

Draft BioCode (2011): Principles and Rules Regulating the Naming of Organisms

Prepared and edited by

W. Greuter,¹ G. Garrity,² D.L. Hawksworth,³ R. Jahn,⁴ P.M. Kirk,⁵ S. Knapp,⁶
J. McNeill,⁷ E. Michel,⁸ D.J. Patterson,⁹ R. Pyle,¹⁰ & B.J. Tindall¹¹
on behalf of the IUBS/IUMS International Committee for Bionomenclature (ICB)

- 1 Herbarium Mediterraneum, c/o Orto Botanico, Via Lincoln 2/A, I-90123 Palermo, Italy; and Botanischer Garten & Botanisches Museum Berlin-Dahlem, Free University of Berlin, Königin-Luise-Str. 6–8, D-14195 Berlin, Germany; e-mail: w.greuter@bgbm.org
- 2 6162 Biomedical & Physical Sciences Bldg., Michigan State University, East Lansing, Michigan 48824-4320, U.S.A.; e-mail: garrity@msu.edu
- 3 Departamento de Biología Vegetal II, Facultad de Farmacia, Universidad Complutense de Madrid, Plaza Ramón y Cajal, Madrid 28040, Spain; and Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, U.K.; e-mail: d.hawksworth@nhm.ac.uk
- 4 Botanischer Garten & Botanisches Museum Berlin-Dahlem, Free University of Berlin, Königin-Luise-Str. 6–8, D-14195 Berlin, Germany; e-mail: r.jahn@bgbm.org
- 5 CAB International, Bakeham Lane, Egham, Surrey TW20 9TY, U.K.; e-mail: p.kirk@cabi.org
- 6 Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, U.K.; e-mail: s.knapp@nhm.ac.uk
- 7 Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR, Scotland, U.K.; e-mail: j.mcneill@rbge.ac.uk
- 8 International Commission on Zoological Nomenclature, Natural History Museum, London SW7 5BD, U.K.; e-mail: e.michel@nhm.ac.uk
- 9 Biodiversity Informatics, Marine Biological Laboratory, Woods Hole, Massachusetts 02543, U.S.A.; e-mail: dpatterson@mbl.edu
- 10 Department of Natural Sciences, Bishop Museum, 1525 Bernice St., Honolulu, Hawaii 96817, U.S.A.; e-mail: deepreef@bishopmuseum.org
- 11 Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH, Mascheroder Weg 1b, D-38124 Braunschweig, Germany; e-mail: bti@dsMZ.de

PREAMBLE

1. Biology requires a precise, coherent and simple system for the naming of organisms used internationally, dealing both with the nomenclatural terms and with the scientific names that are applied to the individual taxonomic groups of organisms (*taxa*, singular *taxon*).

2. The provisions of this *Code* shall apply to names of all kinds of organisms, whether eukaryotic or prokaryotic, fossil or non-fossil,¹ and of fossil traces of organism (ichnotaxa), that are established (i.e., validly published or made available) and shall govern the choice when names compete among themselves or with earlier names. They shall also, and without limitation of date, provide for the establishment of co-ordinate names within rank groups, for the protection of names, as well as for their correct form.

3. Established names of organisms that are not yet covered by Adopted Lists of Protected Names are in all other respects (including their subsequent typification) governed by the *International Code of Nomenclature of Bacteria* (here:

“bacteriological *Code*”), the *International Code of Botanical Nomenclature* (“botanical *Code*”) or the *International Code of Zoological Nomenclature* (“zoological *Code*”) hereafter jointly called the “Special *Codes*”, depending on the accepted taxonomic position of their type.

4. Separate rules for organismal nomenclature, contained in the *PhyloCode*, are being established by analogy to those in the Special *Codes* but are based on different principles. Any names that may be proposed under the *PhyloCode* have no standing under the *BioCode*.

5. Separate rules for virus nomenclature, contained in *The International Code of Virus Classification and Nomenclature* (virological *Code*) have been established in conformity with Principles I and V of this *Code* and with the thrust of many of its rules. Because names of virus species do not have the binominal form required under this *Code*, and names of virus taxa in other recognised ranks have mandatory terminations according to rank, provisions of the *BioCode* proscribing these terminations for non-virus taxa ensure that the names of viruses and other organisms cannot conflict.

6. The nomenclature of cultivated plants follows the provisions of this *Code*, in so far as these provisions are applicable, but the naming of distinguishable groups of plants whose origin or selection is primarily due to intentional human ac-

¹ In this *Code*, the term “fossil” is applied to a taxon when its name is based on a fossil type and the term “non-fossil” is applied to a taxon when its name is based on a non-fossil type.

tions follows the supplementary provisions contained in the *International Code of Nomenclature for Cultivated Plants* (“cultivated plant *Code*”).

7. The nomenclature of infraspecific taxa (pathovars) of plant pathogenic bacteria is regulated by a set of *International Standards for Naming Pathovars of Phytopathogenic Bacteria* (“plant pathogen *Standards*”).

DIVISION I. PRINCIPLES

Principle I

The *BioCode* governs the formation and choice of scientific names of taxa but not the circumscription, position, or rank of the taxa themselves. Nothing in this *Code* may be construed to restrict the freedom of taxonomic action.

Principle II

Scientific nomenclature of organisms builds upon the Linnaean system of binary names (binomina) for species.

Principle III

The application of names of taxa is determined by means of name-bearing types (hereafter referred to as types), although this principle does not apply to certain names at supra-familial ranks (see Art. 23.1(b)).

Principle IV

The nomenclature of a taxon is based upon priority (precedence by date) of publication, although application of this principle is not mandatory at all ranks (Art. 19.7).

Principle V

Each taxon in the family group, genus group or species group with a particular circumscription, position, and rank has only one accepted name, except as may be specified in a Special *Code*.

