavobacterium</i>; latinized personal name, <i>Shigella</i>; arbitrary name, <i>Afipia</i>, <i>Desemzia</i>, <i>Waddlia</i>, or <i>Cedecea</i>.</p> <p>Words from languages other than Latin or Greek should be avoided as parts of genus or subgenus names as long as equivalents exist in Latin or Greek or can be constructed by combining word elements from these two languages. Exceptions can be made for names derived from typical local items such as food, drink or geographical localities for</p>	<p>Text clarifications proposed by the Editorial Board</p> <p>Addition of the nominative case was proposed by Oren, 2014.</p> <p>Changes based on Oren et al. 2014 and Oren 2017; the first part is duplicated from Recommendation 6 as proposed by Oren et al. 2014. If agreed to include here, the corresponding text from Recommendation 6 can be deleted.</p>	<p>Oren A. Proposal to modify Rule 10a of the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2014;64:3919.</p> <p>Oren A, Garrity GM, Schink B. Proposal to modify Rule 6, Rule 10a, and Rule 12c of the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2014;64:1452–1453.</p> <p>Oren A. Proposal to modify Rule 10a and to delete Recommendation 10a(3) from the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2017;67:3683–3684.</p>

	which no Latin or Greek names exist, or for names based on acronyms. As from January 2001, newly proposed names must not be later homonyms of names in use in botany or zoology (see Principle 2).		
<p>Recommendation 10a The following Recommendations apply when forming new generic or subgeneric names.</p> <p>(1) Refrain from naming genera and subgenera after persons quite unconnected with bacteriology or at least with natural science.</p> <p>(2) Give a feminine form to all personal generic and subgeneric names whether they commemorate a man or a woman (see Rule 63).</p> <p>(3) Avoid introducing into bacteriology as generic names such names as are in use in botany or zoology, in particular well known names. (See Appendix 9).</p>	<p>Recommendation 10a The following Recommendations apply when forming new generic or subgeneric names.</p> <p>(1) Refrain from naming genera and subgenera after persons unconnected with microbiology or at least with natural science.</p> <p>(2) Give a feminine form to all personal generic and subgeneric names, whether they commemorate a man or a woman (see Rule 63).</p>	<p>Recommendation 10a(3) was retained in the 2008 revision of the ICNP in spite of the fact that it contravenes the modified Principle 2 (Oren, 2017).</p>	<p>Oren A. Proposal to modify Rule 10a and to delete Recommendation 10a(3) from the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2017;67:3683–3684.</p>
<p>Rule 10b Generic and subgeneric names are subject to the same Rules and Recommendations, except that Rule 10c applies only to subgeneric names.</p>	<p>Rule 10b Generic and subgeneric names are subject to the same Rules and Recommendations, except that Rule 10c applies only to subgeneric names.</p>	<p>Rules 10b and 10c can be deleted if the subgenus category is removed as proposed by some members of the Editorial Board. Rule 10a then becomes Rule 10 and Recommendation 10a becomes Recommendation 10. However, there are validly published names of subgenera.</p>	
Rule 10c	Rule 10c		

<p>The name of a subgenus, when included with the name of a species, is placed in parentheses along with the abbreviation “subgen.” between the generic name and specific epithet. When included, the citation should be inserted before closure of the parentheses.</p> <p>Example: <i>Acetobacter</i> (subgen. <i>Gluconoacetobacter</i>) <i>liquefaciens</i> or <i>Acetobacter</i> (subgen. <i>Gluconoacetobacter</i> Yamada and Kondo 1985) <i>liquefaciens</i> (Asai 1935) Yamada and Kondo 1985.</p>	<p>The name of a subgenus, when included with the name of a species, is placed in parentheses along with the abbreviation “subgen.” between the generic name and specific epithet. When included, the citation should be inserted before closure of the parentheses.</p> <p>Example: <i>Acetobacter</i> (subgen. <i>Gluconoacetobacter</i>) <i>liquefaciens</i> or <i>Acetobacter</i> (subgen. <i>Gluconoacetobacter</i> Yamada and Kondo 1985) <i>liquefaciens</i> (Asai 1935) Yamada and Kondo 1985.</p>		
<p>Names of Taxa between Subgenus and Species</p>	<p>Names of Taxa between Subgenus and Species</p>		
<p>Rule 11 The taxonomic categories <i>section</i>, <i>subsection</i>, <i>series</i>, and <i>subseries</i> are informal categories not regulated by the Rules of this Code. Their designations do not compete with the names of genera and subgenera as to priority and homonymy.</p>	<p>Rule 11 The taxonomic categories <i>section</i>, <i>subsection</i>, <i>series</i>, and <i>subseries</i> are informal categories not regulated by the Rules of this Code. Their designations do not compete with the names of genera and subgenera as to priority and homonymy.</p>	<p>This Rule and its heading can probably be deleted as these terms are not used in the prokaryotic nomenclature as far as the Editorial Board is aware. They are found in are found in Article 4.2 of the ICN. When doing so, it will be necessary to renumber all subsequent Rules. Alternatively, it can be marked ‘Deleted’.</p>	
<p>Names of Species</p>	<p>Names of Species</p>		
<p>Rule 12a The name of a species is a binary combination consisting of the name of the genus followed by a single specific epithet.</p>	<p>Rule 12a The name of a species is a binary combination consisting of the name of the genus followed by a single specific epithet.</p>		<p>Tindall BJ. Clarifying the definition and role of effective publication in the International Code of</p>

