CONSPECTUS SYSTEMATIS POLYPORACEARUM

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Summary: The system of the family *Polyporaceae* is presented and the overview of the order *Polyporales* is carried out. The family *Polyporaceae* s. str. was subdivided into three subfamilies, *Polyporoideae*, *Trametoideae*, and *Lopharioideae*. The largest subfamily *Polyporoideae* was subdivided into the tribes *Polyporeae*, *Epitheleae* (trib. nov.), *Lentineae*, and *Ganodermateae*. In the *Polyporaceae* family, two new genera were described as *Pilatotrama* and *Szczepkamyces*. Such subgenera as *Cerioporus* subgen. *Datronia*, *Lentinus* subgen. *Polyporellus*, *Ganoderma* subgen. *Haddowia*, *Ganoderma* subgen. *Humphreya* were informally described too. In the *Polyporales* order overview, such families as *Ischnodermataceae*, *Incrustoporiaceae*, large *Fomitopsidaceae*, *Gelatoporiaceae*, *Grifolaceae*, *Polyporaceae*, and large *Meruliaceae* were recognized. In the *Polyporales* overview, a range of new genera was described as *Gloeoporellus* (*Incrustoporiaceae*), *Ranadivia* (*Fomitopsidaceae*), *Cinereomycetella* (*Gelatoporiaceae*), *Efibulella*, *Hermanssonia*, *Pappia*, *Resiniporus*, *Trullella*, *Vitreoporus* (*Meruliaceae*). In total, 85 new combinations were made. The problem of taxa ranking in the *Polyporales* was proposed for further theoretical discussion.

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Nomenclatural novelties

Foreword

The present «Conspectus» opens a series of author's references to the system of an important group of basidiomycetes in period when the consensus in an understanding of higher taxa becomes a real issue. We came to the necessity of binary numbering of our system updates that would help follow a new data accumulation. The current version (1.0) has a taxonomical slice on the state of September 2018. Possible modifications of this version (1.1, 1.2...) will mainly involve a development of generic bibliography, Internet-linkage of references, and author's echo on the community response on the version 1.0. More significant updates of the system (v. 2.0, 3.0, etc.) in our opinion, would make any sense in longer time intervals. As practice shows, in accordance to the modern information exchange intensity, a sufficiently new taxonomic knowledge can substantially accumulate no earlier than in 3–5-year intervals.

In the present work, the author has intended to generalize his thinkings that emerged during 25-year testing of the group. A great attention to the history of the taxonomy of *Polyporaceae* family the author considers being justified, at least for the purpose of showing a certain periodicity of splitter's and enlarger's taxonomical fashions. The author is convinced that a manifestation of taxonomical rank still remains a refuge of subjectivism on the background of progress in the development of reproducible molecular-cladistic procedures. This issue also included the focus of the author's discussion. All the presented taxonomical innovations, according to author's intention, carry a minimum of provocative elements and basically are designed to close remaining windows in the nomenclatural lining of GenBank phylogenetic datasets. We hope that publication of this overview will be an occasion for more intensive information exchange between main research teams, especially in the field of taxa ranking methodology.

Chapter 1

History of taxonomy of the family *Polyporaceae*

Several fungal species considered currently within the *Polyporaceae* family were known to pre-Linnean authors. The knowledge on some species of tinder fungi dates back to prehistoric times what has a number of ethnobotanical evidence (Peintner et al., 1998). The type genus of the family, *Polyporus* without a rank indication was established by P. A. Micheli (1729), and his polynomial «*Polyporus esculentus*, *exogenous*, *perenni and tuberosa radice in fungulos menses plerum nascens*, *superne rufescens*, *interne simul cum pediculo albus*» was recognized by the Fries as *Polyporus tuberaster* (Fries, 1821). As a genus type, this species was selected by Donk (1933: 124), and such a typification was adopted by Ryvarden (1991; see Figure 1).[1]

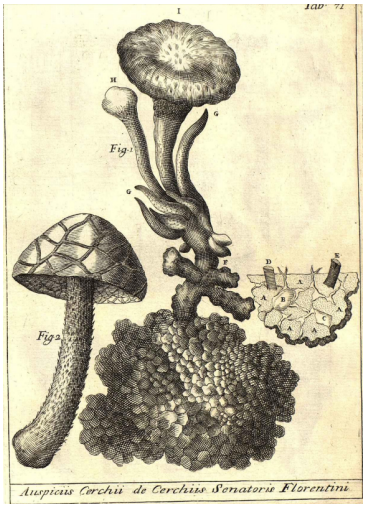

Figure 1. Micheli's figure, selected as a lectotype of the genus *Polyporus* by Donk and Ryvarden (on the right under the designation «Fig. 1») (Micheli, 1729, pl. 71, 1).

In his earlier works (in particular, the «Flora Lapponica»), Linnaeus (1737) gives a polynomial description of the range of tinder fungi in the *Boletus* section (e.g., «*Boletus acaulis*, *superne laevis*, *salici insidens*» currently known as *Trametes suaveolens*). In the section «Cryptogamia, Fungi» of his «Species Plantarum» (Linnaeus, 1753), this author has established 10 genera, whereas the polyporaceous fungi in this system were distributed within two genera, *Agaricus* and *Boletus*, receiving a binomial representation (Table 1).

[1] The analysis of this figure shows that it depicts the hat form of *Cerioporus rangiferinus* (Zmitrovich et al., 2017) since the branching of the stem and the formation of sterile processes are not characteristic of the *Polyporus tuberaster*. Accordingly, the iconotype of *Polyporus* is doubtful.

Table 1

Polyporaceous fungi in Linnean system (1753)

Genera, sections	Species
Agaricus (sect. *Parasitici*, *acaules*, *dimidiati*)	*A. quercinus*, **A. betulinus*, *A. alneus*
Boletus (sect. *Acaules*, *parasitici*)	**B. suberosus*, **B. fomentarius*, *B. igniarius*, **B. versicolor*, **B. suaveolens*

Note. The species, currently considered within *Polyporaceae*, are marked with asterisk.

In framework of the two Linnean genera, the systematics of polyporaceous fungi has developed over the next 60 years (Schäffer, 1774; Bulliard, 1782; Bolton, 1790; Sowerby, 1815; Persoon, 1794, 1796, 1801, 1822).

Table 2

Polyporaceous fungi in Persoon' system (1801)

Boletus sections	Species
A. *Pileo pulvinato-carnoso, a tubis elongates facilo se disingesto*	*B. annulatus*, *B. cortinatus*, *B. cinereus*, *B. aurantius*, *B. scaber*, *B. circinans*, *B. subtomentosus*, *B. radicans*, *B. piperatus*, *B. reticulatus*, *B. constrictus*, *B. felleus*, *B. edulis*, *B. aereus*, *B. amarus*, *B. luridus*, *B. erythropus*, *B. rubeolarius*
B. *Pileo carnoso, coriaceo, subsuberoso, tubis subbrevibus, cum pilei substantia connexis*	*B. carinthiacus*, **B. tuberaster*, *B. cinnamomeus*, *B. leucomelas*, *B. albidus*, *B. ovinus*, *B. constrictus*, *B. fuligineus*, **B. infundibuliformis*, **B. melanopus*, **B. brumalis*, *B. lacteus*, *B. fasciculatus*, *B. perennis*, *B. fimbriatus*, **B. arcularius*, **B. nummularius*, **B. leptocephalus*, **B. umbellatus*, **B. polycephalus*, **B. frondosus*, **B. giganteus*, **B. platyporus*, *B. cristatus*, *B. floriformis*, *B. lividus*, *B. marginatus*, *B. igniarius*, *B. betulinus*, **B. fomentarius*, **B. lipsiensis*, *B. conchatus*, *B. velutinus*, *B. lutescens*, **B. ochraceus*, **B. versicolor*, **B. cinnabarinus*, **B. sanguineus*, **B. badius*, **B. varius*, *B. lateralis*, *B. croceus*, *B. rutilans*, *B. caesius*, *B. mollis*, *B. hispidus*, *B. fuscus*, *B. triqueter*, *B. alneus*, *B. carpineus*, *B. adustus*, *B. fumosus*, **B. suaveolens*, *B. amaricans*, *B. purgans*, *B. odoratus*, **B. polymorphus*, *B. abietinus*
C. *Poria*	*B. favus*, *B. cryptarum*, *B. destructor*, *B. salicinus*, *B. spongiosus*, *B. ferruginosus*, *B. contiguus*, *B. vitreus*, *B. tuberculosus*, *B. fimbriatus*, *B. vaporarius*, *B. incarnatus*, *B. nitidus*, *B. radula*, *B. molluscus*, *B. byssinus*, *B. subtilis*, *B. reticulatus*, *B. obliquus*
D. *Polyporus*	*B. ramosus* (sensu Bull.)
E. *Fistulina*	*B. hepaticus*

Note. The species, currently considered within *Polyporaceae*, are marked with asterisk.

The Persoon's works are distinguished by wide range coverage of currently known fungal diversity as well as by development of intraspecies systematics. Thus, in fundamental survey called «Synopsis methodica fungorum» (Persoon, 1801), this author gives 93 species of polyporaceous fungi and distinguishes 5 units (correlating with section rank in modern taxonomy) in the *Boletus* genus, where he incorporates these species (Table 2). The most of polyporaceous fungi he places into unnamed section B, characterized as follows: «*Pileo carnoso, coriaceo, subsuberoso, tubis subbrevibus, cum pilei substantia connexis*». To the section *Polyporus* Persoon refers only one species, *Boletus ramosus* in Bulliard's sense (modern name *Laetiporus sulphureus*). In addition, he established such *Boletus* sections as *Poria* and *Fistulina* in which (in Persoonian interpretation) there are no species currently considered within polyporaceous fungi.

The works by Fries and, first of all, his fundamental survey «Systema Mycologicum» (Fries, 1821) is of prime importance for the taxonomy of polyporaceous fungi. In the family *Polyporaceae* (called *Polyporei*), Fries has included 3 genera, *Daedalea*, *Polyporus* and *Fistulina*, whereas the largest in created system genus *Polyporus* he has divided into 3 subgenera, *Favolus*, *Microporus* and *Polysticta*, differing in size and nature of the pores (large and often hexagonally-elongated in *Favolus*, medium to small-sized in *Microporus*, and cup-shaped in *Polysticta*). The genus *Microporus* was divided into tribes *Mesopus* (central stipe), *Pleuropus* (lateral stipe), *Merisma* (branched multipileate stipe), *Apus* (fruit bodies sessile) and *Resupinatus* (fruiting bodies dorsally attached). In accordance with fruit body consistency, the largest tribe *Apus* (58 species) was subdivided by *Fries* into series *Carnosi*, *Subcarnosi*, *Subsuberosi*, *Coriacei*, and *Subcoriacei* (Table 3).

In the continuation of this work entitled as «Elenchus fungorum, sistens commentarium in Systema mycologicum», Fries has raised the rank of the subgenus *Favolus* to generic one (Fries, 1828), and three years earlier (Fries, 1825) he describes the genus *Lentinus* within tribe *Omphalina* of the *Agaricus* genus, noting its similarity to the genus *Polyporus* («*Favoli very absolute agaricini, Polypori autem favoloidei ab hoc genere neutiquam separari debent*»).

In his «Flora Scanica» work, Fries describes the genera of *Trametes* and *Lenzites* (Fries, 1835), whereas in «Genera Hymenomycetum» work this great mycologist gives an extended discussion of the differences between the genera he distinguished from the *Daedalea* genus, paying a great attention to hymenophore description (labyrinthine in the *Daedalea* genus, lamellar in *Lenzites*, and more or less tubular in *Trametes*) (Fries, 1836).

Within further works in which Fries refers to the classification of polyporaceous fungi, the mention should be made on «Epicrisis Systematis Mycologici seu Synopsis Hymenomycetum» (Fries, 1838).