Principle VI

Scientific names of taxa are treated as Latin, regardless of their derivation.

Principle VII

The name as applied to a taxon is not to be changed without sufficient reason, based either on further taxonomic studies or on the necessity of giving up a name that is contrary to the Rules of nomenclature.

Principle VIII

In the absence of a relevant rule or where the consequences of rules are doubtful, established custom is followed (see also Div. III.5).

Principle IX

The rules of nomenclature are retroactive, subject to any specified limitations (see also Pre. 2–3).

DIVISION II. RULES

CHAPTER I. TAXA AND RANKS

Article 1

1.1. Every individual organism is treated as belonging to an indefinite number of taxa of consecutively subordinate rank.

1.2. Taxa normally consist of whole organisms in all their life stages, irrespective of the nature of the corresponding name-bearing types. For practical reasons, in some categories of organisms taxa are recognised and can be named that correspond only to parts of organisms, or to definite stages of their life history, or result from their activity. Such taxa are termed parataxa. This *Code* provides, in Art. 31, for names of parataxa of specified categories.

Article 2

2.1. The primary ranks of taxa in descending sequence are: *kingdom, phylum, class, order, family, genus, and species*.

Article 3

3.1. Secondary ranks of taxa, when required, include in descending sequence: *domain* above kingdom, *tribe* between family and genus, *section* and *series* between genus and species, and *variety* and *form* below species.

3.2. Should an even greater number of ranks of taxa be desired, the terms for these are made by adding the prefixes super-, pro-, or sub- (sub- being below pro-) to non-prefixed terms denoting principal or secondary ranks.

Ex. 1. Superfamilies, progenera or subspecies are permitted but not subprospecies or prosubspecies.

3.3. Throughout this *Code*, the following rank groups are recognised: “suprafamilial ranks” (all ranks above the family group); “family-group ranks” (the ranks of family and profamily); “intrafamilial ranks” (all ranks between family group and genus group); “genus-group ranks” (the ranks of genus and progenus); “infrageneric ranks” (all ranks between genus group and species group); “species-group ranks” (the

ranks of species and prospecies); and “infraspecific ranks” (any rank below the species group).

Note 1. Further ranks may be intercalated or added, but designations of taxa in such ranks are not governed by this *Code*.

Recommendation 3A

3A.1. The establishment of new names of infraspecific taxa is strongly discouraged, except in groups in which they are used traditionally.

CHAPTER II. NAMES (GENERAL PROVISIONS)

SECTION 1. STATUS

Article 4

4.1. Established names are those that comply with the requirements of Art. 7–11 (see also Art. 33.2) or that, prior to the starting date defined in those Articles, were validly published or became available under the relevant *Special Code*.

4.2. In this *Code*, unless otherwise indicated, the word “name” means an established name, whether it be acceptable or unacceptable (see Art. 19).

4.3. Acceptable names are established names that are in accordance with the rules, that is, are neither unacceptable under Art. 18 nor illegitimate under the relevant *Special Code*.

4.4. In the family group, genus group, or species group, the accepted name of a taxon with a particular circumscription, position, and rank is the acceptable name which must be adopted for it under the rules (see Art. 19).

Note 1. In ranks not belonging to the family group, genus group, or species group, any established name of a taxon adopted by a particular author is an accepted name (see Art. 19.7).

4.5. The name of a taxon consisting of the name of a genus combined with one epithet is a binomen, the name of a species combined with a second epithet is a trinomen; binomina or trinomina are combinations.

Recommendation 4A

4A.1. In order to denote a clear distinction between scientific names of organisms and designations in common language, scientific names of all ranks should appear in the same distinctive, and preferably italic, type.

SECTION 2. ESTABLISHMENT

Article 5

5.1. In order to be established, a name must be (a) new, (b) have the form required by Art. 23–31, and (c) comply with the special provisions of Art. 7–11.

5.2. On or after the relevant future date to be determined (Div. III.4), case by case, for the various categories of organisms, names, and nomenclatural acts, any name of a new taxon, replacement name, or new combination, and any nomenclatural act (Art. 16.6, 17.4, 18.8 & 19.5), must be registered in order to be established (see Art. 12).

Note 1. Registration does not in itself grant establishment. Upon request or by oversight, names and nomenclatural acts may be registered even though they fail to fulfil all establishment requirements. In such cases, an appositive note will be added to the registration entry (see Art. 13.1).

Note 2. No previous formal publication is required for registration, nor does such publication affect the date or the form and attributes of a registered name.

Recommendation 5A

5A.1. Authors who submit names or nomenclatural acts for registration that have not previously been formally published should expedite formal publication as soon as possible after registration, and should endeavour to provide a reference to that prospective publication in their registration submission.

5A.2. Authors should register new names and nomenclatural acts on acceptance of the corresponding text for formal publication.

5A.3. In the subsequent formal publication of a new taxon of which the name has already been registered, or of new nomenclatural acts, the registration parameters (number, date) should be mentioned, and the spelling and relevant attributes (e.g. type, validating description) of the name should be given exactly as registered.

Article 6

6.1. The establishment of any family-group name is deemed to automatically establish co-ordinate names at the other rank of the family group. The co-ordinate names are formed from the same generic name and have the same authorship and date.

6.2. All subfamily names established under the zoological *Code* are, under the *BioCode*, treated as simultaneously established names of profamilies (Art. 3.2; see also Art. 24 Note 1).

Note 1. Names of subfamilies established under the botanical or bacteriological *Code* maintain the former subfamily termination *-oideae* (Art. 25.1) and are intermediate in rank between profamily and tribe (Art. 3.2).

6.3. The establishment of any genus-group name is deemed to automatically establish an identical co-ordinate name at the other rank of the genus group. The co-ordinate names have the same type, authorship and date.