<p>If a specific epithet is formed from two or more words, then the words are to be joined. If the words were not joined in the effective publication, then the epithet is not to be rejected but the form is to be corrected by joining the words, which can be done by any author. If an epithet has been hyphenated, its parts should be joined. The name is considered to have been validly published and retains its standing in nomenclature.</p> <p>Example: <i>Nocardia otitidis-caviarum</i> has been corrected to <i>Nocardia otitidiscaviarum</i>, or <i>Propionibacterium acidi-propionici</i> has been corrected to <i>Propionibacterium acidipropionici</i>, or <i>Treponema paraluis-cuniculi</i> has been corrected to <i>Treponema paraluis-cuniculi</i>.</p>	<p>If a specific epithet is formed from two or more words, then the words are to be joined. If the words were not joined at the time of valid publication, then the epithet is not to be rejected but the form is to be corrected by joining the words, which can be done by any author. If an epithet has been hyphenated, the parts should be joined. The name is considered to have been validly published.</p> <p>Example: <i>Nocardia otitidis-caviarum</i> has been corrected to <i>Nocardia otitidiscaviarum</i>, or <i>Propionibacterium acidi-propionici</i> has been corrected to <i>Propionibacterium acidipropionici</i>, or <i>Treponema paraluis-cuniculi</i> has been corrected to <i>Treponema paraluis-cuniculi</i>.</p>		<p>Nomenclature of Prokaryotes with proposals to make changes. <i>Int J Syst Evol Microbiol</i> 2019a;69:2602–2605.</p> <p>Tindall BJ. An analysis of the term 'standing in nomenclature', as used in the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2019;69:2166–2168.</p>
<p>Rule 12b No specific or subspecific epithets within the same genus may be the same if based on different types (see Rules 13c, 40d and Section 9). Example: <i>Bacillus pallidus</i> Scholz et al. 1988 is based on the nomenclatural type, strain H12; the specific epithet <i>pallidus</i> cannot be used for <i>Bacillus pallidus</i> Zhou et al. 2008, another bacterium whose name is based on a different type.</p>	<p>Rule 12b No specific or subspecific epithets within the same genus may be the same if based on different types (see Rules 13c, 40d and Section 9). Example: <i>Bacillus pallidus</i> Scholz et al. 1988 is based on the nomenclatural type, strain H12; the specific epithet <i>pallidus</i> cannot be used for <i>Bacillus pallidus</i> Zhou et al. 2008, another bacterium whose name is based on a different type.</p>		
<p>Rule 12c</p>	<p>Rule 12c</p>		<p>Oren A, Garrity GM, Schink B. Proposal to</p>

<p>A specific epithet may be taken from any source and may even be composed arbitrarily. Example: <i>thetaitaomicron</i> in <i>Bacteroides thetaitaomicron</i> derived from a combination of the Greek letters <i>theta</i>, <i>iota</i> and <i>omicron</i>.</p>	<p>A specific epithet may be taken from any source and may even be composed arbitrarily. Example: <i>thetaitaomicron</i> in <i>Bacteroides thetaitaomicron</i> derived from a combination of the Greek letters <i>theta</i>, <i>iota</i> and <i>omicron</i>. Words from languages other than Latin or Greek should be avoided as parts of a specific epithet as long as equivalents exist in Latin or Greek or can be constructed by combining word elements from these two languages. Exceptions can be made for names derived from typical local items such as food, drink or geographical localities for which no Latin or Greek names exist or for names based on acronyms. Example: <i>safensis</i> in <i>Bacillus safensis</i>, arbitrarily derived from SAF (the spacecraft-assembly facility at the Jet Propulsion Laboratory, Pasadena, CA, USA).</p>	<p>The added text is duplicated from Recommendation 6 and example added as proposed by Oren et al. 2014. If agreed to include here, then the corresponding text from Recommendation 6 can be deleted.</p>	<p>modify Rule 6, Rule 10a, and Rule 12c of the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2014;64:1452–1453. Oren A. Proposal to modify Rule 12c of the International Code of Nomenclature of Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2017;67:761–762.</p>
<p>A specific epithet must be treated in one of the three following ways. (1) As an adjective that must agree in gender with the generic name. Example: <i>aureus</i> in <i>Staphylococcus aureus</i>.</p>	<p>A specific epithet must be treated in one of the three following ways. (1) As an adjective in the singular number in the nominative case that must agree in gender with the generic name. Example: <i>aureus</i> in <i>Staphylococcus aureus</i>.</p>	<p>‘in the singular number in the nominative case’ is based on the suggestion by Oren, 2017. It is necessary to add that present and past particles can be used as adjectives? (e.g.</p>	

