

1 **DRAFT - CONFIDENTIAL**

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3 **Emendation of Rules 5b, 8, 15, and 22 of the International Code of Nomenclature**
4 **of Prokaryotes to include the rank of phylum**

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22 List of abbreviations: ICSP, International Committee on Systematics of Prokaryotes;

23 ICNP, International Code of Nomenclature of Prokaryotes; IJSEM, International

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26

27 **Abstract**

28

29 Following the International Committee on Systematics of Prokaryotes online
30 discussion and vote on proposals to include the rank of phylum in the rules of the
31 International Code of Nomenclature of Prokaryotes, we here announce the results of
32 the ballot. We also present draft versions of the emended Rules 5b, 8, 15, and 22

33 based on the outcome of the ballot, to be included in the proposal for the
34 preparation of a new revision of the International Code of Nomenclature of
35 Prokaryotes.

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37

38 The rules of the current version of the International Code of Nomenclature of
39 Prokaryotes (ICNP) (2008 Revision) [1] do not include the rank of phylum. Following
40 the publication of proposals to include the rank of phylum in the rules of the ICNP
41 [2,3], the members of the International Committee on Systematics of Prokaryotes
42 (ICSP) have voted on these proposals in February 2021. The ballot was preceded by a
43 public discussion, conducted by email correspondence that started in November
44 2020 [4]. As a result of the discussions, in which the issue of whether the
45 nomenclatural type of a phylum should be one of the contained classes or one of the
46 contained genera was raised (as previously [5]), an additional question (Vote 2
47 below) was added. Twenty-one votes from ICSP delegates were received by the
48 tellers, Aharon Oren and David R. Arahal. The outcome of the ballot is as detailed
49 below.

50

51 Vote 1 - Should the rank of phylum be included under the rules of the ICNP?

52 The proposal was accepted by 19 delegates and rejected by two.

53

54 Vote 2 - If Vote 1 is in favour of including the rank of phylum under the rules of the
55 ICNP, should the nomenclatural type of a phylum be one of the contained classes or
56 one of the contained genera?

57 Seven delegates voted in favour of a class as the nomenclatural type of the
58 phylum, 10 were in favour of a genus, there were three abstentions, and one
59 blank vote was returned.

60

61 Vote 3 – If Vote 1 is in favour of including the rank of phylum under the rules of the
62 ICNP, should the suffix *-aeota* or *-ota* be adopted for phyla?

63 Three delegates voted in favour of the ending *-aeota*, 13 were in favour of *-*
64 *ota*, there were four abstentions, and one blank vote was returned.

65

66 Vote 4 - If Vote 1 is in favour of including the rank of phylum under the rules of the
 67 ICNP, should the ending (*-aeota* or *-ota*) be applied consistently or should the
 68 Judicial Commission be allowed to make exceptions for the nomenclature of some
 69 phyla?

70 Seven delegates voted that the ending must be applied consistently, 13 voted
 71 that the Judicial Commission be allowed to make exceptions, and one blank
 72 vote was returned.

73

74 The proceedings of the open discussion that preceded the ballot are posted on the
 75 website of the ICSP at <https://www.the-icsp.org/>.

76

77 Based on these votes, the following emendations of the rules of the ICNP are
 78 proposed. Changes are indicated in boldface type.

79

80 RULE 5B

81 The taxonomic categories above and including species which are covered by these
 82 Rules are given below in ascending taxonomic rank. Those in the left-hand column
 83 should be recognized where pertinent; those in the right-hand column are optional.
 84 The Latin equivalents are given in parentheses.