6.4. All names of subgenera established under the zoological *Code* are, under the *BioCode*, treated as simultaneously established names of progenera (Art. 3.2; see also Art. 26 Note 1).

Note 2. Names of subgenera (subgen.) have the same form as those of other infrageneric taxa, for instance, sections (Art. 27), and are intermediate in rank between progenus and section (Art. 3.2).

6.5. The establishment of any species-group name is deemed to automatically establish a co-ordinate name at the other rank of the species group. The co-ordinate names have identical final epithets, the same type, authorship and date.

6.6. All names of subspecies established under the zoological *Code* are, under the *BioCode*, treated as simultaneously established names of prospecties (Art. 3.2; see also Art. 28 Note 1).

Note 3. Names of subspecies (subsp.) have the same form as those of other infraspecific taxa, for instance, varieties (Art. 29), and are intermediate in rank between prospecties and variety (Art. 3.2).

Article 7

7.1. On or after a future date to be determined (Div. III.4) a name of a new taxon, in order to be established, must be accompanied by a Latin or English description of the taxon, or by a direct and unambiguous bibliographic reference to a previously published Latin or English description that applies to the taxon at a rank belonging to the same rank group (Art. 3.3).

7.2. Art. 7.1 notwithstanding, a direct and unambiguous bibliographic reference to a previously published Latin or English description of an infrafamilial, infrageneric, or infraspecific taxon is sufficient, under the botanical *Code*, to establish a name of a new taxon in the rank of family-group, genus-group, or species-group, respectively, and vice versa (see also Art. 6).

Article 8

8.1. On or after a future date to be determined (Div. III.4) a new combination or a replacement name for a previously established name, in order to be established, must be accompanied by a direct and unambiguous bibliographic reference to its basionym (name-bringing or epithet-bringing synonym) or replaced name, its author and place of original publication.

8.2. In order to be direct and unambiguous, a bibliographic reference must include the page or plate reference (where applicable) and year (in so far as known); for publications with a consecutive pagination, the page reference is a reference to the page or pages on which the basionym was published or on which the protologue¹ is printed, but not to the pagination of the whole publication unless it is coextensive with that of the protologue.

1 Protologue (from the Greek *protos*, first; *logos*, discourse): everything associated with a name in the publication in which it was established.

Note 1. When the basionym or replaced name is a name established by registration, citation of that name with its registration parameters (number, date) is a direct and unambiguous reference.

8.3. The basionym or replaced name may be of a different rank from the new combination or replacement name, but only within a single rank group (as defined in Art. 3.3).

8.4. Art. 8.3 notwithstanding, names of infrafamilial, infrageneric, or infraspecific taxa established under the botanical *Code* can serve as basionyms or replaced names for new combinations or replacement names in the ranks of family-group, genus-group, or species-group, respectively, and vice versa (see also Art. 6).

Article 9

9.1. On or after a future date to be determined (Div. III.4) a name of a new taxon of the rank of genus or below, in order to be established, must be accompanied by the designation of its type (see Art. 14–17). Designation of the type must include one of the words “holotype” (*holotypus*) or “type” (*typus*), or the corresponding abbreviation, and, unless the type is a published illustration, a specification of the institution or collection in which it is conserved.

Article 10

10.1. On or after a future date to be determined (Div. III.4) a name of a new fossil botanical species or subordinate taxon, in order to be established, must be accompanied by an illustration or figure showing diagnostic characters, in addition to the description or diagnosis, or by a bibliographic reference to a previously published illustration or figure. This requirement also applies to names of new non-fossil algal taxa at these ranks.

Recommendation 10A

10A.1 Provision of an illustration or figure showing diagnostic characters is recommended for all new taxa, especially for those of zoological fossils as well as ambiregna² and any microscopic organisms.

Article 11

11.1. Only if the corresponding genus or species name is established can the name of a subordinate taxon be established (but see Art. 30.2).

SECTION 3. REGISTRATION

Article 12

12.1. Registration as mandated by Art. 5.2 is effected (*a*) by submitting a name, with all necessary details (Art. 7–11), or by specifying a nomenclatural act (Art. 16.6, 17.4, 18.8 or

2 Ambiregna organisms are those that are treated under more than one Special *Code* by different taxonomists.

19.5), authored by at least one named person, either in print or in an agreed digital format, to the appropriate Registering Centre (see Annex A¹ and Div. III.8); and (b), complying with the technical requirements of the registering centre.

12.2. Registration will be granted to all submitted names that fulfil these conditions as well as the requirements of Art. 7–11. The procedures are specified in Annex A.

Note 1. Co-ordinate names within a rank group need not be submitted separately.

12.3. The registering centres are empowered to register non-submitted items placed in the public domain that meet the requirements of Art. 7–11 for establishment. They are entitled to do so when the following conditions obtain: (a) new names and nomenclatural acts are clearly identified as such; (b) the authors are named persons; and (c) there is nothing to indicate that new names and nomenclatural acts are not definitely accepted by their author, nor is there any disclaimer to the effect that they are not to be considered as published for nomenclatural purposes.

12.4. Under Art. 5.2, the date of establishment of a new name or of a nomenclatural act is that of its registration, which is the moment in which the relevant information becomes generally available by being placed on a global electronic communication network by the competent registering centre, or published in the relevant official medium.

Article 13

13.1. Entries of registered names and nomenclatural acts cannot be deleted (but see Art. 13.2). However, factual omissions and errors, particularly those that result in non-establishment, will be mentioned in notes added to the registration entry. Subsequently added notes will be dated. Whenever possible, reference will be made to the actual (prior or subsequent) place and date of establishment.