<p>(2) As a substantive (noun) in apposition in the nominative case. Example: <i>Desulfovibrio gigas</i> or other names cited in Trüper and De'Clari [3].</p> <p>(3) As a substantive (noun) in the genitive case. Example: <i>coli</i> in <i>Escherichia coli</i>.</p>	<p>(2) As a substantive (noun) in apposition in the nominative case Example: <i>Blautia obeum</i>.</p> <p>(3) As a substantive (noun) in the genitive case. Example: <i>coli</i> in <i>Escherichia coli</i>.</p>	<p><i>Streptococcus mutans; Halomonas elongata</i>?)</p> <p>It is not clear why Trüper and De'Clari must be cited here; if more appropriate examples are needed, there are many options: <i>Blautia obeum</i>, <i>Halorubrum chaoviator</i>, etc. The Editorial Board changed the example to <i>Blautia obeum</i> as it clearly shows that the gender of the two nouns does not have to agree (which happens to be the case in <i>Desulfovibrio gigas</i>).</p> <p>The Editorial Board must reconsider to what extent such references must be cited in the ICNP.</p>	
<p>Recommendation 12c Authors should attend to the following Recommendations, and those of Recommendation 6, when forming specific epithets.</p> <p>(1) Choose a specific epithet that, in general, gives some indication of a property or of the source of the species.</p> <p>(2) Avoid those that express a character common to all, or nearly all, the species of a genus.</p> <p>(3) Ensure that, if taken from the name of a person, it recalls the name of one who discovered or described it, or was in some way connected with it, and</p>	<p>Recommendation 12c Authors should attend to the following Recommendations, and those of Recommendation 6, when forming specific epithets.</p> <p>(1) Choose a specific epithet that gives some indication of a property or of the source of the species.</p> <p>(2) Avoid those that express a character common to all, or nearly all, the species of a genus.</p> <p>(3) Specific epithets should not honour the author or co-authors of the proposed species or subspecies, or any persons not</p>	<p>This change is long overdue. 'bacteriology' in the original proposal by Oren 2015 was changed to 'microbiology'.</p>	<p>Oren A. Proposal to change Recommendation 12c of the International Code of Nomenclature of</p>

<p>possesses the appropriate gender (see Appendix 9).</p> <p>(4) Avoid in the same genus epithets which are very much alike, especially those that differ only in their last letters (see Rule 56a(4)).</p> <p>(5) Avoid the use of the genitive and the adjectival forms of the same specific epithet to refer to two different species of the same genus (see Rule 63).</p> <p>(6) If an ordinal adjective used for enumeration is chosen then they may include numbers up to ten. Example: <i>primus, secundus</i>.</p>	<p>connected with microbiology or at least with natural science.</p> <p>(4) Avoid in the same genus epithets which are very much alike, especially those that differ only in their last letters (see Rule 56a(4)).</p> <p>(5) Avoid the use of the genitive and the adjectival forms of the same specific epithet to refer to two different species of the same genus (see Rule 63).</p> <p>(6) If an ordinal adjective used for enumeration is chosen then they may include numbers up to ten. Example: <i>primus, secundus</i>.</p>	<p>A recommendation to prevent excessive formation of names such as <i>X. silvae / X. silvestris</i>; <i>Y. maris / Y. marinus</i>. But there already are quite a few of those.</p>	<p>Prokaryotes. <i>Int J Syst Evol Microbiol</i> 2015;65,4288.</p>
<p>Names of Subspecies</p>	<p>Names of Subspecies</p>		
<p>Rule 13a The name of a subspecies is a ternary combination consisting of the name of a genus followed by a specific epithet, the abbreviation “subsp.” (<i>subspecies</i>), and finally the subspecific epithet. Example: <i>Bacillus subtilis</i> subsp. <i>spizizenii</i> Nakamura et al. 1999. For “variety” see Rule 5c.</p>	<p>Rule 13a The name of a subspecies is a ternary combination consisting of the name of a genus followed by a specific epithet, the abbreviation “subsp.” (<i>subspecies</i>), and finally the subspecific epithet. Example: <i>Bacillus subtilis</i> subsp. <i>spizizenii</i> Nakamura et al. 1999.</p>		
<p>Rule 13b</p>	<p>Rule 13b</p>		