Table 3

Polyporaceous fungi in Friesian (1821) system

Genera	Subgenera	Sections («tribes»)	Species
Daedalea	–	*Stipitatae*	*Daedalea maxima*, *D. biennis*, *D. sowerbei*, **D. brasiliensis*
		Dimidiatae	*D. quercina*, **D. betulina*, *D. sepiaria*, *D. abietina*, *D. striata*, *D. trabea*, **D. elegans*, **D. palisoti*, **D. buillardii*, *D. thunbergii*, **D. confragosa*, *D. pini*, *D. cinerea*, **D. variegata*, **D. saligna*, **D. suaveolens*, **D. gibbosa*, *D. albida*, *D. angustata*, *D. aurea*, **D. rubescens*, *D. fusca*, *D. ferruginea*
		Resupinatus	*D. latissima*, *D. serpens*, *D. heteromorpha*
Polyporus	*Favolus*		**Polyporus* (*Favolus*) *tessulatus*, **P. arcularius*, **P. alveolarius* (sic!), **P. michelii*, **P. squamosus*, **P. tenuiculus*, **P. mori*, **P. heteroclitus*, **P. villosus*, **P. hirtus*, **P. sinensis*, **P. gallicus*
	Microporus	*Mesopus*	*P. subsquamosus*, *P. repandus*, *P. leucomelas* (sic!), *P. ovinus*, **P. tuberaster*, **P. melanopus* (α *infundibulum*, β *cyathoides*), **P. fuligineus*, **P. brumalis*, **P. ciliatus*, **P. leptocephalus*, **P. carbonarius*, *P. perula*, **P. xanthopus*, **P. concinuus*, *P. perennis*, *P. rufescens*, *P. tomentosus*, *P. schweinitzii*, **P. lepideus*
		Pleuropus	**P. varius*, **P. lucidus*, **P. amboninensis*, *P. pes-caprae*
		Merisma	**P. umbellatus*, *P. frondosus*, *P. confluens*, *P. giganteus*, *P. cristatus*, *P. sulphureus*, *P. imbricatus*
		Apus	*Carnosi:* *P. betulinus*, *P. spumeus*, *P. chioneus*, *P. destructor*, *P. lacteus*, *P. stipticus*, *P. mollis*, *P. caesius*, *P. tephroleucus*, *P. alutaceus*, *P. resinosus* *Subcarnosi:* *P. hispidus*, *P. nidulans*, *P. rutilans*, *P. cuticularis*, *P. crispus*, *P. adustus*, *P. dichrous*, *P. amorphous*, *P. croceus* *Subsuberosi:* *P. soloniensis*, **P. ulmarius*, *P. officinalis*, *P. borealis*, **P. suaveolens*, *P. populinus*, *P. fumosus*, **P. pubescens* *Coriacei:* **P. hirsutus*, **P. velutinus*, **P. zonatus*, **P. versicolor*, **P. stereoides*, *P. radiatus*, *P. castaneus*, *P. pallescens*, **P. membranaceus*, *P. neesii*, *P. serialis*, *P. abietinus* *Subcoriacei:* **P. sanguineus*, **P. cinnabarinus*, *P. roseus*, *P. marginatus*, *P. pinicola*, *P. odoratus*, *P. annosus*, **P. fasciatus*, *P. dryadeus*, **P. fomentarius*, *P. nigricans*, *P. igniarius*, *P. ribis*, *P. conchatus*, *P. microporus*, *P. supinus*, *P. salicinus*, *P. cryptarum*
		Resupinatus	*P. spongiosus*, *P. contiguus*, *P. ferruginosus*, *P. obliquus*, *P. subspadiceus*, *P. rufus*, *P. xanthus*, *P. nitidus*, *P. violaceus*, *P. purpureus*, *P. incarnatus*, *P. rhodellus*, **P. medulla-panis*, **P. tuberculosus*, *P. vitreus*, *P. vulgaris*, *P. callosus*, *P. sinuosus*, *P. vaporarius*, *P. cerasi*, *P. mucidus*, *P. radula*, *P. micans*, *P. sanguinolentus*, *P. terrestris*, *P. vaillantii*, *P. molluscus*, *P. farinellus*
	Polysticta		*P. corticola*, *P. reticulatus*
Fistulina			*Fistulina hepatica*

Note. The species, currently considered within *Polyporaceae*, are marked with asterisk.

In this work, he describes the genus *Panus*, and also gave a different subdivision of *Polyporus* in comparison to «Systema Mycologicum». The species characterized by matt and crustless pileus upperside, the author referred to the *Anodermei* tribe, the perennial species with a thick crust he referred to the *Placodermei* tribe, whereas the annual-biennial species with a fibrous cuticle he referred to the *Inodermei* tribe. In his «Summa Vegetabilium Scandinaviae», the polyporaceous fungi with perennial sessile fruit bodies Fries referred to the genus *Fomes* (Fries, 1849), however, in his «Novae Symbolae Mycologicae» he has returned to an extended concept of the genus *Polyporus* divided into 3 subgenera: *Eupolyporus*, *Fomes*, and *Poria* (Fries, 1851).

In his later mycological work, «Hymenomycetes Europaei», Fries (1874) has distinguished the genera *Fistulina*, *Trametes*, *Daedalea*, *Hexagonia*, *Favolus*, and *Polyporus* within polyporaceous fungi, giving the following subdivision:

Polyporus
- *Mesopus*
  - *Carnosi*
  - *Lenti*
  - *Spongiosi*
  - *Subcoriacei*
- *Pleuropus*
  - *Lenti*
  - *Suberoso-lignosi*
- *Merisma*
  - *Carnosi*
  - *Lenti*
  - *Caseosi*
  - *Suberosi*

Apus
- *Anodermei*
  - *Carnosi*
  - *Lenti*
- *Placodermei*
  - *Suberosi*
  - *Fomentarii*
  - *Lignosi*
- *Inodermei*
  - *Stupposi*
  - *Coriacei*

Resupinatus

A Friesian ideas concerning polyporaceous taxonomy were taken as a basis for his contemporaries. First of all, we should mention Berkeley, who enriched the Friesian genera *Polyporus* and *Lentinus* by many tropical species, including the New World ones (Berkeley, 1839, 1841, 1846; Berkeley, Curtis, 1853, 1859, 1869; Berkeley, Cooke, 1876).

A Friesian contribution to the taxonomy of polyporaceous fungi has already been repeatedly discussed and received a high recognition (Ames, 1913; Donk, 1933; Nikolaeva, 1938; Bondartsev, 1953; Bondartseva, 1983c, 1998). In the context of the history of the family taxonomy, it should be noted that during his work on polypores, Fries repeatedly changed his views on the leading discriminant characters, without going outside the classification of this group beyond the limits of macro-morphological analysis. As it was noted by Bondartsev (1953) for this case, «…one cannot fail to note the extraordinary observability of this famous scientist, who lived and worked at the time when microscopic technique was far from perfect. Many small sys-

tematic units, established by them in a purely intuitive way, are recognized to the present day. All this makes Fries recognize as an outstanding connoisseur of the fungi, and his works as extremely valuable, which cannot be ignored in the compilation of any significant research on the taxonomy of polyporaceous and other closely related families of the fungi». Parmasto (1965) has noted that Friesian system presents a detailed system of fungal life forms.

The value of Friesian works for the nomenclature of fungi is also significant (Gams, Kuyper, 1995). This is due to the fact that in his writings a large number of species names was published after Linnaeus (1753). The Article 13 of the International Code of Nomenclature for Algae, Fungi and Plants (McNeill, 2012) states that the initial date in the nomenclature of fungi is May 1, 1753 (Linnaeus, 1753), whereas the species names *Uredinales*, *Ustilaginales*, and *Gasteromycetes* adopted by Persoon (1801) and all the other fungi adopted by Fries (1821, 1822, 1828, 1832) should be considered sanctioned by these authors. The Article 15 of the Code clarifies that sanctioned names should be considered as being conserved against earlier post-Linnean homonyms and competing synonyms. At the same time, such a status is reserved for the names even when Fries himself does not recognize them in subsequent works, and the spelling version of the name, in which he was sanctioned by Fries, should be basically preserved.

Friesian misinterpretations of some species suggested by earlier authors led to instability in the nomenclature of corresponding taxa and subsequent decisions of the Nomenclature Committee. In particular, such problematic names include *Polyporus suaveolens* L. : Fr., based on *Boletus suaveolens* (Linnaeus, 1753). Linnaeus himself linked this name to the previously described «*Boletus acaulis*, *superne laevis*, *salici insidens*» (Linnaeus, 1737), which was understood as growing on willows rare perennial polypore with a smooth upperside and a very strong anise odor («*Rarius occurrit hic in salicibus et odore suavissimoque pollet*») which is currently classified in the genus *Haploporus*. Fries has applied this name to annual fungus with tomentose upperside widely spread on willows in temperate latitudes and characterized as «*Pileo carnoso-suberoso azono villoso albo*, *poris majusculis fuscentibus; odor gratus*, *aniseus; pileus subsolitarius*, *crassus*, *azonatus; pori obtusi*, *opaci*, *in superficie plana rotundi aequales*, *in declivi inaequales*» (Fries, 1821), which later became a type of the genus *Trametes* (Murrill, 1903). This contradiction was settled by the decision of the Nomenclature Committee only in 1992: «The Committee agrees that *Trametes* should be maintained for annual species. In various publications, Fries is considered *Polyporus suaveolens* L. to be based on two elements: a perennial northern species, cited by reference to Linnaeus's Flora lapponica, which is now classified in *Haploporus*, and an annual southern taxon. *Trametes suaveolens* Fries 1838 is considered a legitimate name of a new

species based on *P. suaveolens* Fries 1828 : Fries [non L. 1753 : Fries] and applying to the annual species» (Gams, 1992). At the same time, to our knowledge, the issue with the type of the genus *Haploporus*, *Polyporus odorus* Sommerf., which the author himself considered as synonymous with *Boletus suaveolens* sensu L. (Sommerfelt, 1826), has not yet been satisfactorily resolved.

After Fries, the systematics of polyporaceous fungi began developing rather intensively. Table 4 shows a dynamics of the description of genera from the first post-Friesian authors to the recent times. From the works listed, let us dwell on the most significant.

A Friesian follower Gillet (1878) has basically adhered to the Friesian system, however, he created a separate genus **Merisma* for *Polyporus* representatives furnished by the ramified stem. The resupinate forms he transferred to the genus *Physisporus*, whereas the perennial sessile – to the genus **Fomes*. Quélet (1888) has separated some units of Friesian *Polyporus* into separate genera and added to them his own new genera *Leptoporus*, **Coriolus*, *Phellinus*, *Placodes*, **Leucoporus*, **Cladomeris*, and **Cerioporus*. The Quélet's attempts to intuitive isolation of characters' patterns and some of the provisions of his system were very successful and confirmed by the latest molecular taxonomy data (e. g., the genera **Cladomeris* and **Cerioporus*).

With such names as Quélet and especially his contemporary Karsten (Karsten, 1880, 1881, 1889) is associated a «splitters' period» in the history of *Polyporaceae* taxonomy (Bondartseva, 1998). This was a period of fragmentation of the Friesian genera accompanied by creation of artificial systems based on certain morphological features which seemed to the authors to be most significant. Karsten, in addition to the character of the shape of basidiomes and hymenophore, took into account the character of coloration of the pileus upperside, its internal tissues, and spores as well as the texture of basidiome surfaces. In the «*Polyporeae*» group, this mycologist distinguished a total of 26 genera (Karsten, 1889) of which such genera as **Ganoderma*, **Pycnoporus*, *Bjerkandera*, *Ischnoderma* and some others turned out to be very successful and persist in a current use. This researcher was one of the first who points out the need to consider the lamellate genus **Lenzites* among the polyporaceous fungi. Other researchers, who worked in the 1880s, mostly adhered to Friesian taxonomy deviating from one in particular. Thus, Saccardo (1888) has accepted all the Friesian genera, including *Fomes*, and also has recognized a separate genus *Poria* (Persoon, 1794) including all polyporaceous fungi with a tubular hymenophore and prostrate basidiomata. Winter (1884) has adhered the Friesian system publised in «Epicrisis» (Fries, 1838), but with uniting such groups as *Polystictus*, **Fomes* and *Poria* in large genus **Polyporus*.