85

86 Species (*Species*)87 Subgenus (*Subgenus*)88 Genus (*Genus*)89 Subtribe (*Subtribus*)90 Tribe (*Tribus*)91 Subfamily (*Subfamilia*)92 Family (*Familia*)93 Suborder (*Subordo*)94 Order (*Ordo*)95 Subclass (*Subclassis*)96 Class (*Classis*)

97 **Phylum (*Phylum*)**

98

99 **RULE 8**

100 The name of each taxon (covered by the Code) above the rank of order is a Latin or
 101 latinized word. The name of a class is in the neuter gender, the plural number and
 102 written with an initial capital letter. The name is formed by the addition of the suffix
 103 *-ia* to the stem of the name of the type genus of the type order of the class. The
 104 name of a subclass is in the feminine gender, the plural number and written with an
 105 initial capital letter. The name is formed by the addition of the suffix *-idae* to the
 106 stem of the name of the type genus of the type order of the subclass. **The name of a**
 107 **phylum is in the neuter gender, the plural number and written with an initial**
 108 **capital letter. The name is formed by the addition of the suffix *-ota* to the stem of**
 109 **the name of the designated type genus.**

110

111 **RULE 15**

112 A taxon consists of one or more elements. For each named taxon of the various
 113 taxonomic categories (listed below), there shall be designated a nomenclatural type.
 114 The nomenclatural type, referred to in this Code as 'type', is that element of the
 115 taxon with which the name is permanently associated, whether as a correct name or
 116 as a synonym. The nomenclatural type is not necessarily the most typical or
 117 representative element of the taxon. The types are dealt with in Rules 16–22. Types
 118 of the various taxonomic categories can be summarized as follows:

119

120 Table 2. Taxonomic categories

121

122

Taxonomic category	Type
Subspecies	Designated strain; in special cases the place of the type strain may be taken by a description, preserved specimen, or an illustration
Species	
Subgenus	Designated species

Genus		
Subtribe		Genus on whose name the name of the higher taxon is based
Tribe		
Subfamily		
Family		
Suborder		
Order		
Subclass		One of the contained orders
Class		
Phylum		One of the contained genera

123

124

125 THE FIRST PARAGRAPH OF RULE 22

126 **The type of a phylum is one of the contained genera. If there is only one genus, this**127 **becomes the type. If there are two or more genera, the type shall be designated by**128 **the author at the time of the proposal of the phylum name, although authors are**129 **encouraged to respect priority by considering which genus was described first.** The

130 type of a class or subclass is one of the contained orders, and if there is only one

131 order this becomes the type. If there are two or more orders the type shall be

132 designated by the author at the time of the proposal of the name.

133

134 **Based on these emendations and the votes by the ICSP, the List Editors of the IJSEM**135 **will prepare a list of names of phyla that can be validated, formed from the name of**136 **a genus proposed as the nomenclatural type and the ending *-ota*.**

137

138 As announced earlier [4], the Editorial Board of the ICNP will prepare proposals for

139 emendation of the General Considerations, Principles, Rules, Recommendations and

140 Appendices of the entire ICNP document, in order to support the preparation of a

141 new revision. The emendations outlined above will be included in the draft of the

142 revision that will be published for open discussion prior to balloting among the full

143 and co-opted members of the ICSP [4].

144

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146

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148 at <https://www.the-icsp.org/>

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154

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158 **References**

159

160 **[1] Parker CT, Tindall BJ, Garrity GM.** International Code of Nomenclature of
161 Prokaryotes. Prokaryotic code (2008 revision). *Int J Syst Evol Microbiol*
162 2019;69:S1-S111.

163 **[2] Oren A, da Costa M, Garrity GM, Rainey FA, Rosselló-Móra R *et al.*** Proposal to
164 include the rank of phylum in the International Code of Nomenclature of
165 Prokaryotes. *Int J Syst Evol Microbiol* 2015;65:4284-4287.

166 **[3] Whitman WB, Oren A, Chuvochina M, da Costa MS, Garrity GM *et al.*** Proposal
167 of the suffix *-ota* to denote phyla. Addendum to “Proposal to include the rank
168 of Phylum in the International Code of Nomenclature of Prokaryotes”. *Int J Syst*
169 *Evol Microbiol* 2018;68:967-969.

170 **[4] Oren A, Arahall DR, Rosselló-Móra R, Sutcliffe IC, Moore ERB.** Preparing a
171 revision of the International Code of Nomenclature of Prokaryotes. *Int J Syst*
172 *Evol Microbiol* 2021;71:004598.

173 **[5] Tindall BJ.** Names above the rank of genus; the radical approach. *Int J Syst Evol*
174 *Microbiol* 2019;69:1833-1834.