<p>A subspecific epithet is formed in the same way as a specific epithet. When adjectival in form, it agrees in gender with the generic name.</p>	<p>A subspecific epithet is formed in the same way as a specific epithet. When adjectival in form, it agrees in gender with the generic name.</p>		
<p>Rule 13c No two subspecies within the same species or within the same genus may bear the same subspecific epithet (see also Rules 12b and 40d).</p>	<p>Rule 13c No two subspecies within the same species or within the same genus may bear the same subspecific epithet (see also Rules 12b and 40d).</p>		
<p>Rule 13d A subspecies that includes the type of the species must bear the same epithet as the species (see also Rules 40d and 45).</p>	<p>Rule 13d A subspecies that includes the type of the species must bear the same epithet as the species (see also Rules 40d and 45).</p>		
<p>Names of Infrasubspecific Subdivisions</p>	<p>Names of Infrasubspecific Subdivisions</p>		
<p>Rule 14a The designations of the various taxa below the rank of subspecies are not subject to the Rules and Recommendations of this Code (for advice on their nomenclature, see Appendix 10).</p>	<p>Rule 14a The designations of the various taxa below the rank of subspecies are not subject to the Rules and Recommendations of this Code (for advice on their nomenclature, see Appendix 10).</p>		
<p>Rule 14b A Latin or latinized infrasubspecific designation may be elevated by a subsequent author to the status of a subspecies or species name providing that the resulting name is in conformity with the Rules. If so elevated, it ranks for purposes of priority from its date of elevation and is attributed to the author</p>	<p>Rule 14b A Latin or latinized infrasubspecific designation may be elevated by a subsequent author to the status of a subspecies or species name providing that the resulting name is in conformity with the Rules. If so elevated, for purposes of priority it ranks from its date of elevation and is attributed to the</p>		

<p>who elevates it, provided that the author who elevates it observes Rule 27.</p> <p>Example: <i>Pseudomonas cannabina</i> (ex Šutič and Dowson 1959) Gardan et al. 1999; elevation of <i>Pseudomonas syringae</i> pathovar Cannabina of (Šutič and Dowson 1959) Young et al. 1978 by Gardan et al. [4].</p>	<p>author who elevated it, provided that the author who elevated it observes Rule 27.</p> <p>Example: <i>Pseudomonas cannabina</i> (ex Šutič and Dowson 1959) Gardan et al. 1999; elevation of <i>Pseudomonas syringae</i> pathovar Cannabina of (Šutič and Dowson 1959) Young et al. 1978 by Gardan et al. [4].</p>	<p>The Editorial Board started discussing whether numbered references are needed or the source of the publication should be given here (<i>Int J Syst Evol Microbiol</i> 1999;49:469-478). It is even possible to delete 'by Gardan <i>et al.</i> [4]'. Note that Ref. [3] in Rule 12c was marked to be deleted. References [1] and [2] are in the Note to General Consideration that possibly may be deleted. The Editorial Board suggest to remove citations from examples and retain references where genuinely needed (e.g. to Roop et al. in Rule 18c).</p>	
<p>Section 4. Nomenclatural Types and Their Designation</p>	<p>Section 4. Nomenclatural Types and Their Designation</p>		
<p>General</p>	<p>General</p>		
<p>Rule 15 A taxon consists of one or more elements. For each named taxon of the various taxonomic categories (listed below), there shall be designated a nomenclatural type. The nomenclatural type, referred to in this Code as “type”, is that element of the taxon with which the</p>	<p>Rule 15 A taxon consists of one or more elements. For each named taxon of the various taxonomic categories (listed below), there shall be designated a single nomenclatural type. The nomenclatural type, referred to in this Code as “type”, is that element of the taxon with which the</p>	<p>Change as suggested by Tindall 2015.</p>	<p>Tindall BJ. Updating Rule 15 of the International Code of Nomenclature of Bacteria. <i>Int J Syst Evol Microbiol</i> 2015;65:2766–2768.</p>