Ex. 1. When the earlier establishment of a supposedly new combination has been overlooked, the entry is maintained but citation of the actual place of establishment is added.

Ex. 2. If the purported basionym of an intended new combination is not an established name, the entry is maintained with a note on failed establishment of the combination.

Ex. 3. When the earlier publication of a supposedly new type designation has been overlooked, the entry is maintained but a reference to the earlier designation is added, and the previously designated name-bearing type, when it differs, is specified.

SECTION 4. TYPIFICATION

Article 14

14.1. The application of names of taxa of the rank of superfamily or below, and of those names of taxa in the higher ranks that are ultimately based on generic names, is determined by means of types (name-bearing types). The unit formed by the name and its type is referred to as the nominal taxon.

14.2. A type is that element to which the name of a taxon is permanently attached, whether it be an accepted name or not.

14.3. A new name based on a previously published acceptable name, for instance, as a new combination or as a replacement for an older name (see Art. 8), is typified by the type of the older name.

Article 15

15.1. The nature of types of names of new taxa is as defined in the relevant *Special Code*.

Article 16

16.1. When the name of a species or subordinate taxon has no acceptable designated type, a type may be designated. Designation must comply with the rules in the relevant *Special Code*.

16.2. When no single type was designated for the name of a new taxon, a lectotype may be designated.

16.3. If a type specimen is lost or destroyed, or is unavailable for consultation for an indefinite period of time, a neotype may be designated to serve as type so long as the original type is unavailable or missing.

16.4. When a type specimen contains parts belonging to more than one taxon, a part of it may be designated as type so as to fix the application of the name.

16.5. When a type cannot be critically identified for purposes of the precise application of the name of a taxon, and it is desirable to fix that application, an epitype may be designated. Suitability of a designated epitype may be challenged (see Div. III.9).

16.6. In order to be established, on and after the relevant starting date for mandatory registration (Art. 5.2), type designations as provided for in Art. 16.1–5 must be registered (Art. 5.1; see also Art. 12).

Article 17

17.1. The type of a name of a supraspecific taxon of generic or lower rank is a nominal species.

¹ This Annex, and those referred to in Art. 21.4, 23.2, 33.3–4, and 34.1–3, will be prepared at later dates, and are not, therefore, included in this *Draft BioCode*.

17.2. The type of a name of a suprageneric taxon the name of which is derived from a generic name is the nominal genus from which it is derived.

17.3. When the name of a supraspecific taxon has no acceptable designated type, a type may be designated. Designation must comply with the rules in the relevant *Special Code*.

17.4. In order to be established, on and after the relevant starting date for mandatory registration (Art. 5.2), type designations as provided for in Art. 17.3 must be registered (Art. 5.1; see also Art. 12).

SECTION 5. HOMONYMY

Article 18

18.1. Homonyms are identically spelled names based on different types. Rank designators are disregarded for the assessment of homonymy, so that names in different ranks can nevertheless be homonyms.

18.2. A family-group, genus-group or species-group name established on or after a future date to be determined (Div. III.3), unless conserved (Art. 21) or otherwise protected, is unacceptable if it is a later homonym, that is, if it, or one of its co-ordinate names, is spelled exactly like a name based on a different type that was previously established for a taxon in the same rank (see also Art. 18.6).

18.3. Two different homonyms may both be acceptable if they were published under different *Special Codes* prior to the date determined in Art. 18.2. However, of different homonyms published under the same *Special Code*, all but the earliest one are unacceptable unless conserved or protected.

Note 1. In the ranks of the species group, a binomen or trinomen that is already established cannot be displaced by transfer of the epithet of an earlier acceptable name whose final epithet¹ would otherwise have to be adopted under Art. 19.4. In such cases, the resultant combination would be unacceptable as a later homonym (see also Rec. 18A).

18.4. A name of an infrageneric taxon is unacceptable, irrespective of its date, if it has the generic name as its epithet but is based on a different type (but see Rec. 18B.1).

18.5. A name of an infraspecific taxon is unacceptable, irrespective of its date, if it has the same final epithet as the species name but is based on a different type (but see Rec. 18B.2).

18.6. When two or more species-group names based on different types are so similar that they are likely to be confused (parahomonyms) they are treated as homonyms.

Note 1. This provision does not apply to genus-group names, except as provided by Art. 18.7.

18.7. When it is doubtful whether species-group or genus-group names are parahomonyms (see Div. III.9) they may be submitted to the appropriate committee(s) (Div. III.9) to obtain a binding decision.

18.8. When two or more homonyms have the same date, precedence between them is established in conformity with the relevant *Special Code*. On or after the relevant starting date for mandatory registration (Art. 5.2), any new choice between homonyms of the same date must be registered (Art. 12) in order to take effect.

Recommendation 18A

18A.1. Later homonyms which, being acceptable under the relevant *Special Code*, are in current use should not be abandoned but proposed for conservation (Art. 21).

18A.2. Prior to the date determined in Art. 18.2, authors should refrain from establishing new names that are homonyms of acceptable names established under a different *Special Code*.

18A.3. In choosing between homonyms in ranks where the principle of priority is not mandatory, authors should nevertheless follow that principle, unless the result would be nomenclaturally disruptive and contrary to established tradition.

Recommendation 18B

18B.1. When establishing the name of a new progenus, authors should refrain from using the epithet of a name previously established for an infrageneric taxon of the same genus, based on a different type.

18B.2. When establishing the name of a new prospecies, authors should refrain from using the epithet of a name previously established for an infraspecific taxon of the same species, based on a different type.

SECTION 6. PRECEDENCE

Article 19

19.1. For purposes of priority the date of a name is either the date attributed to it in an Adopted List of Protected Names (Art. 20) or, for unlisted names established prior to the relevant starting date for mandatory registration (Art. 5.2), the date on which it was validly published or became available under the relevant *Special Code*, or the date on which it was established, on or after that same date, under the *BioCode*. Limitations of priority that under the *Special Codes* affect names in certain groups or of certain categories, even if not provided for in the *BioCode*, still apply.