Table 4

The genera of *Polyporaceae* s. str. in retrospective

Year	Genus	Author (reference)	Holotype/*Lectotype (author)
1763	*Polyporus*(nom. illeg.)	Adanson (1763)	**Polyporus ulmi* Paulet (Murrill, 1903)
1784	*Cellularia* (nom. ambig.)	Bulliard (1784)	*Cellularia cyathiformis* Bull.
1805	*Favolus* (nom. illeg.)	Beauvois (1805)	*Favolus hirtus* Beauv.
1805	*Microporus*	Beauvois (1805)	*Microporus perula* Beauv.
1812	*Xylometron*	Paulet (1812)	*Xylometron lobatum* Paul.
1816	*Hexagonia*	Pollini (1816)	*Hexagonia mori* Poll.
1821	*Polyporus*	Micheli (1729) per Fries (1821)	**Polyporus brumalis* Pers. : Fr. (Clements, Shear, 1931); **P. tuberaster* Jacq. : Fr. (Donk, 1933, 1960)
1825	*Lentinus*	Fries (1825)	**Agaricus crinitus* L. : Fr. (Donk, 1949)
1828	*Favolus*	Fries (1828)	*Merulius daedaleus* Link
1828	*Xerotinus* (nom. illeg.)	Reichenbach (1828)	*Xerotus afer* Fr.
1828	*Xerotus*	Fries (1828)	*Xerotus afer* Fr.
1835	*Lenzites*	Fries (1835)	**Daedalea betulina* Fr. (Clements, Shear, 1931)
1835	*Trametes*	Fries (1835)	**Boletus suaveolens* L. (Murrill, 1905)
1838	*Panus*	Fries (1838)	*Agaricus conchatus* Bull. : Fr.
1844	*Hymenogramme*	Montagne, Berkeley (1844)	*Hymenogramme javensis* Mont. et Berk.
1849	*Fomes*	Fries (1849)	**Polyporus fomentarius* L. : Fr. (Donk, 1933)
1849	*Theleporus*	Fries (1849)	*Theleporus cretaceus* Fr.
1869	*Grammothele*	Berkeley, Curtis (1869)	*Grammothele lineata* Berk. et M. A. Curtis
1878	*Merisma* (Fr.) Gill.	Gillet (1878)	*Polyporus frondosus* Dicks. : Fr.
1880	*Hansenia* (nom. invalid.)	Karsten (1880)	**Polyporus versicolor* L. : Fr. (Donk, 1960)
1880	*Polyporellus*	Karsten (1880)	**Polyporus brumalis* Pers. : Fr. (Murrill, 1903)
1881	*Ganoderma*	Karsten (1881)	*Polyporus lucidus* Curtis : Fr.
1881	*Lopharia*	Kalchbrenner (1881)	*Lopharia lirellosa* Kalchbr. et MacOwan
1881	*Pycnoporus*	Karsten (1881)	*Boletus cinnabarinus* Jacq.
1882	*Xylopilus*	Karsten (1882)	*Polyporus crassus* Fr.
1883	*Bresadolia*	Spegazzini (1883)	*Bresadolia paradoxa* Speg.
1887	*Melanopus* (nom. ambig.)	Patouillard (1887)	**Polyporus squamosus* Huds. : Fr. (Murrill, 1903); **Polyporus melanopus* Fr. (Donk, 1960)
1888	*Cerioporus*	Quélet (1888)	**Polyporus squamosus* Huds. : Fr. (Murrill, 1903)
1888	*Cladomeris*	Quélet (1888)	**Polyporus umbellatus* Pers. : Fr. (Murrill, 1903)
1888	*Coriolus*	Quélet (1888)	**Polyporus lutescens* Pers. (Murrill, 1903)
1888	*Leucoporus*	Quélet (1888)	**Polyporus ciliatus* Fr. (Murrill, 1903)
1888	*Placodes* (nom. illeg.)	Quélet (1888)	**Polyporus lucidus* L. : Fr. (Murrill, 1903)
1888	*Daedaleopsis*	Schroeter (1888)	*Daedalea confragosa* Bolton : Fr.
1889	*Elfvingia*	Karsten (1889)	*Boletus applanatus* Pers.
1894	*Mycobonia*	Patouillard (1894)	*Peziza flava* Sw.
1898	*Scenidium* (nom. inval.)	Kuntze (1898)	*Polyporus whightii* Klotzsch
1900	*Epithele*	Patouillard (1900)	*Epithele typhae* (Pers.) Pat.

1900	*Funalia*	Patouillard (1900)	*Polyporus mons-veneris* Jungh.
1900	*Pseudofavolus*	Patouillard (1900)	**Polyporus miquelii* Mont. (Cooke, 1940)
1900	*Porogramme*	Patouillard (1900)	*Poria dussii* Pat.
1900	*Ungulina*	Patouillard (1900)	**Polyporus fomentarius* L. : Fr. (Donk, 1960)
1902	*Cryptoporus*	Shear (1902)	*Polyporus volvatus* Peck
1904	*Globifomes*	Murrill (1904)	*Boletus graveolens* Schwein.
1904	*Nigrofomes*	Murrill (1904)	*Polyporus melanoporus* Mont.
1904	*Pogonomyces*	Murrill (1904)	*Polyporus hydnoides* Sw. : Fr.
1904	*Poronidulus*	Murrill (1904)	*Boletus conchifer* Schwein.
1904	*Cyclomycetella*	Murrill (1904)	*Polyporus pavonius* (Hook.) Fr.
1905a	*Amauroderma*	Murrill (1905)	*Fomes regulicolor* Berk. ex Cooke
1905a	*Coriolopsis*	Murrill (1905)	*Polyporus occidentalis* Klotzsch
1905a	*Cubamyces*	Murrill (1905)	*Polyporus cubensis* Mont.
1905b	*Dendrophagus*	Murrill (1905)	*Polyporus colossus* Fr.
1905	*Earliella*	Murrill (1905)	*Earliella cubensis* Murrill
1905	*Fomitella*	Murrill (1905)	*Polyporus supinus* Schwartz : Fr.
1905	*Tomophagus*	Murrill (1905)	*Polyporus colossus* Fr.
1907	*Melanoporella*	Murrill (1907)	*Polyporus carbonaceus* Berk. et M. Curtis
1907	*Melanoporia*	Murrill (1907)	*Polyporus niger* Berk.
1907	*Tinctoporia*	Murrill (1907)	*Polyporus fuligo* Berk et Broome var. *aurantuotingens* Ellis et McBride
1908	*Whitfordia*	Murrill (1908)	*Fomes warburgianus* Henn.
1909	*Artolenzites*	Falck (1909)	**Daedalea repanda* Pers. (Donk, 1960)
1909	*Leucolenzites* (nom. illeg.)	Falck (1909)	*Daedalea betulina* L. : Fr.
1914	*Elfvingiella*	Murrill (1914)	*Polyporus fomentarius* L. : Fr.
1916	*Friesia* (nom. illeg.)	Lázaro é Ibiza (1916)	*Polyporus applanatus* (Pers.) Wallr.
1920	*Lentus*	Torrend (1920)	**Polyporus brumalis* Pers. : Fr. (Donk, 1960)
1920	*Lignosus*	Torrend (1920)	**Polyporus sacer* Afz. ex Fr. (Donk, 1960)
1936	*Polyporoletus* (nom. ambig.)	Snell (1936)	*Polyporoletus sublividus* Snell
1942	*Perenniporia*	Murrill (1942)	**Polyporus medulla-panis* Jacq. : Fr. (Cooke, 1953)
1944	*Haploporus*	Singer (1944)	**Polyporus odorus* Sommerf. : Fr. (Niemelä, 1971)
1944	*Pseudotrametes*	Singer (1944)	*Polyporus gibbosus* Pers. : Fr.
1952	*Trachyderma*	Imazeki (1952)	*Polyporus tsunodae* Yasuda ex Lloyd
1952	*Trametella*	Pinto-Lopes (1952)	*Trametes hispida* Bagl.
1953	*Truncospora*	Pilát (1953)	**Polyporus ochroleucus* Berk. (Cooke, 1953)
1963	*Echinochaete*	Reid (1963)	*Polyporus megaloporus* Mont.
1963	*Pachykytospora*	Kotlaba, Pouzar (1963)	*Polyporus tuberculosus* Fr.
1964	*Pyrofomes*	Kotlaba, Pouzar (1964)	*Polyporus demidoffii* Lév.
1965	*Dichomitus*	Reid (1965)	*Trametes squalens* P. Karst.
1966	*Datronia*	Donk (1966)	*Daedalea mollis* Sommerf.: Fr.
1966	*Phaeotrametes*	Wright (1966)	*Hexagonia decipiens* Berk.
1969	*Apoxona*	Donk (1969a)	*Hexagonia nitida* Dur. et Mont.
1972	*Dextrinosporium*	Bondartseva (1972)	*Poria desertorum* Kravtz.
1972	*Haddowia*	Steyaert (1972)	*Polyporus longipes* Lév.
1972	*Humphreya*	Steyaert (1972)	*Ganoderma lloydii* Pat. et Har.
1972	*Magoderna*	Steyaert (1972)	*Fomes subresinosus* Murrill
1973	*Atroporus*	Ryvarden (1973)	*Polyporus diabolicus* Berk.
1973	*Donkioporia*	Kotlaba, Pouzar (1973)	*Boletus expansus* Desm.

1973	*Vanderbylia*	Reid (1973)	*Polyporus vicinus* Lloyd
1974	*Dentocorticium*	Larsen, Gilbertson (1974)	*Laeticorticium ussuricum* Parmasto
1976	*Loweporus*	Wright (1976)	*Polyporus lividus* Kalchbr.
1980	*Navisporus*	Ryvarden, Johansen (1980)	*Trametes floccosa* Bres.
1980	*Sparsitubus*	Xu, Zhao (1980)	*Sparsitubus nebuliformis* Xu et Zhao
1982	*Dendropolyporus*	Jülich (1982b)	*Polyporus umbellatus* Pers. : Fr.
1982	*Fuscocerrena*	Ryvarden (1982)	*Polyporus portoricensis* Fr.
1982	*Grammothelopsis*	Jülich (1982b)	*Grammothele macrospora* Ryvarden
1982	*Megasporoporia*	Ryvarden et al. (1982)	*Poria setulosa* Henn.
1984	*Mollicarpus*	Ginns (1984)	*Trametes cognata* Berk.
1991	*Austrolentinus*	Ryvarden (1991)	*Panus tenebrosus* Corner
1995	*Neolentiporus*	Rajchenberg (1995)	*Polyporus maculatissimus* Lloyd
1996	*Royoporus*	De (1996)	*Laschia spathulata* Jungh.
2003	*Perenniporiella*	Decock, Ryvarden (2003)	*Polyporus neofulvus* Lloyd
2012	*Leiotrametes*	Welti, Courtecuesse in Welti et al. (2012)	*Polyporus lactineus* Berk.
2013	*Megasporia*	Cui, Dai, Li in Li, Cui (2013)	*Poria hexagonoides* Speg., 1898
2013	*Megasporoporiella*	Cui, Dai, Li in Li, Cui (2013)	*Polyporus cavernulosus* Berk., 1856
2013	*Neofavolus*	Sotome, Hattori in Sotome et al. (2013)	*Merulius alveolaris* DC.
2013	*Yuchengia*	Zhao et al. (2013)	*Trametes narymica* Pilát, 1936
2014	*Cellulariella*	Zmitrovich, Malysheva (2013, 2014)	*Lenzites acuta* Berk.
2014	*Datroniella*	Li et al. (2014a)	*Polyporus scutellatus* Schwein.
2014	*Flammeopellis*	Zhao et al. (2014)	*Flammeopellis bambusicola* Y. C. Dai, B. K. Cui et C. L. Zhao
2014	*Neofomitella*	Li et al. (2014b)	*Neofomitella rhodophaea* (Lév.) Y. C. Dai, Hai J. Li et Vlasák
2016	*Leifiporia*	Zhao et al. (2016)	*Leifiporia rhizomorpha* C. L. Zhao, F. Wu et Y. C. Dai
2016	*Picipes*	Zmitrovich, Kovalenko (2016)	*Boletus badius* Pers.
2017	*Neodictyopus*	Palacio et al. (2017)	*Neodictyopus atlanticae* Palacio, Robledo et Drechsler-Santos
2018	*Dextrinoporus*	Yuan, Qin (2018)	*Dextrinoporus aquaticus* Yuan et Qin

Schroeter (1888) has divided the genus *Polyporus* in Friesian sense (Fries, 1821) into **Polyporus* «s. str.» (white or gray tubes), *Ochroporus* (ochraceous tubes) and *Phaeoporus* (brown tubes). From the genus *Daedalea* he has separated a new genus **Daedaleopsis*. This system was approximated to utilitarian goals, but in many respects remained artificial.