<p>name is permanently associated, whether as a correct name or as a later heterotypic synonym. The nomenclatural type is not necessarily the most typical or representative element of the taxon. The types are dealt with in Rules 16–22. Types of the various taxonomic categories are presented in Table 2.</p>	<p>name is permanently associated, whether as a correct name or as a synonym. The nomenclatural type is not necessarily the most typical or representative element of the taxon. The types are dealt with in Rules 16–22. Types of the various taxonomic categories are presented in Table 2.</p>	<p>Proposed changes in the new version of Table 2 (addition of phyla, deletion of subtribes and subfamilies) are based on Oren, 2019 and Oren <i>et al.</i>, 2021.</p>	<p>Oren A. Proposal to modify the Rules of the <i>International Code of Nomenclature of Prokaryotes</i> to abolish the taxonomic categories Subfamily, Subtribe and Kingdom. <i>Int J Syst Evol Microbiol</i> 2019;69:1524-1525.</p> <p>Oren A, Arahal DR, Rosselló-Móra R, Sutcliffe IC, Moore ERB. Emendation of Rules 5b, 8, 15, and 22 of the <i>International Code of Nomenclature of Prokaryotes</i> to include the rank of phylum. <i>Int J Syst Evol Microbiol</i> 2021;71:004851</p>
<p>Rule 16 The type of a taxon must be designated by the author at the time the name of the taxon is published in the IJSEM (see Rules 15, 18a, b, f, 20a-c, 21a, 22, 27(3)).</p> <p><i>Note.</i> Authors who intend to publish the name in the IJSEM with reference to a previous effectively published description under Rule 27(2) are advised also to</p>	<p>Rule 16 The type of a taxon must be designated by the author at the time the name of the taxon is published in the IJSEM (see Rules 15, 18a, b, f, 20a-c, 21a, 22, 27(3)).</p> <p><i>Note.</i> Authors who intend to publish the name in the IJSEM with reference to a † description or listing of the properties of the taxon that has appeared in an</p>	<p>Changes suggested by Tindall, 2019.</p>	<p>Tindall BJ. Clarifying the definition and role of effective publication in the <i>International Code of Nomenclature of Prokaryotes</i> with proposals to make changes. <i>Int J Syst Evol Microbiol</i> 2019;69:2602–2605.</p>

<p>designate the type when publishing that description.</p> <p><i>Note.</i> If a previous effective publication does not designate a type then the type must be designated at the time of valid publication in IJSEM, in accordance with the Rules of this Code.</p>	<p>effective publication under Rule 27(2) must also designate the type when publishing that description.</p> <p><i>Note.</i> If a type has not been designated in the effective publication, then the type must be designated at the time of valid publication in IJSEM, in accordance with the Rules of this Code.</p>		
<p>Rule 17 The type determines the application of the name of a taxon if the taxon is subsequently divided or united with another taxon.</p> <p>Example: Ash et al. [5] proposed that the genus <i>Bacillus</i> be divided into the genera <i>Bacillus</i> and <i>Paenibacillus</i>, and the genus which contained the type species <i>Bacillus subtilis</i> must be named <i>Bacillus</i>.</p>	<p>Rule 17 The type determines the application of the name of a taxon if the taxon is subsequently divided or united with another taxon.</p> <p>Example: Ash et al. [5] proposed that the genus <i>Bacillus</i> be divided into the genera <i>Bacillus</i> and <i>Paenibacillus</i>, and the genus which contained the type species <i>Bacillus subtilis</i> must be named <i>Bacillus</i>.</p>	<p>About the numbered references, see the comment to Rule 14b. The reference can be added here: <i>Antonie van Leeuwenhoek</i> 1993;64:253-260; Validation List no. 51 - 1994).</p>	

Table 2. *Taxonomic Categories*

Taxonomic category	Type
Subspecies Species	Designated strain; in special cases the place of the type strain may be taken by a description, preserved specimen, or an illustration (see Rule 18a(1))
Subgenus Genus	Designated species
Subtribe Tribe Subfamily Family Suborder Order	Genus on whose name the name of the higher taxon is based
Subclass Class	One of the contained orders

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Subtribe Tribe Subfamily	Genus on whose name the name of the higher taxon is based

Family Suborder Order	
Subclass Class	One of the contained orders
Phylum	One of the contained genera

Concerning the rank of Subgenus: to be discussed.

One of the members of the Editorial Board proposed reversing the order of the Taxonomic Categories, starting with Phylum.