19.2. Competing names are acceptable names with types that belong to the same taxon. At family-group, genus-group and

¹ Here and elsewhere in this *Code*, the phrase “final epithet” refers to the last epithet in sequence in any particular combination, in any rank lower than genus.

species-group ranks, the choice between competing names of the same rank is governed by the principle of priority of establishment.

Note 1. Under the principle of co-ordinate status (Art. 6), co-ordinate names in the other rank of the same rank group are automatically established and accordingly take the same date in both ranks of the group.

19.3. For any taxon in one of the ranks of the family or genus group, the accepted name is the earliest acceptable one that competes at that rank, except in cases of limitation of precedence under Art. 20–24, or where Art. 31 applies.

19.4. For any species-group taxon, the accepted name is the combination of the final epithet of the earliest acceptable name that competes at that rank, with the accepted name of the genus or species to which it is assigned, except (a) in cases of limitation of precedence under Art. 20–24, or (b) if the resulting combination cannot become established under Art. 28.2, or (c) would be unacceptable as a later homonym as defined in Art. 18, or (d) if Art. 31 rules that a different combination be used.

19.5. When, for any taxon of the family group, genus group or species group, a choice is possible between acceptable names of equal date, or between final epithets of acceptable names of equal date, the first such choice to be published before the relevant starting date for mandatory registration (Art. 5.2) in conformity with the relevant *Special Code*, or if there is none, the first registered choice under the *BioCode* (Art. 12) establishes the precedence of the chosen name, and of any acceptable combination with the same type and final epithet at that rank, over the other competing name(s).

19.6. Names of organisms (animals and algae excepted) based on a non-fossil type take precedence over names of the same rank based on a fossil (or subfossil) type (see also Art. 31.2).

19.7. The principle of priority is not mandatory for names of taxa not belonging to the family group, genus group or species group.

Recommendation 19A

19A.1. Authors should follow the principle of priority also when it is not mandatory, unless the result would be nomenclaturally disruptive and contrary to established tradition.

Article 20

20.1. In order to stabilise the nomenclatural status of names in current use, and to prevent their being displaced by names no longer in use, Lists of names and their attributes may, after apposite public review, be submitted to the ICB for adoption (see Div. III.9).

Ex. 1. The Approved Lists of Bacterial Names (see Rule 24a of the

bacteriological *Code*) are, for all events and purposes, equivalent to the Adopted Lists provided for in the *BioCode*.

Ex. 2. The Lists of Available Names in Zoology (see Art. 79 of the zoological *Code*) are, for all events and purposes, equivalent to the Adopted Lists provided for in the *BioCode*.

Ex. 3. The list of Names in Current Use in the *Trichocomaceae* (fungi) to which special status has been granted by the 1993 International Botanical Congress (Regnum Veg. 128: 13–57. 1993; see the Tokyo edition of the botanical *Code*, p. x) is, for all events and purposes, equivalent to an Adopted List as provided for in the *BioCode*.

20.2. Once a List has been adopted, all listed names and their co-ordinate names are protected. A protected name is treated as if conserved against earlier homonyms and unlisted competing names; it is treated as established in the place and on the date cited in the list; and its type, when listed, its spelling and, if specified, its gender are treated as if conserved.

20.3. Protection can, for individual lists, be restricted with respect to the options set out in Art. 20.2, and particular entries on a list can be exempted from protection. Such restrictions and exceptions are to be specified.

20.4. Once a list has been adopted, entries can be added, modified or removed only by the mechanisms of conservation or suppression of names (Art. 21–23). Specified restrictions and exceptions can be waived or modified only upon recommendation of the appropriate committee.

20.5. An earlier homonym of a protected name does not lose its status of an established name, but the precedence of the two homonyms is inverted by protection.

20.6. When, for a taxon of the family or genus group, two or more protected names compete, Art. 19.3 governs the choice of name (see also Art. 20.9).

20.7. When, for a taxon of the species group, two or more protected names and/or two or more names with the same final epithet and type as a protected name compete, Art. 19.4 governs the choice of name.

20.8. The date of protection does not affect the date of a protected name, which is the date of its establishment (Art. 19.1).

20.9. A name which is neither protected nor has the same type and final epithet as a protected name in the same rank may not be applied to a taxon that includes the type of a protected name in that rank unless the final epithet of the latter cannot be used in the required combination (see Art. 19.4(b–c)).

20.10. Conservation and suppression (Art. 21) override protection.

Article 21

21.1. Conservation or suppression of names, nomenclatural acts or publications can suspend the application of the rules to names of taxa of the family group, genus group and species group. Conservation also permits the amendment of Adopted List of names (Art. 20).

21.2. Provisions for the conservation and suppression of names, and mechanisms for implementing them, are detailed in the Special Codes (see Div. III.9).

Article 22

22.1. A name that has been widely and persistently used for a taxon or taxa not including its type is not to be used in a sense that conflicts with current usage unless and until a proposal to deal with it under Art. 21 has been submitted and rejected.

CHAPTER III. RANK GROUPS AND THEIR NAMES

SECTION 1. TAXA ABOVE THE RANK OF FAMILY

Article 23

23.1. Names of taxa above the rank of family are treated as nouns in the plural and are written with a capital initial letter. They may be either (a) typified names (see Art. 14.1) that are formed by adding a termination denoting their rank to the genitive singular stem of a generic name, or exceptionally to the whole name; or (b) typeless (“descriptive”) names that are formed differently, apply to taxa defined by circumscription, and may be used unchanged at different ranks.