The Murill's work on the taxonomy of polyporaceous fungi seems to be completing so-called «splitters' period» of its history. The basic units of his system Murril establish on basis of upperside features and fruit bodies coloration. In total, this researcher recognized up to 66 genera of polypo-

raceous fungi at various times, among them **Globifomes*, **Pogonomyces*, **Poronidulus* (Murrill, 1904), **Amauroderma*, **Coriolopsis*, **Cubamyces*, **Dendrophagus*, **Earliella*, **Fomitella*, **Tomophagus* (Murrill, 1905), **Melanoporella*, **Melanoporia*, **Tinctoporia* (Murrill, 1907), **Whitfordia* (Murrill, 1908). A. S. Bondartsev, when characterizing the Murrill's system, notes about «...a vagueness and fuzziness of the characteristics of individual genera, often unavoidable with such a large number of the latter» (Bondartsev, 1953). On the other hand, this American researcher, having generalized all the morphological features of Central American and partly South American material (classified from the of Berkeley and Curtis times in the genus **Polyporus*), little known to European mycologists, significantly expanded an ideas field for taxonomists working above polyporaceous fungi.

The Patouillardian work «Essai taxonomique sur les familles et les genres des Hymenomycetes» (Patouillard, 1900) reveals so-called «evolutionary period» in the taxonomy of polyporaceous fungi which was associated with the statement among researchers phylogenetic approaches referring to Haeckel's ideas. It must be borne in mind that concepts of macro- and microevolution were not yet developed at that times, therefore the authors simply «deduced» some units from others, based on subjective criteria, but on the whole guided by the concept of progressive evolution. In classification aspect, these phylogenetic concepts were reflected mainly in order of taxa presentation in current systems corresponding to survey of their appearing on a hypothetical phylogenetic tree.

In group of family rank named *Porés*, Patouillard has included such genera as *Phlebia*, *Hydnochaete*, *Coniophora*, and *Hymenochaete* with folded, spinose or smooth hymenophore. In the *Porés* group, this researcher identified 2 subgroups, «les *Polyporés* vrais», characterized by fleshy, film or leathery consistency of fruit bodies, and «les *Fomés*», characterized by corky, fibrous or wood fruit bodies consistency. The first subgroup was divided into 3 series, the *Polyporés*, characterized by a fleshy consistency of fruit body and the presence of stipe, the *Leucoporés*, characterized by leathery or cartilaginous consistency of fruit body and the presence of atipe, and the *Leptoporés*, which unites a polypores without stipe, or annual stipitate fruit bodies. The second subgroup this author also subdivided into 3 series, the *Trametés*, characterized by tube layer inseparable from context tissues, the Igniarés, characterized by tube layer detachable from context tissues and absence of differentiated upperside crust, and the *Placodés*, with differentiated tube layer and a superficial crust. The series *Polyporés* Patouillard has «deduced» from *Odontiés*. In the modern taxonomy of polyporaceous fungi, some Patouillardian genera as **Epithele*, **Funalia*, and **Porogramme* persist till now.

A significance of Patouillardian work was highly appreciated by subsequent mycologists. His special merit was the selection of the *Phylacteriés* group into which he combined the fungi both of orthotropic and plagiotropic growth system, smooth, warty or spinose hymenophore, but coinciding in smoky warty spores of uneven outlines. As noted by A. S. Bondartsev (1953), «...Patouillard began to build a natural classification system. He was the first to set milestones and indicated the path that subsequent researchers should follow, striving to substantiate their conclusions on the phylogenetic basis». According to Bondartseva (1998), in his work «...a self-sufficient value of the hymenophore configuration as a basis of the taxonomy of the polyporaceous fungi was questioned for the first time».

In France, the most famous followers of Patouillard were Bourdot and Galzin, who have used this system in their capital work «Hyménomycètes de France» (Bourdot, Galzin, 1928) and, on the basis of the involvement of micromorphology data, have developed and detailed its separate propositions, in particular, a splitting of the unit *Poria* by transferring brownish-colored species to the genera *Phellinus* and *Xanthochrous*. A great attention these authors have paid to presentation of intraspecific polymorphism of polyporaceous fungi.

In the 1920s, some researchers pay an attention to similarities between some polyporaceous fungi and representatives of the genus *Lentinus* s. l., which tend to be interpreted as close relationships. Torrend (1920) describes the genus *Lentus*, covering the *Polyporus brumalis*-group. Kühner (1928) notes about relationships of *Lentinus variabilis* (modern name is *Neolentinus cyathiformis*, *Gloeophyllales*) to the *Polyporus squamosus*-group.

In 1922, in his capital work «British *Basidiomycetae*» Rea (1922) describes the order *Aphyllophorales* (non-gilled fungi), a group that, along with the order of *Agaricales*, is widely accepted among taxonomists, much more than the order described by a four years later, namely, the *Polyporales* (Gäumann, 1926). In outline of *Aphyllophorales* fungi with tubular hymenophore, Rea includes such currently persisted genera as *Sistotrema*, **Polyporus*, **Ganoderma*, **Fomes*, **Trametes*, *Poria*, *Irpex*, and **Lenzites*.

The description of the first quarter of the XX century a large number of genera of polyporaceous fungi has required a coordination of generic units used in various studies (Murrill, 1903, Ames, 1913, Clements, Shear, 1931). The work by Clements and Shear (1931) is the most extensive in terms of material covered at that time. In this work, the *Polyporus brumalis* Pers. was designated as a lectotype of the genus *Polyporus*. Many years later, this typification will attract a certain attention of researchers in connection with the problem of *Polyporus* splitting.

In the 1930s, the most elaborate system of polyporaceous fungi was proposed by Donk (1933). The family *Aphyllophoraceae* (representing a

certain «author's gesture» associated with a rank decreasing of *Aphyllophorales*) Donk divides into several subfamilies (*Cantharelloideae*, *Phylacterioideae*, *Clavarioideae*, and *Polyporoideae*). In the latter, this author distinguished 4 more units, the Latin names of which, despite its lower rank, bear the same consignments – *Fistulinoideae* (*Fistulina*), *Hymenochaetoideae* (*Polystictus*, *Inonotus*, *Ochroporus*), *Ganodermoideae* (*Ganoderma*, *Polyporus unitus*), and *Polyporoideae*. The group *Polyporoideae* Donk divides into a number of tribes: the *Polyporeae* (*Polyporus*, *Piptoporus*), the *Tyromyceteae* [*Tyromyces*, *Podoporia*, *Bjerkandera*, *Gloeoporus*, *Hirschioporus*, *Ceraporia* (sic!), *Hapalopilus*], the *Daedaleae* (*Ischnoderma*, *Heteroporus*, **Coriolus*, **Trametes*, *Daedalea*, **Daedaleopsis*, **Lenzites*, *Irpex*, *Oxyporus*, **Fomes*, *Gloeophyllum*, *Poria*). Along with macro-morphology, this mycologist systematically turns to micro-morphological features of basidiomata in genera characterization. The genus *Polyporus* Donk has based on *Polyporus tuberaster* lectotype, which consequently was accepted by majority of the authors.

The distribution of phylogenetic ideas within systematics occurred during the described period, of course, did not bring the proposed systems to «natural» by itself, even when it was declared by their authors. Still, there was no a real basis for verifying phylogenetic constructions. As the «leading» for distinguishing of basic units of the system, various authors have selected a wide range variety of characteristics. It is necessary to stress that micro-characters, appearing generally more conservative when considering the variability spectrum at the species level, also carry an explicit seal of convergence in reviewing the material at higher levels. Donk cames to this rather pessimistic conclusion at end of his research activities when he wrote about a «multiple convergence» in the evolution of polyporaceous fungi (Donk, 1971).

In the early 1940's, Bondartsev and Singer have published the system of polyporaceous fungi based on an ontogeny criterion (Bondarzew, Singer, 1941; Singer, 1944; Bondartsev, 1953). In accordance to type of development of fungus fruit body, the order *Aphyllophorales* was divided into suborders *Corticiineae* (resupinate basidiomata with smooth, tuberculate or folded hymenophore), *Cyphellineae* (cup-shaped solitary or immersed in common subiculum basidiomata), *Polyporineae* (sessile to resupinate basidiomata with basically tubular hymenophore), *Clavariineae* (orthotropic simple or branched fruiting bodies), *Phylacteriineae* (basidiomata of various types, but producing smoky and warty spores), where the polyporaceous fungi were classified within *Corticiineae* (*Phlebiella*, *Trechispora*, *Merulioporia*), *Polyporineae* (the most of genera), *Clavariineae* (*Scutiger*, *Polypilus*), *Cyphellineae* (*Fistulina*, *Porotheleum*), and *Phylacteriineae* (*Boletopsis*).

An internal structure of the *Polyporaceae* was elaborated by these authors to the tribe level (Table 5).

Table 5

Subfamilies and tribes of the Polyporaceae according to Bondartsev and Singer

Subfamily	Tribe	Genera
Porioideae	–	*Fibuloporia*, *Xylodon*, *Podoporia*, *Ceraporia* (sic!), *Amyloporia*, *Aporpium*, *Chaetoporellus*, *Chaetoporus*
Tyromycetoideae	–	*Laetiporus*, *Tyromyces*, *Amylocystis*, *Bjerkandera*, *Spongipellis*, *Gloeoporus*, *Hapalopilus*
Fomitoideae	*Piptoporeae*	**Cryptoporus*, *Piptoporus*
	Ischnodermateae	*Ischnoderma*, *Anisomyces*, *Pelloporus*
	Fomiteae	**Fomes*, *Fomitopsis*
	Phaeoleae	*Phaeolus*
	Inonoteae	*Inonotus*, *Phellinus*, *Leucophellinus*, *Cyclomyces*, *Cyclomorus*, *Polystictus*, *Coltricia*
	Ganodermateae	**Ganoderma*
Polyporoideae	–	**Polyporus*, *Asterochaete*
Corioloideae	*Corioleae*	**Pycnoporus*, *Cerrena*, **Coriolus*, *Coriolellus*, **Poronidulus*, **Trametes*, **Pseudotrametes*, **Haploporus*, **Hexagonia*, *Antrodia*, **Funalia*, **Coriolopsis*
	Oxyporeae	*Flaviporus*, *Abortiporus*, *Oxyporus*, *Irpex*
	Hirschioporeae	*Hirschioporus*
	Daedaleae	*Daedalea*, **Daedaleopsis*, **Lenzites*, *Gloeophyllum*

The polyporaceous fungi in the modern sense were distributed in this system along such taxa as *Polyporoideae* (*Polyporus*), the tribes *Piptoporeae*, *Fomiteae* and *Ganodermateae* of the *Fomitoideae* subfamily and the tribes *Corioleae* and *Daedaleae* of the *Corioloideae* subfamily. These authors have described the genus *Haploporus* included in grouping *Corioleae* (Bondarzew, Singer, 1941; Singer, 1944; Bondartsev, 1953).

At the turn of 1940–50's, significant changes were taking place in macro-taxonomy of polyporaceous fungi. In 1948, Donk has erected a previously described subfamily *Ganodermoideae* to a family rank (Donk, 1948), and family *Ganodermataceae* was adopted by most subsequent mycologists.

It should be noted here that systematics of **Ganoderma* and related genera remains the most problematic area of polyporology. An extreme morphological plasticity of ganodermoid polypores combined with a dispersal of type material for various herbaria of the world with the absence of holotypes for many species caused a wide distribution of many described taxa that didn't correspond to original interpretations. Below, only main milestones of the history of the taxonomy of ganodermoid polypores will be outlined.

The genus **Ganoderma* (type *Polyporus lucidus* Curtis : Fr.) was described by Karsten (1881). Later, basing on the character of two-layered sporoderm, some additional species began to be transferred to this genus. The first attempt at a monographic treatment of *Ganoderma* belongs to

Patouillard (1889), which refers 48 species to this genus, classified within sections *Ganoderma* and *Amauroderma*. To the second section Patouillard has included a species with spherical or subspherical basidiospores with a uniformly thickened wall (according to the data obtained by an imperfect microscopic technique of these times). In the same year of publication of Patouillardian monograph, Karsten (1889) has described the genus **Elfvingia* (type *Boletus applanatus* Pers.) for species with similar basidiospores, but with lacking laccate pileus cover. Bresadola (1881–1926), like Patouillard, has recognized two sections in the genus, *Ganoderma* and *Amauroderma*, and didn't recognized the genus **Elfvingia*. His contemporary Lloyd (1898–1925) has not recognized the genus **Ganoderma* and has considered a species with ganodermoid spores in section *Amaurodermus* of the genus **Polyporus*, whereas a fomitoid species – within the genus **Fomes*. Murrill (1902, 1905a) has recognized the genera **Amauroderma*, **Ganoderma*, and **Elfvingia*. Also, he has described the genus **Tomophagus* for *Polyporus colossus* Fr. (Murrill, 1905b). Torrend has recognized the genera **Ganoderma* and **Amauroderma*, having a great contribution to study of neotropical species (Torrend, 1920). Imazeki has considered **Elfvingia* as a subgenus of the genus *Ganoderma* (Imazeki, 1939), but later he has increased a rank of *Elfvingia* up to generic one (Imazeki, 1952), and, in addition, he has described a new genus of ganodermoid affinity, **Trachyderma* (type *Polyporus tsunodae* Yas. ex Lloyd).

The presence in the most of *Ganoderma* species an unusual for *Polyporaceae* sporoderm construction was a reason for taxonomical isolation of this group of polypores. However, in the mid-20th century, there were no any objective instruments that allow assessing a depth of divergence and a possible rank of this group.

The second important period in the systematics of polyporaceous fungi was related to Singer's fundamental works. In 1951, based on some similarities of **Polyporus* with representatives of such lamellate genera as **Lentinus* and *Panus*, this mycologist has combining them with such genera as **Pseudovafolus*, **Mycobonia*, *Phyllotopsis*, and *Pleurotus* within *Polyporaceae* family and has shifted this family in the order *Agaricales* (Singer, 1951). As a type species of the genus **Lentinus* Singer has considered *Lentinus lepideus* (Fr. : Fr.) Fr. (more correct typification is *L. crinitus* L.), while small-spored species he has carried in the genus *Panus*. Later, he reissues his system 3 times, leaving *Polyporaceae* s. str. in the order *Agaricales* (Singer, 1962, 1975, 1986). For residual polyporaceous fungi, Singer has described a new family, *Coriolaceae* (Singer, 1961).

Taking into account Singer's authority, these changes were accepted also by the majority of mycologists, with consideration of residual polyporaceous fungi within a families *Coriolaceae* or *Poriaceae* of the order *Aphyllophorales* = *Poriales* (Locquin, 1957). Similarities in the hyphal

structure between fungi of genera **Polyporus* (*Polyporaceae* s. str., *Agaricales*) and **Trametes*, **Xerotus*, **Coriolopsis* («*Poriales*») were not discussed by these authors in any way.

Taxonomy of generic level in a period under consideration was characterized by attempts to comprehend a new datasets from the field of micromorphology. A great contribution to micromorphological polypores investigation was made by Corner (Corner, 1932a, b; Corner, 1953), who devoted to the study of hyphal differentioation in the polypores. Corner's ideas concerning a monomitic, dimitic, and trimitic hyphal systems were used by Kotlaba and Pouzar to refine a generic concepts of polyporaceous fungi. These researchers described the genera **Pachykytospora* (Kotlaba, Pouzar, 1963) and **Pyrofomes* (Kotlaba, Pouzar, 1964). Reid (1963) describes a separate genus **Echinochaete* for tropical species *Polyporus megaloporus*. In the 1960s, a considerable progress in the morphology and taxonomy of ganodermoid fungi is allocated, because of a fine stucture of basidiospores and hyphae were involved in comprehensive studies (Hansen, 1958, Sarkar, 1959; Steyaert, 1961a, b, 1962, 1967; Teixeira, 1962; Furtado, 1965; Donk, 1969, Pegler, Young, 1973). Such genera as **Haddowia*, **Humphreya*, and **Magoderna* (an anagram of *Ganoderma*) were segregated from the genus **Ganoderma*, mostly on basis of basidiospores ratio and sculpture (Steyaert, 1972). In the same period, Donk has described the genus *Datronia* (an anagram of *Antrodia*) (Donk, 1966).

A great contribution to the modern knowledge on polyporaceous fungi was made by Norwegian mycologist Leif Ryvarden.

The first mycological work written by Ryvarden at the University of Trondheim (Norway) was devoted to the distribution of the genus *Datronia* in Fennoscandia (Ryvarden, 1964). In 1966, he moved to the Department of Botany of the University of Oslo. In the period 1971–72, Ryvarden had a 12 months practice at the Royal Botanical Gardens, Kew, England, and in 1992 he received the title of professor of mycology at the same university, where he worked until 2003. Currently, he is Professor Emeritus of his university, a world-famous specialist in polyporaceous fungi, who continues to work actively and fruitfully on taxonomy, morphology, and biodiversity of the polypores.

A geographic range of Ryvarden's research is extremely wide. He visited all the continents, about 80 countries, in many of them collecting polyporaceous fungi. In his herbarium there are collections from Spain, Italy, Russia, Estonia, Great Britain and all countries of Fennoscandia (Europe), from Nepal, China, Thailand, Singapore, Japan (Asia), Cameroon, Ethiopia, Kenya, Tanzania, Malawi, Zambia, Zimbabwe (the last country it visited 8 times), the South African Union, Uganda, the Seychelles (Africa), Argentina, Brazil, Belize, Colombia, Dominican Republic, Ecuador, Jamaica, Panama, Mexico, Cuba, Venezuela, Ricky, Puerto Rico, the United States

(America), as well as from Australia and New Zealand. The collected materials, as well as the critical study of the standard material of the Kew and Oslo herbaria, served as the basis for the compilation of floristic reports by countries and continents (Ryvarden, 1972–1976c, 1977a, b). In 1976 and 1978, he published two parts of the general book on polypores of North Europe (Ryvarden, 1976d, 1978). Between 1973 and 1988, Ryvarden takes an active part in writing and publishing a series of books on corticioid fungi of North Europe, where his co-authors in different issues were Hjortstam and Larsson. An entire edition consists of 8 books (Eriksson, Ryvarden, 1973, 1975, 1976; Eriksson et al., 1978, 1981, 1984; Hjortstam et al., 1987, 1988). The results of Ryvarden's expeditionary travels across countries and continents are reflected in numerous articles and books. So, in 1980, the book «A preliminary polypore flora of East Africa» has appeared (Ryvarden, Johansen, 1980), which describes in detail an impressive number of species of polyporaceous fungi of this almost neglected area. Wide circulation have received a two-volume key-books devoted to polypores of North America (Gilbertson, Ryvarden, 1986, 1987) and Europe (Ryvarden, Gilbertson, 1993, 1994). These books have been valuable tools for identifying polypores on both continents and are widely used by mycologists of many countries. In 1991, Ryvarden has presented a handbook on nomenclature and taxonomy of polypores (Ryvarden, 1991). This edition summarizes the study of the genera of polypores described at different times. In 1995, the monograph «*Polyporus* and related genera» (Nuñez, Ryvarden, 1995a) was published. This book gives a key for species identifying and their descriptions. Separate monographic study with the participation of Ryvarden is devoted to the nomenclature of ganodermoid fungi (Moncalvo, Ryvarden, 1997).

Parallelly, Ryvarden has continued studies of *Aphyllophorales* in insufficiently studied world regions. An example of such a work is the report «East Asian polypores. Vol. 1. *Ganodermataceae* and *Hymenochaetaceae*» (Núñez, Ryvarden, 2000) and «East Asian polypores. Vol. 2. *Polyporaceae* s. lato» (Núñez, Ryvarden, 2001), summarizing the study of these taxa in East Asia. Somewhat later, Ryvarden and co-authors have published a critical list of corticioid and polyporoid fungi in Norway (Ryvarden et al., 2003), in 2005 – a monograph devoted to the genus *Inonotus* (Ryvarden, 2005), and a series of monographs on neotropical polypores (Ryvarden, 2004, 2015, 2016).

A modern fundamental monograph with the key participation of this researcher was published in 2014 (Ryvarden, Melo, 2014).[2] This is a fundamental publication containing a variety of color photographs of polypores basidiomata and drawings of their microstructure. This book summarizes the data on European polypores for more than a century of their study and

[2] The second edition of this book was published in 2017 (Ryvarden, Melo, 2017).

presents an interpretation of their current taxonomic position. The authors declare adherence to broad generic concepts, which responds both to convenience in identification and tradition in the treatment of widely known taxa, whose names have become peculiar «unions», used even by specialists who know more splitten and justifiable from the point of view of phylogenetic systematics units (list «splitten» genera is given by the authors in the section «Taxonomy» of the same book).

In the Russia, Margarita Bondartseva, following her father, Apollinaris Bondartsev, was engaged in improving of the system of polyporaceous fungi.

The first generalizing publications on the morphology and taxonomy of polyporaceous fungi by Bondartseva were «On the changes in the systematic position of the genus *Aporpium*» (Bondartseva, Bondartsev, 1960), «Critical review of the newest systems of the family *Polyporaceae*» (Bondartseva, 1961) and «On the anatomical criteria in the taxonomy of the aphyllophoraceous fungi» (Bondartseva, 1963) which has attracted an attention of foreign colleagues. Expedition trips to a number of regions of European Russia, the Crimea, the Caucasus, Central Asian Siberia and the Far East allowed her to collect a significant mycological material on the territory of Russia and the Republic of Cuba (Bondartseva, Herrera, 1979a, b, 1982).

All the data accumulated were used by Bondartseva in preparing her doctoral dissertation «The system of polyporaceous fungi and principles for their classification» (Bondartseva, 1983b, c), and then in two issues of Definitorium Fungorum Rossiae (URSS), one of which was dedicated to polyporaceous fungi (Bondartseva, 1998).

Following to Bondartsev, the order *Aphyllophorales* was divided by Bondartseva into suborders *Corticiineae* (families *Corticiaceae* and *Lachnocladiaceae*), *Cyphellineae* (*Fistulinaceae*), *Polyporineae*, *Clavariineae* (*Albatrellaceae*, *Bondarzewiaceae*), *Thelephorineae* (former *Phylacteriineae – Boletopsidaceae*), and also recognizes the order *Aporpiales* with a single family *Aporpiaceae*.

The largest suborder *Polyporineae* she divided into a number of families, describing a new family *Caloporaceae*, whereas the largest family *Polyporaceae* she divided into a number of subfamilies and tribes (Table 6).

In «Definitorium Fungorum Rossiae» (Bondartseva, 1998), she has prepared an issue devoted to polyporaceous fungi, based on system proposed by this author in 1983 with some changes (Table 7).

Following by Singer, Bondartseva has assumed the family *Polyporaceae* s. str., in which she considered such genera as **Cryptoporus*, *Jahnoporus*, *Piptoporus* and **Polyporus*.