23.2. For typified names, the name of a subphylum that includes the type of the accepted name of a phylum, the name of a subclass that includes the type of the accepted name of a class, or the name of a suborder that includes the type of the accepted name of an order, are to be based on the same type.

23.3. The typified name of a phylum or subphylum is formed from the same generic name as an acceptable name of an included class. The phylum name termination is *-mycota* for fungi, *-phyta* for other botanical taxa, and *-zoa* for animals. The subphylum name termination is *-mycotina* for fungi, *-phytina* for other botanical taxa, and *-zoina* for animals.

23.4. The typified name of a class or subclass is formed from the same generic name as an acceptable name of an included order. The class name termination is *-mycetes* for fungi, *-phyceae* for algae, and *-opsida* for other botanical taxa and all animals. The subclass name termination is *-mycetidae* for fungi, *-phycidae* for algae, *-idae* for other botanical taxa, and *-zoidae* for animals.

23.5. The typified name of an order, suborder, or superfamily is formed from the same generic name as an acceptable name of an included family. For all groups, the order name termination is *-ales*, the suborder name termination *-ineae*, and the superfamily name termination *-oidea*.

23.6. The name of a taxon above the rank of family may not have the termination *-virinae*, *-virales*, or *-viridae*, because these terminations are reserved for the names of viral taxa (see Pre. 4).

Note 1. Names of taxa above the rank of family that do not conform to the standards set out in Art. 23.3–23.6 are acceptable as descriptive names (Art. 23.1(b)).

23.7. When a typified suprafamilial name is published with a Latin termination not agreeing with the provisions of this Article, the termination is changed to accord with it, but the name retains its authorship and date.

Note 2. For suprafamilial names of ambireginal taxa (Rec. 10A, footnote), the alternative use of the terminations *-mycota* or *-phyta* and *-zoa* (for phyla), *-mycotina* or *-phytina* and *-zoina* (for subphyla), *-mycetes* or *-phyceae* and *-opsida* (for classes), *-mycetidae* or *-phycidae* and *-zoidae* (for subclasses) is authorised, irrespective of the Special Code otherwise used by a given author.

Recommendation 23A

23A.1. The terminations provided in Art. 23.3–23.5 should not be used in typeless, descriptive names of any rank above family.

SECTION 2. FAMILY-GROUP TAXA
AND INFRAFAMILIAL TAXA

Article 24

24.1. Family-group names are treated as nouns in the plural and are written with a capital initial letter. They are formed by adding a termination denoting rank to the genitive singular stem of a generic name, or to the whole name if necessary to avoid homonymy.

The family name termination is *-aceae* for all botanical and bacteriological taxa, *-idae* for zoological taxa.

The profamily name termination is *-idieae* for all botanical and bacteriological taxa, *-inae* for zoological taxa.

Note 1. Names of subfamilies established under the zoological Code are, under the BioCode, treated as simultaneously established names of profamilies (Art. 6.2). For practical purposes, subfamily and profamily are, for these names, treated as one and the same rank. However, names of subfamilies established under the botanical or bacteriological Code are not equivalent to names of profamilies and remain outside the family-group ranks.

24.2. The name of a family may not have the termination *-viridae*, and the name of a profamily may not have the termina-

tion *-virinae*, because these terminations are reserved for the names of viral taxa (see Pre. 4).

24.3. When a name is published with a Latin termination not agreeing with the provisions of this Article, the termination is changed to accord with it, but the name retains its authorship and date.

Note 2. For family-group names of ambiregnal taxa (Rec. 10A, footnote), the alternative use of the terminations *-aceae* and *-idae* (for families), *-idae* and *-inae* (for profamilies) is authorised, irrespective of the *Special Code* otherwise used by a given author.

Article 25

25.1. The name of an infrafamilial taxon is a noun in the plural and is written with a capital initial letter. It is formed in the same way as a name of a family-group taxon, but by adding a different termination to denote rank:

The subfamily name termination is *-oideae* for all botanical and bacteriological taxa, *-inae* for zoological taxa.

The tribe name termination is *-eae* for all botanical and bacteriological taxa, *-ini* for zoological taxa.

The subtribe name termination is *-inae* for all botanical and bacteriological taxa, *-ina* for zoological taxa.

25.2. The name of an infrafamilial taxon that includes the type of the accepted name of the family is to be based on the same type as the family name.

25.3. The name of a subtribe may not have the termination *-virinae*, which is reserved for the names of viral taxa (see Pre. 4).

25.4. When a name is published with a Latin termination not agreeing with the provisions of this Article, the termination is changed to accord with it, but the name retains its authorship and date.

Note 1. For infrafamilial names of ambiregnal taxa (Rec. 10A, footnote), the alternative use of the terminations *-oideae* and *-inae* (for subfamilies), *-eae* and *-ini* (for tribes), *-inae* and *-ina* (for subtribes) is authorised, irrespective of the *Special Code* otherwise used by a given author.

SECTION 3. GENUS-GROUP TAXA AND INFRAGENERIC TAXA

Article 26

26.1. The name of a genus is a noun in the singular, or a single word treated as such, and is written with a capital initial letter. It may not have the termination *-virus*, which is reserved for the names of viral genera (see Pre. 4).

26.2. The name of a progenus has the same form as a generic name and stands on its own. However, it may not be used as the first term in a binomen or trinomen. It may be interpolated in parentheses between the terms of a binomen, optionally

preceded by the rank designator “progenus” (progen.), but is not for nomenclatural purposes a part of that binomen.

Note 1. Names of subgenera established under the zoological *Code* are, under the *BioCode*, treated as simultaneously established names of progenera (Art. 6.4). For practical purposes, subgenus and progenus are, for these names, treated as one and the same rank. However, names of subgenera established under the botanical or bacteriological *Code* are not equivalent to names of progenera and remain outside the genus-group ranks.