Table 6

The structure of suborder *Polyporineae* in the system of Bondartseva (1983b, c)

Families	Subfamilies	Tribes	Genera
Caloporaceae	*Caloporoideae*	*Caloporeae*	*Caloporus*, *Ceriporia*, *Cystidiophorus*
		Oxyporeae	*Oxyporus*, *Rigidoporus*, *Rigidoporopsis*, *Leucophellinus*
	Phaeoloideae	–	*Phaeolus*, *Macrohyporia*, *Pycnoporellus*, *Pseudophaeolus*
Polyporaceae	*Tyromyceto-ideae*	*Fibuloporeae*	*Fibuloporia*, *Anomoporia*, *Oligoporus*, *Ceri-poriopsis*
		Tyromyceteae	*Tyromyces*, *Amylocystis*, *Parmastomyces*, *Irpicodon*
		Flaviporeae	*Flaviporus*, *Sarcoporia*
		Spongipelleae	*Spongipellis*, *Gloeoporus*, *Skeletocutis*, *Bjerkandera*
		Echinoporeae	*Echinoporia*
	Steccherino-ideae	*Incrustoporieae*	*Incrustoporia*, *Amyloporia*, *Dextrinospori-um*, **Dichomitus*, *Diplomitoporus*, *Antro-diella*, *Cystostiptoporus*
		Ischnodermateae	*Ischnoderma*, *Datronia*
		Amylosporeae	*Amylosporus*, *Wrightoporia*, *Amylonotus*
	Trametoideae	*Trameteae*	**Trametes*, **Coriolus*, **Pseudotrametes*, *Cerrena*, **Lignosus*, **Lenzites*, **Poronidulus*, *Nigroporus*, **Pycnoporus*
		Coriolopsideae	**Coriolopsis*, **Hexagonia*, **Daedaleopsis*, *Hirschioporus*, *Trichaptum*
	Fomitoideae	*Fomiteae*	**Fomes*, **Haploporus*, **Donkioporia*, **Nigroporus*
		Perenniporieae	**Perenniporia*, **Loweoporus*, *Pseudopipto-porus*, **Pyrofomes*, **Pachykytospora*
		Heterobasidieae	*Heterobasidion*
	Gloeophyllo-ideae	*Fomitopsieae*	*Fomitopsis*, *Antrodia*, *Fibroporia*, *Tincto-porellus*
		Gloeophylleae	*Gloeophyllum*, *Osmoporus*, *Daedalea*, *Phaeodaedalea*, **Xerotinus*, **Melanoporia*
	Polyporoideae	*Piptoporeae*	*Piptoporus*, **Cryptoporus*, *Buglossoporus*
		Polyporeae	**Polyporus*, **Favolus*, **Pseudofavolus*
		Laetiporeae	*Laetiporus*, *Osteina*
		Echinochaeteae	**Echinochaete*
		Porodisculeae	*Porodisculus*, *Microporellus*
Ganodermatac eae			**Ganoderma*, **Amauroderma*, **Haddowia*, **Humphreya*
Hymeno-chaetaceae			*Hymenochaete*, *Aurificaria*, *Cyclomyces*, *Coltriciella*, *Coltricia*, *Onnia*, *Inonotus*, *Inonotopsis*, *Phylloporia*, *Phellinus*

Table 7

The system of polyporaceous fungi adopted to «Definitorium Fungorum Rossiae» (Bondartseva, 1998)

Families	Genera
Albatrellaceae	*Albatrellus*, *Grifola*, *Laetiporus*, *Meripilus*
Aporpiaceae	*Protomerulius*
Boletopsidaceae	*Boletopsis*
Bondarzewiaceae	*Bondarzewia*
Corticiaceae	*Byssocorticium*, *Chaetoporellus*, *Irpicodon*, *Lindtneria*, *Poriodontia*, *Sistotrema*, *Trechispora*
Fistulinaceae	*Fistulina*
Ganodermataceae	**Ganoderma*
Lachnocladiaceae	*Vararia (luteopora)*
Phaeolaceae	*Phaeolus*, *Pycnoporellus*
Polyporaceae	**Cryptoporus*, *Jahnoporus*, *Piptoporus*, **Polyporus*
Poriaceae	*Abortiporus*, *Amylocystis*, *Anomoporia*, *Antrodia*, *Antrodiella*, *Auriporia*, *Bjerkandera*, *Ceriporiopsis*, *Cerrena*, *Climacocystis*, **Coriolopsis*, *Daedalea*, **Daedaleopsis*, **Datronia*, **Dextrinosporium*, **Dichomitus*, *Diplomitoporus*, *Fibuloporia*, *Flaviporus*, **Fomes*, *Fomitopsis*, *Gloeophyllum*, *Gloeoporus*, *Hapalopilus*, **Haploporus*, *Heterobasidion*, **Hexagonia*, *Irpex*, *Ischnoderma*, *Junghuhnia*, **Lenzites*, *Leptoporus*, **Melanoporia*, **Microporus*, *Nigroporus*, *Oligoporus*, **Pachykytopora*, *Parmastomyces*, **Perenniporia*, **Poronidulus*, **Pycnoporus*, **Pyrofomes*, *Schizopora*, *Skeletocutis*, *Spongipellis*, **Trametes*, *Trichaptum*
Rigidoporaceae	*Castanoporus*, *Ceriporia*, *Leucophellinus*, *Oxyporus*, *Physisporinus*, *Rigidoporus*

Other genera of polyporaceous fungi, in particular, **Coriolopsis*, **Daedaleopsis*, **Datronia*, **Dichomitus*, **Fomes*, **Haploporus*, **Hexagonia*, **Lenzites*, **Microporus*, **Pachykytospora*, **Perenniporia*, **Poronidulus*, **Pycnoporus*, **Pyrofomes*, **Trametes* belong to the *Poriaceae* family in this system.

In the 1980s, Corner publishes his records of different years, devoted to polyporoid and lentinoid fungi of tropical latitudes (Corner, 1981, 1983, 1984, 1989, 1990). The genera **Lentinus* and *Panus* he has differentiated on the basis of features of skeletal hyphae – branched and slightly swollen in **Lentinus* and unbranched fibrous in *Panus* (Corner, 1981). Among the group of ganodermoid polypores, Corner accepted the genera **Amauroderma*, **Ganoderma* (subgenera *Ganoderma* and *Elfvingia*), **Haddowia*, and **Humphreya* (Corner, 1983). The genus **Polyporus* Corner understood rather narrowly, in the sense of Kreisel (1960) and Ryvarden (1978). Also, he recognized as closely related genera **Echinochaete*, **Favolus*, **Mycobonia* and **Pseudofavolus* (Corner, 1984). The rest of the genera of polyporaceous fungi he understood for his time deliberately large that can be considered also a kind of «gesture», or «taxonomic manifesta-

tion». For example, the genus **Trametes* in the treatment of Corner included also *Cerrena*, **Coriolopsis*, **Daedaleopsis*, **Datronia*, **Earliella*, **Fomes*, *Fomitopsis*, **Hexagonia*, **Lignosus*, **Microporus*, **Megasporoporia*, **Mollicarpus* and **Pycnoporus*, that is, almost all genera that combined fungi of trametoid habitus (Corner, 1990). Such a broad interpretation was used in the future to prepare a «global» key for the genus **Trametes* s. l. (Zmitrovich et al., 2012), but in general, it was not accepted.

In 1983, Pegler published a monograph on the genus **Lentinus* including *Panus* as a subgenus, according to the principles of the Corner: in the subgenus *Lentinus* he has considered species with branched and swollen sclerohyphae, whereas in the subgenus *Panus* – with unbranched fibrohyphae (Pegler, 1983).

In 1985, Redhead and Ginns (1985) have described a new genus of *Neolentinus* in which representatives of the genus **Lentinus* are shifted, characterized by a total absence of laccase activity (brown rot). Further, the genus *Neolentinus* was recognized by all the mycologists.

An attempts to create the macrosystem including taxa of polyporaceous fungi took place too, but it should be noted that a limit to such constructions was outlined by Donk, who established a «multiple convergence» phenomenon in polyporaceous fungi (Donk, 1971), embracing both macro- and micromorphological features of the basidiome, as well as by Parmasto with his maxim «An artificial system built on microscopic features is no more sophisticated than an artificial systems created on the macromorphological features» (Parmasto, 1968).

The instability of taxonomy of the order *Aphyllophorales* was predetermined by Singer's innovations (Singer, 1951b, 1962, 1975, 1986), i.e. by the transfer of genera with a non-lamellate hymenophore into the order *Agaricales* basing on a set of microcharacters. In phylogenetic notices to his books, Singer indirectly pursues an idea of the polyphyly of *Aphyllophorales*, namely relationships of some its representatives with cyphelloid, polyporoid, or even gasteroid taxa. Donk (1964), formally describing many families of *Aphyllophorales*, follows to Singer in speak on various phylogenetic lines linking *Aphyllophorales* and *Agaricales*, polyphyly of cyphelloid and corticioid taxa as well as an artificial nature of the *Polyporaceae* family. Kreisel (1969) has broken an Aphyllophorales conglomerate by 3 orders, *Polyporales* (containing *Polyporaceae* s. str. and such genera of lamellate fungi as *Panellus* and *Hohenbuehelia*), *Cantharellales*, and *Poriales* (rest genera of polyporaceous fungi). From the order of *Agaricales*, Kreisel has split the *Russulales* and *Boletales* as separate orders. Since that time, for almost 20 years, a splitter's systems of polyporaceous fungi have been kaleidoscopically replaced one another.

In 1981 and 1984, Locquin's works «Entaxie, taxotropie, néguentropie, valeur et qualité en taxonomie généralisée» and «Mycologie générale et structurale» were released. In these, in the framework of the subclass *Mycenamycetidae* of *Homobasidiomycetes*, among numerous orders (32), this author distinguishes, in particular, such orders as *Poriales* (families *Bankeraceae*, *Poriaceae*, *Coniophoraceae*, *Stereaceae*, *Coraceae*, *Podoscyphaceae*, *Hymenochaetaceae*, *Daedaleaceae*, *Echinoodontiaceae*, *Favolaschiaceae*) and *Polyporales* (*Pleurotellaceae*, *Lentinaceae*, *Pleurotaceae*, *Phyllotopsidaceae*, *Resupinataceae*, *Tectellaceae*, *Panellaceae*, *Arrheniaceae*, *Polyporaceae*). Locquin's works were less known and not widely distributed, especially since most of the «splitted» families and orders identified by this author have invalidly published names.

The Jülich's system, published in his «Higher taxa of Basidiomycetes» (Jülich, 1982a), became more famous, and it represents an «impudent attempt was made to synthesize everything new that has recently been expressed in the systematics of basidiomycetes» (Parmasto, 1983). In the preamble, Jülich explains his guideline: to create a splitten homogeneous taxonomic units that can be included in a phylogenetic tree. Describing this desire of the author, his critic Parmasto notes: «The homogeneity of most families and a number of orders in the Jülich's system is unquestionable, but this was achieved at cost of dividing basidiomycetes into 62 orders and 261 families» (Parmasto, 1983). 31 orders and more than 120 families were established by Jülich as a new to science.

Various taxa of polyporaceous fungi in the modern sense were distributed in Jülich's system within described by this mycologist orders *Coriolales*, *Ganodermatales*, *Perenniporiales*, and such families as *Coriolaceae*, *Cryptoporaceae*, *Epitheleaceae*, *Fomitaceae*, *Ganodermataceae*, *Grammotheleaceae*, *Haploporaceae*, *Hymenogrammaceae*, *Lentinaceae*, *Mycoboniaceae*, *Pachykytosporaceae*, *Perenniporiaceae*, *Polyporaceae*, and *Sparsitubaceae*.

As closest to ancestral forms of homobasidiomycetes, the order *Cantharellales* was considered by Jülich, that has a certain prehistory in speculative phylogenetics of the 20th century (Corner, 1966, Zmitrovich, 2002). «From» the *Cantharellales* by several large branches Jülich has deduced a whole set of other orders. Very few propositions of Jülich's phylogenetic reconstruction have stood a testing of the time, what cannot be said about the taxa described by them. All of them remain valid and many taxa are used by modern authors in order of necessity.

The most famous within practitioner mycologists' reference to Jülich's system is the Knudsen's system (Knudsen, 1995) which was adopted to keybook «Nordic macromycetes» (Hansen, Knudsen, 1997) (see Figure 2).

Figure 2. Knudsen's system (1995), adopted to keybook «Nordic macromycetes» (Hansen, Knudsen, 1997). In a double framework, a number of taxa belonging to *Polyporaceae* s. str. as it is confirmed by data of molecular taxonomy are included.

The publication of the multi-order system of basidiomyctes by Knudsen marks an important milestone. In fact, this is the last widespread system based on morphological features and built an intuitive way, the last «author's system». A «more pragmatic approach» (Karatygin, 1999) began to penetrate in fungal taxonomy which was connected with the study of divergence, fixed by extracting phylogenetically significant information in comparative study of certain genome fragments. Poseur's «author's gestures» were replaced by reproducible procedures of amplification, sequencing, alignment and comparison of nucleotide sequences, and cladistic analysis.

Proceeding from an obvious fact of the continuity of DNA-flow in generations of organisms, the premise of molecular phylogenetics was the compilation of a kind of «protocol of divergence» by comparative study of the mutation saturation of homologous genome loci in different organisms. Beginning with Woese (Woese, Fox, 1977), the main attention was drawn to genes and spacers involved in the formation of ribosomal RNA, since they are present in all the pro- and eukaryotes, determine one of the basic life-supporting functions, and are not directly related with functions of superficial adaptive re-arrangements.

Not all the morphosystematists, who was forced in preceding period to obtain a «complex of characters» in order to understand phylogeny, first appreciated a «reductionist's power» of such a new approach. In particular, this was a reason of declaration by many of them a «polyphasic taxonomy» approach, i.e. the complement of DNA phylogeny by many other datasets, as metabolic profiles, morphological features of different levels, that is a phenotype in the broad sense. However, an «additive effect» in a new semantic environment is only conceivable when «divergence histories» extracted from one genome locus will be supplemented or verified by «histories» extracted from other loci (multigene analysis, phylogenomics).

The «molecular revolution», which has opened the possibility of obtaining in course of comparative study of nucleotide sequences a «protocol of divergence», has basically led to objective and more stable basis to the classification. In the field of ranking as well as a correlation of phylogenetic reconstructions with a Linnaean hierarchy, a subjectivism is still preserved, however, having data on basal and terminal radiations in each reconstruction, the research community is substantially approaching to the consensus on rank and boundaries of the taxa.

The first experiments on molecular taxonomy of the *Polyporaceae* were related to search most informative genome loci, which possess a greatest resolution in divergence fixation. In this respect, for example, mitochondrial rRNA genes were tested (Hibbett, Donoghue, 1995). Later, it was found that the most informative in this respect are nuclear rRNA genes

and spacers (SSU, LSU, an ITS1–5.8S–ITS2 region) in combination with TEF1 (Binder et al., 2013).

During past 20 years, the data on molecular taxonomy of basidiomycetes allowed to form rather consistent phylogenetic picture (Swann, Taylor, 1993; Hibbett et al., 1997, 2007, 2014; Hibbett, Thorn, 2001; Binder et al., 2013) and recent phylogenomic studies of economically important species appear rather congruent with results obtained from SSU and LSU rDNA reconstructions (Hibbett et al., 2014) that has confirmed a Woesean insight.

On a generic level, the molecular taxonomy of polyporaceous fungi develops extensively (Kim, 1999; Kim, Jung, 2000; Krüger, Gargas, 2004; Tomšovsky et al., 2004; Dai et al., 2007; Sotome et al., 2008; Cui et al., 2011; Justo, Hibbett, 2011; Miettinen et al., 2011; Welti et al., 2012; Zmitrovich, Malysheva, 2013).

A molecular confirmation of isolated nature of the genera *Lentinus* and *Neolentinus*, as well as transfer of the latter to the order *Gloeophyllales* (Garcia-Sandoval et al., 2001), has initiated testing by new methods of the conglomerate *Lentinus* s. l.–*Polyporus* s. l.

Earlier molecular-taxonomic studies of the genus *Ganoderma* were carried out by Moncalvo group (Moncalvo et al., 1995a, b). Further experiments in this direction were continued (Smith, Sivasithamparam, 2000; Dounala-Meli, Langer, 2009; Zhou et al., 2015; Hennicke et al., 2016), but progress in molecular taxonomy of ganodermoid fungi was less pronounced on the reason a difficulty of reaching and testing of type material. With the exception of a few common ubiquitous species, the authenticity of which does not cause doubts, the identification of most other taxa without resorting to type material and a few standard revisions is impossible – for this reason such names as «*Ganoderma lucidum*», «*G. resinaceum*», «*G. tsugae*», «*G. australe*» can be found in different clusters of the same molecular cladogram, and the question of their relation to the corresponding types remains to be open.

Krüger and Gargas (2004) have indicated the close affinity of some representatives of the genus *Polyporus* sensu Ryvarden (*P. arcularius*, *P. brumalis*, *P. tricholoma*) with representatives of the genus *Lentinus* s. str. (*L. crinitus*, *L. tigrinus*). Not overviewing a large species spectrum, these authors didn't follow a way of *Polyporus* splitting, but an idea on the heterogeneity of this genus, even in modern interpretation, was increasingly asserted. Subsequent testing of the traditionally understood genus *Polyporus*, even without focusing on the «lentinoid element», made it possible to isolate the *Favolus* and *Neofavolus* as separate genera (Sotome et al., 2011, 2013).

In thesis by Costa Rezende (2014) presents a great contribution to the knowledge of the genus *Amauroderma*. This work includes materials on

molecular phylogeny, which allow to conclude about independent generic status of *Ganoderma*, *Amauroderma* and *Tomophagus*, but a certain gravitation of *Haddowia* and *Humphreya* to internal phylogenetic radiation of *Ganoderma*.

The paper of Justo and Hibbett (2011) is devoted to *Trametes* taxonomy. According to these authors, the species of traditionally interpreting genus *Trametes* s. l. belong to different – «large polyporoid» and «large trametoid» – clades. In «large polyporoid» clade, trametoid fungi are grouped into following subclades:

– «*Lentinus*-clade» (*Trametes trogii*, *T. gallica*, *T. aspera*);

– «*Polyporus–Datronia*-clade» (*Trametes mollis*, *T. scutellata*);

– «*Daedaleopsis–Earliella*-clade» (*T. confragosa*, *T. scabrosa*, *T. hirta*);

– «*Ganodermataceae*»-clade (*Trametes* cf. *byrsina*, *Cryptoporus volvatus*).

The «large trametoid clade» on Justo and Hibbet's tree, includes the «core *Trametes*» lineage (*T. ectypa*, *T. versicolor*, *T. ochracea*, *T. conchifera*, *T. villosa*), and adjacent satellite subclades:

– «*Lenzites*-clade» (*T. betulina*, *T. gibbosa*, *T. pavonia*, *T. membranacea*);

– «*Coriolopsis*-clade» (*T. polyzona*);

– «*Artolenzites*-clade» (*T. maxima*, *T. elegans*);

– «*Pycnoporus*-clade» (*T. cinnabarina*, *T. sanguinea*, *T. cubensis*). Such genera as *Cerrena* and *Fomitopsis* are carried out by these authors, after some previous investigators, to merulioid and /fomitopsidaceae superclades, respectively. A further splitting of trametoid clade for daughter subclades appears to these authors «still problematic».

The study by Welti group (Welti et al., 2012) was initially focused on trametoid clade. Within the latter, these authors have distinguished 3 phylogenetic lines: 1) the line represented by a single species *Artolenzites elegans*; 2) the line uniting the genus *Pycnoporus* in its traditional interpretation and *Trametes cingulata*, *T. lactinea*, *T. ljubarskyi* and *T. menziesii*; 3) the line uniting «core *Trametes*» with the genera *Coriolopsis* and *Lenzites*. These researchers described a new genus *Leiotrametes* with *Polyporus lactineus* Fr. as a type.

The paper of Zmitrovich and Malysheva (2013) was devoted to correlation of morphology-based and molecular taxonomy of the polypores having the trametoid morphotype. Fine morphological markers of trametoid morphotype were revised. All the obtained molecular entities were characterized morphologically and the generic limits were discussed. It was shown that two large radiations of family level, the *Meruliaceae* and *Polyporaceae* contain the trametoid nodes. The lamellate genus *Panus* has appeared to be distant from *Lentinus* and *Polyporus*, but closely related to trametoid *Cer-*

rena and *Steccherinum* (merulioid radiation). Trametoid genera of *Polyporaceae* have appeared to be disseminated within two subradiations – polyporoid and trametoid ones. The polyporoid radiation includes such genera as *Datronia*, *Earliella*, *Microporus*, *Daedaleopsis*, *Hexagonia* s. str., *Pogonomyces*, and *Funalia*. The trametoid radiation includes such genera as *Pycnoporus*, *Cubamyces*, *Cellularia*, *Coriolopsis* s. str., *Sclerodepsis*, *Artolenzites*, *Lenzites*, and *Trametes* s. str. 7 new combinations were described as *Daedaleopsis nitida*, *Cellulariella acuta*, *C. warnieri*, *Funalia aspera*, *F. caperata*, *F. floccosa*, *F. sanguinaria*. The genus *Cellulariella* was formally described for substitution of *Cellularia* nom. ambig.

The work by Zmitrovich and Kovalenko was concentrated on resolution in lentinoid-polyporoid phylogenetic zone by means of selection both of main section representatives of *Lentinus*-related genera, and poorly known/intermediate taxa as *Lentinus suavissimus*, *Neofavolus* spp., resupinate part of *Polyporus* (genera *Perenniporia* and *Pachykytospora*) in the context of the basic structure of *Polyporales*-tree. The data obtained from ITS, TEF, and LSU coincide in support within core *Polyporaceae* of 10 clades corresponded to generic level and 7 of these (*Cerioporus*, *Cladomeris*, *Favolus*, *Lentinus*, *Neofavolus*, *Picipes*, *Polyporus* s. str.) contain generic units characterized by polyporoid or lentinoid morphotypes. The rest two clades containing lentinoiod taxa have lying outside of core *Polyporaceae*, namely *Panus* (*Meruliaceae*, *Polyporales*) and *Neolentinus* (*Gloeophyllaceae*, *Gloeophyllales*). A new genus *Picipes* is described and 25 new combinations were proposed.

Parallelly, the *Lentinus*-conglomerate was splitted by Seelan et al. (2015). The relationships between *Lentinus* subg. *Lentinus* sensu Pegler (i.e. sections *Lentinus*, *Tigrini*, *Dicholamellatae*, *Rigidi*, *Lentodiellum* and *Pleuroti* and polypores that share similar morphological characters) were studied by this group. Also, the authors have evaluated the transition in hymenophore morphology between *Lentinus*, *Neofavolus* and related polypores with ancestral state reconstruction. Single-gene phylogenies and phylogenies combining ITS and 28S with RPB1 and RPB2 genes all support existence of a *Lentinus*/*Polyporellus* clade and a separate *Neofavolus* clade. *Polyporellus* (represented by *P. arcularius*, *P. ciliatus*, *P. brumalis*) forms a clade with species representing *Lentinus* subg. *Lentinus* sensu Pegler (1983), excluding *L. suavissimus*. The priority combination *Neofavolus suavissimus* was made in this work.

The Zhou's (2016) group has highlighted a morphological unit of *Polyporus* which contains species with a black cuticle on the stipe and known as *Melanopus* in old authors. The multigene analysis has confirmed that the previously *Melanopus*-group is not a monophyletic assemblage, and species in this group distribute into two distinct clades: the *Picipes*-clade and the

Squamosus-clade. Four new species of *Picipes* were described, and nine new combinations are proposed by these authors.

A recent study by Motato-Vásquez (2018), the genus *Bresadolia* was confirmed as a distinct lineage. The phylogenetic relationship of *Polyporus udus* and its purported taxonomic synonym in South America was investigated by these authors. It was shown that *Bresadolia paradoxa* and *Polyporus udus* are not conspecific, but form independent lineages that cluster together within a monophyletic genus recognized as *Bresadolia*. In this study, a complete description of *B. paradoxa* incorporating data of type specimens previously overlooked and characters from sequenced fresh specimens is provided, as well as comments on all species described or combined in *Bresadolia*.

An important contribution to the knowledge on *Lopharia* s. str. phylogeny was made by Liu team (Liu et al., 2018) using datasets on rDNA ITS1–5.8S–ITS2 (ITS), D1–D2 domains of nuc 28S rDNA (28S) and RNA polymerase II second largest subunit (rpb2) sequences. These authors show that such genera as *Dendrodontia* and *Fuscocerrena* are synonyms of *Dentocorticium*, which appears phylogenetically related to *Lopharia*.

A number of other taxa of polyporaceous fungi have been described by Chinese research teams very recently (Li, Cui, 2013; Zhao, 2013a, b; Li et al., 2014a, b; Zhao et al., 2015, 2016). These works demonstrate well rather problematic situation with the ranking of taxa, which has developed in the molecular phylogenetics of fungi as a whole. For example, when describing the genus *Datroniella*, Li et al. (2014) showed that corresponding cluster is detached from *Datronia* cluster, however, it is impossible to judge from this cladogram even the rank of the latter. The problem of ranking is, therefore, associated with another problem – the selection of already studied in molecular respect taxa for constructing a balanced «context-forming tree» where new testing sequences should be embedded.

In the present work, we adhere to certain principles of ranking of molecularly supported taxa, which will be outlined below.

Chapter 2 The principles of ranking of molecular lineages

A new situation overtaken researchers during «molecular revolution» turned out to be unusual for many morphosystematists: an unexpected way to approach the reconstruction of «pure phylogenesis» was opened, bypassing the stage of evaluation of characters which inevitably has included a discussion, accurately called «medieval» one (Shear, 1923). In place of the ambiguous concept of «character» (Lyubishchev, 1982) came the more pragmatic concept of synapomorphy. A huge heuristic power of the sequences of genes and spacers involved in formation of rRNA for phylogeny reconstruction was verified by morphological data (Binder et al., 2013; Hibbett et al., 2014).