Note 2. Under Art. 1.1 every progenus is considered to belong to a given genus, but this affiliation is not reflected in its name. Transfer of a progenus from one genus to another does not therefore require a nomenclatural act.

Article 27

27.1. The name of an infrageneric taxon (subgenus, section, subsection, series or subseries) is a combination of a generic name and an epithet, the two being connected by the term denoting the rank. The epithet is either of the same form as a generic name, or a plural adjective. It is written with a capital initial letter. For practical purposes the generic name may be omitted in citation.

27.2. Adjectival epithets agree in gender with the generic name. Errors in inflection are to be corrected, but the name retains its authorship and date.

27.3. The name of an infrageneric taxon that includes the type of the accepted name of the genus is to repeat the generic name unchanged as its epithet. Such names are termed autonyms.

27.4. The epithet in the name of an infrageneric taxon may not repeat unchanged the accepted name of the genus to which the taxon is assigned unless the two names have the same type.

SECTION 4. SPECIES-GROUP TAXA AND INFRASPECIFIC TAXA

Article 28

28.1. The name of a species consists of a generic name followed by a single word as specific epithet. The epithet may have the form of an adjective, a noun in the genitive, or a word in apposition; it is written with a lower-case initial letter.

28.2. In a name of a botanical taxon, ambiregnal taxa (Rec. 10A, footnote) excepted, the specific epithet may not exactly repeat the generic name.

28.3. A name of a prospecies consists of the name of the species followed by a final epithet having the same form as a specific epithet.

Note 1. Names of subspecies established under the zoological *Code* are, under the *BioCode*, treated as simultaneously established names

of prospecies (Art. 6.6). For practical purposes, subspecies and prospecies are, for these names, treated as one and the same rank. However, names of subspecies established under the botanical or bacteriological *Code* are not equivalent to names of prospecies and remain outside the species-group ranks.

Note 2. Insertion of the rank-denoting term “prospecies” (prosp.) between the binomen and the final epithet is unnecessary.

28.4. In a species-group name, the final epithet, when adjectival in form and not used as a noun, agrees grammatically with the generic name. Errors in inflection are to be corrected, but the name retains its authorship and date.

Article 29

29.1. The name of an infraspecific taxon is a combination of the name of a species and a final epithet, both being connected by a rank-denoting term. The epithet has the same form as a species-group epithet. Art. 28.4 applies by analogy.

29.2. The name of an infraspecific taxon that includes the type of the accepted name of the species is to repeat the specific epithet unchanged as its epithet. Such names are termed autonyms.

29.3. The final epithet in the name of an infraspecific taxon may not repeat unchanged the epithet of the accepted name of the species to which the taxon is assigned unless the two names have the same type.

CHAPTER IV. PROVISIONS FOR SPECIAL GROUPS

Article 30

30.1. Names for hybrids between different taxa of specific or lower rank, including their progeny, are provided for in the botanical *Code*. Except for some special rules, the nomenclature of these hybrids follows the same principles as that of non-hybrid taxa.

Note 1. The zoological and bacteriological *Codes* do not provide for the naming of hybrids.

30.2. Designations of hybrid taxa in supraspecific ranks that equivalent to condensed formulae, or have condensed formulae as their epithets, and are determined by a statement of parentage under the botanical *Code* (Art. H7 & H9), are not established names under the *BioCode*. However, Art. 11 notwithstanding, names of species placed under such designations retain their status of established names under the *BioCode*.

Note 2. Distinguishable groups of cultivated plants and fungi, whose origin or selection is primarily due to the intentional actions of mankind (e.g., cultivars and cultivar-groups), are not covered by this

Code, but are denominated under the provisions of the *International Code of Nomenclature for Cultivated Plants*.

Article 31

31.1. Names based on any part of an organism or portion of its life history are treated as applicable to the whole organism and compete for precedence as provided for in Art. 19–24, unless the relevant *Special Code* provides otherwise.

31.2. Fossil non-algal botanical taxa are parataxa, which for nomenclatural purposes comprise only those parts, life-history stages, or preservation states of organisms that are represented by the corresponding name-bearing types.

Note 1. When a name, under the relevant *Special Code*, applies only to that part of an organism or portion of its life history represented by its type, it is considered as the name of a parataxon.

Note 2. The botanical *Code* currently provides for parataxa of certain groups of fungi with a pleomorphic life-cycle and of plant fossils. The zoological *Code* provides for taxa for the fossilised work of organisms (ichnotaxa).

CHAPTER V. ORTHOGRAPHY AND GENDER OF NAMES

Article 32

32.1. For the purpose of the *BioCode*, orthographical variants are defined as the various spelling, compounding, and inflectional forms of a name or its epithet (including typographical errors), only one type being involved. Confusingly similar names based on the same type are also treated as orthographical variants.

Note 1. For confusingly similar names based on different types, see Art. 18.6 and 18.7.

32.2. Every established name is deemed to have a single correct orthography. Its variants are treated as correctable errors. The correctability of orthographical variants of names established prior to a future date to be determined (Div. III.3) is specified in the relevant *Special Codes*. The corresponding provisions remain applicable under the *BioCode*, complemented by those of Art. 33 (see also Art. 20.2 and 21.2).

32.3. Correctable orthographical variants of a name are to be corrected to the established form of that name. Whenever such a variant appears in print, it is to be treated as if it were printed in its corrected form.

Article 33

33.1. The original spelling of a name or epithet is to be retained, except for the correction of typographical or ortho-

graphical errors, the standardisation of terminations required by Art. 23.7, 24.3, 25.4, 27.2, 28.4, and 29.1 (see also Art. 32), and the corrections provided for by the relevant Special *Code*.

Note 1. For names established on or after the relevant starting date for mandatory registration (Art. 5.2), the words “original spelling” in this Article mean the spelling employed when the name is submitted for registration. Any corrections and standardisations required under Art. 33.1 are made during the registration process.

Article 34

34.1. A generic name is treated as a noun with either masculine or feminine or neuter gender. Gender is established on the basis of classical Latin and Greek grammar, when applicable, and by subsequent biological usage (see also Annex C). In case of doubt, the gender assigned by the author of the name or, failing this, by the first subsequent author to assign a gender to the name, is accepted (see also Art. 20.2, 21.2, and Annex C).

34.2. Compound generic names take the gender of the last word in the nominative case in the compound. The most usual words used in compounding generic names, together with their gender, are listed in Annex C.

34.3. The gender of generic names often depends on their termination. For those terminations for which a particular gender is defined in the Special *Codes*, that gender must be accepted. The most usual terminations used in forming generic names, together with their gender, are listed in Annex C (see also Art. 20.2 and 21.2).

34.4. When a new generic name is submitted for registration without indication of gender, or with an indication of gender that is contrary to the *Code*, the gender is assigned or corrected during registration.

CHAPTER VI. AUTHORSHIP OF NAMES

Article 35

35.1. In publications dealing with the taxonomy and nomenclature of organisms, it may be desirable to cite the name of the author(s) who established the name concerned and the year of its establishment. For author citation, the rules of the relevant special *Code* apply, in addition to the provisions in the present Article.

35.2. When a name of a taxon is jointly authored by two persons, both author names are cited, linked with an ampersand (&) or the word “*et*”. When a name of a taxon has three or more authors, in subsequent citations only the first needs to be cited, followed by the phrase “& al.” (or *et al.*).

35.3. When a taxon of rank lower than progenus is altered in rank, or when its epithet is transferred to another genus or

species, the names of the authors of the basionym (name- or epithet-bringing acceptable name), and optionally its year, are placed in parentheses. After the parenthesis, the authorship and year of the alteration or transfer may be added.

Recommendation 35A

35A.1. Inclusion of the name of persons other than the actual author or authors, linked to the latter by the particle “*ex*”, is provided for in the Special *Codes*. As the prescribed order of names differs between the *Codes*, so that confusion may result, this practice is discouraged under the *BioCode*.

35A.2. Author citations should be used sparingly in publications dealing with the taxonomy and nomenclature of organisms, and should be omitted in other publications unless they are necessary to avoid confusion.

DIVISION III. AUTHORITY

1. The *BioCode* is established under the joint authority of the International Union of Biological Sciences (IUBS) and of the International Union of Microbiological Societies (IUMS), to be exercised through an inter-union International Committee on Nomenclature (ICB).

2. The ICB is a non-governmental organisation (NGO) consisting of up to 20 members, with a balanced representation of the main groups of organisms covered by the Special *Codes*. It operates in close contact with the General Committee on Botanical Nomenclature (GCBN), the International Commission on Zoological Nomenclature (ICZN), the International Committee on Systematic Bacteriology (ICSB), the International Commission for the Nomenclature of Cultivated Plants (ICNCP), and the International Committee on the Taxonomy of Viruses (ICTV).

3. The *BioCode* takes effect upon being approved by an International Congress of Systematic and Evolutionary Biology (ICSEB), or any Congress that may in the future take its place, subject to ratification at the subsequent IUBS General Assembly or appropriate IUMS Divisional Congress.

4. The dates on which individual provisions of the *BioCode* (Art. 5.2, 7.1, 8.1, 9.1, 10.1, 16.6, 17.4, 18.2, 18.8, 32.2) take effect, for any particular purpose or group of organisms, are determined by the ICB, which will ensure that notice of such dates and of any relevant procedures be disseminated worldwide at least one year in advance. The ICB has also power to suspend the effect of any such provision, should this become necessary, and to designate Registration Centres for defined groups of organisms (Art. 12.1; see Div. III.8).

5. The ICB has power to resolve present and future ambiguity concerning the provisions of the *BioCode*. In case of those organisms that have been or still are treated under different

Special *Codes* by different workers, it will consult and seek to establish consensus among the specialists in the groups concerned. Based on these consultations, it shall – for nomenclatural purposes only – assign each controversial group of organisms to the jurisdiction of one of the Special *Codes*.

6. The first and future editions of the *BioCode* are published under the auspices of the International Organisation for Systematic and Evolutionary Biology (IOSEB), or any future successor organisation.

7. The ICB has power to edit future editions of the *BioCode*, and to amend its provisions where necessary. Any proposed change of substance must, however, be subject to public discussion before being approved by an ICSEB, or any Congress that may in the future take its place, and ratified by the subsequent IUBS General Assembly or appropriate IUMS Divisional Congress.

7.1. The ICB will act on the proposals in the light of these opinions, a 60% majority of voting members being required for the approval of a change, when a quorum of 50% of members will apply.

7.2. Any adopted change that is not of a retroactive nature will take effect from a date determined by the ICB.

8. The ICB will operate in close contact with the Registering Centres (Annex A), when they exist, and will assist in setting up those that are wanting for a complete coverage of all groups of organisms. It will ensure that the technical requirements defined by each registering centre are compatible with user requirements and the letter and spirit of the *BioCode*.

9. The ICB will not interfere with the activities of the nomenclature committees operating under the authority of the Special *Codes*, and will refrain from setting up similar structures under its own authority unless and until such a committee should cease to function. It will transmit to the pertinent nomenclature committee any request for the conservation or suppression of individual names, publications or nomenclatural acts (Art. 21), and seek its opinion and advice before adopting any List (Art. 20) or acting on any challenge of an epitype designation (Art. 16.5).