A reproducibility of the results obtained by these new methods by different research teams can be demonstrated the fact that within one year two researcher's teams made the same new combination – *Neofavolus suavissimus* (Seelan et al., 2015; Zmitrovich, Kovalenko, 2016), based on the revealed homology of sequences of *Lentinus suavissimus* with those of *Neofavolus alveolaris* and other representatives of the genus. All aforementioned, of course, does not provide a basis for the creation of a «rRNA religion», but allows one to relate to phylogenetic hypotheses based on comparing orthologous copies of these conservative genes as having an advantage, at least in front of morphological (in a broad sense) hypotheses. A possibility of reviewing pure phylogenesis, devoid of «morphological husks» (Karpov, 2001) it has appeared. The resolution of the ribosomal cluster genes in overview of «pure phylogenesis» varies, which is associated with the need for multigene verification of ribosomal trees or their individual nodes, but is basically rather high.

The SSU rRNA gene is very conservative and little varies in all the higher fungi. The gene, encoding LSU rRNA is more variable. An overview of the divergence of *Polyporales* at the family and the generic level is most conveniently done on the basis of a comparison specifically for this site (Justo, Hibbett, 2011; Binder et al., 2013; Zmitrovich, Malysheva, 2013; Zmitrovich, Kovalenko, 2016) (see Figure 3).

One of the phylogenetically informative loci of the ribosomal cluster for fungal organisms is the internal transcribed spacers (ITS) region flanking the 5.8S rRNA gene: ITS1–5.8S–ITS2. This locus has been proposed for universal barcoding of fungi (Schoch et al., 2012), although an intragenomic variability of this region, as well as its highly variable length in some groups

(e.g. *Cantharellales* – Taylor, McCormick, 2008; Psurtseva et al., 2016), is an argument against this idea. More importantly, that 2/3 of examined fungal organisms have an intraspecific variability of ITS1–ITS2 sequences lies in the range 0–1% and approximately 3/4 of fungi have their intraspecific variability ca 1–2% (Nilsson et al., 2008), therefore, in fungi this region can be used as a marker of species divergence (O'Brian et al., 2005; Nilsson et al., 2008; Hughes et al., 2009; Walker et al., 2009).

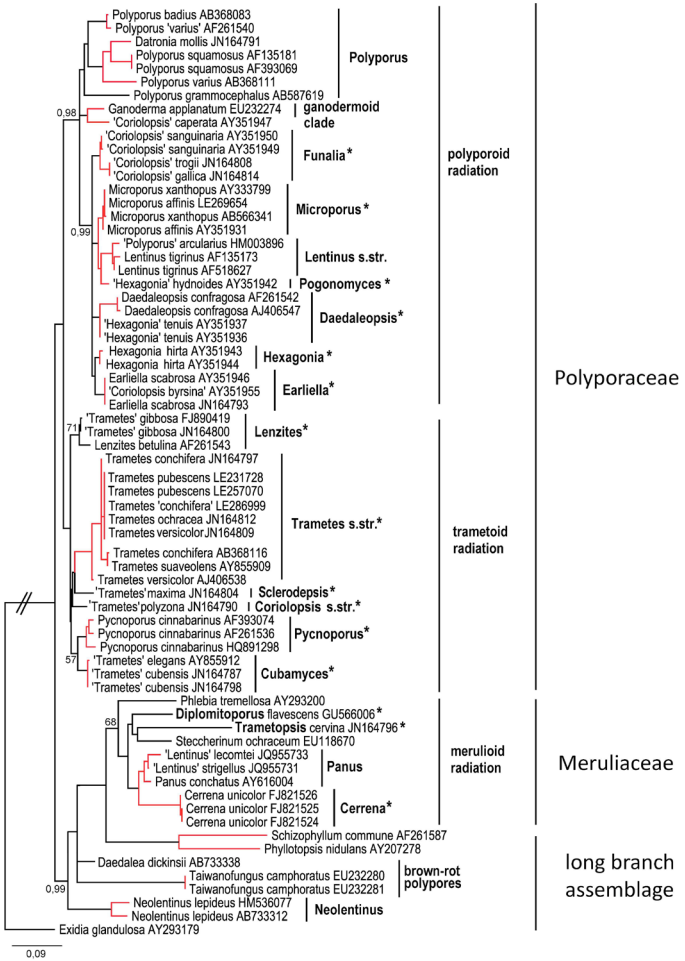

Figure 3. An example of large-scale *Polyporales* tree obtained from the ML analysis of the nLSU dataset focused on trametoid taxa (marked with asterisk) (Zmitrovich, Malysheva, 2013).

The assignment of a certain taxonomic rank to the branches of molecular cladogram remains, apparently, the last resort of subjectivism in molecular taxonomy, while something well-being in the ranking field was not observed also in the pre-molecular era (Vasilyeva, 1999). A complexity in the ranking field is conditioned objectively: the phylogenetic tree, random by its nature, can be placed within «Procrustean bed» of Linneean hierarchy only with certain costs. The radical solution of this situation, namely, the rejection of the Linnaean hierarchy as a whole was proposed by the group of Erezhevsky (Cantino, de Queiroz, 2003; Ereshefsky, 2004). To date, such a kind of refusal is rather an ideological slogan, and the Linnaean categories are still in demand by the taxonomic community for various reasons, accordingly, the coordination of ranks of taxa is somehow carried out by different authors, proceeding from 1) the nature of taxa range, and 2) the authors' flexibility and their readiness for wide use an intercalary taxonomic categories.

When ranking a molecular phylogenetic tree, we adhered to the following principles.

1. In reality, the phylogenetic tree is always not strictly dichotomous (sympodial) because of a random elimination of the polymorphism spectra in different branching zones that took place in the evolution of all the groups. Therefore, each preceding node doesn't necessarily correspond to the previous basic hierarchical category.

2. If the species is easily defined as a terminal lineage or a well-supported terminal cluster with a minimum number of expected changes per site, the rank of superscript clusters can be determined by multidimensional coordination, the algorithms of which have not yet been elaborated.

3. One way to approach a clear ranking algorithm is to allocate a series of phylogenetic radiations, whichever is reflected in the cladogram by zones with multiple nests presumable of the same level, preceded by the basal nest. For practical reasons, it is better to correlate such a zones with the basic (not intercalary) categories of the Linnaean hierarchy.

4. A terminal radiation, obviously, corresponds to the Linnean category of the lowest rank, whereas basal radiation – to the higher one. The distant nodes we are suggested to be pulling to the nearest radiation, but not to assign them a formally equal with the «large radiation» rank, what is practiced today especially wide that leads to splitting at generic and family level. The assignment of taxonomic rank of a basal radiation occurs in practice by incorporation the generated tree into the global one, with a consensus understanding its rank in the corresponding global system (Kirk et al., 2008; Hibbett et al., 2014; Tedersoo et al., 2018).

Chapter 3 Morphological thesaurus

This chapter contains a minimum of data concerning structures of polyporaceous fungi having presumably a diagnostical value. For an enlarged morphological outline of *Polyporaceae* we refer to our special research (Zmitrovich, 2017).

3.1. Basidiome macromorphology

3.1.1. Growth forms. Basidiomata of polyporaceous fungi developed mostly on a woody substrate. A positive geotropism of the hymenophore is achieved through developing various types of basidiomata – *sessile*, *effused-reflexed*, totally *resupinate* or furnished by a short *stem* or long *stipe*. All the types of basidiomata can grow solitary or in clusters – as *imbricate* or *widely effused* formations.

3.1.2. Hymenophore. The most of polyporaceous fungi are characterized by poroid *hymenophore* organized as a single (*annual* or *persisted basidiomata*) or multiple (*perennial basidiomata*) tube layers; in some groups the tubes can be splitted with formation of *labyrhintine* catacombs, *radial gills*, *irpicoid teeth*, or *plates*. In many tropical taxa the *pores* have hexagonoid appearance (*hexagonoid hymenophore*), or strongly elongated (*favoloid hymenophore*). Some taxa of polyporaceous fungi are characterized by other types of hymenophore: *lamellate*, *smooth*, *tuberculate*, *costate*, or *spinose*.

3.1.3. Context. The sterile part of basidiome (*context*) can differ in texture, color, and consistency. The *color* varies from white or nearly so to cinnamon and umber-brown in melanized forms. The *texture* can be *homogeneous* or *heterogeneous* – with prominent fiber fascicles and surrounding material. Some basidiomata have a context of various density: as a rule, an *upper layer* is soft and spongy, whereas the *layer underlying the hymenophore* is dense. In some cases so-called *black lines* underlying the hymenophore or cuticle. The *consistency* varies from *tough-fleshy* or *byssoid* to *fibrous-coriaceous*, *ceraceous*, *suberose*, or *hard-wood*.

3.1.4. Upperside. Some types basidiomata form pilei which surface is diverse. As a rule, the *cuticular* formations of *intermixed hyphal structure* are formed (*anamixoderm*), but in some cases (*Ganoderma*) forms *hymenioderm* (*pileocystidial palisade*), or various types of *trichoderm*. In trametoid fungi, the type of pileus cover (trichodermoid or intermixed

structure, presense/absense of *subpellis*, pigments deposits) has a great diagnostical value. *Scales* or *dots* are characteristic for *cuticle* of some *Polyporus*- and *Lentinus*-like fungi. The macrorelief of upperside can be characterized as *even*, *radially ridged*, *zonally furrowed*, or *scrupose*.

3.1.5. Basidiome morphotypes. The growth form of the basidiome, its texture, proportions, and hymenophore configuration, can be generalized in certain morphotype. Within the *Polyporales*, the following main basidiome morphotypes can be distinguished: *polyporoid* – annual orthotropic basidiome of tough-fleshy consistence with tubular hymenophore and more or less central stipe; *lentinoid* – annual orthotropic basidiome of tough-fleshy consistence with gilled hymenophore and more or less central stipe; *tyromycetoid* – annual sessile to effused-reflexed basidiocarp of fleshy consistence, with tubular (rarely toothed) hymenophore; *trametoid* – annual or persistant sessile to effused-reflexed basidiocarp of coriaceous to suberose consistence with tubular hymenophore (as variants: *corioloid* – with thinner context layer, *scenidioid* – with thin context and tube layers, but with large pore diameter); *fomitoid* – perennial sessile, rarely effused-reflexed basidiocarp of suberose to hard-woody consistence with several tube layers; *merulioid* – annual effused-reflexed to resupinate basidiome of fleshy to corneous consistence with folded hymenophore; *stereoid* – usually perennial effused-reflexed to resupinate basidiome of hard consistence with smooth or tuberculate hymenophore and thickening hymenium; *fibroporioid* – annual to perennial resupinate orbicular basidiome of fibrous-coriaceous consistency with tubular hymenophore; *ceriporioid* – annual resupinate orbicular basidiome of ceraceous consistency with tubular hymenophore; *corticioid* – annual orbicular or rhizomoid basidiome of dense consistency with smooth hymenophore; *athelioid* – the same as corticioid, but basidiome is differentiated into loose subiculum and pellicular leptohymenium; *grandinioid* – the same as corticioid, but with papillose hymenophore; *odontioid* – the same as corticioid, but with toothed hymenophore.

3.2. Types of hyphae

The basic type of basidiome hyphal differentiation is *generative hyphae* – a totipotent septate hyphae with functioning protoplast; usually thin-walled, clamped, in some groups without clamps. In some cases, also *gloeoplerous hyphae* are present together with generative ones, i. e. living hyphae with oily (light-refracting) contents; usually they bear clamps and inflations. In some species *pseudoskeletal* (*intermediate*) hyphae can be differentiated too – more or less thick-walled septate ones, clearly differing from generative hyphae by its thickened walls, pigmentation, or diameter ($L > 2w$). While the protoplast and septa in pseudoskeletal hyphae collapse,

the *skeletal hyphae* develop, i. e. thick-walled, non-septate, linear filaments. Skeletal hyphae as well as their thick-walled precursors can be furnished by peculiar *appendages* known as *binding hyphae*, i. e. sclerified hyphae branched to the state when the main axis is undistinguishable.

3.3. Diagnostically important hyphal attributes

Generative hyphae of many species bear small lateral anastomoses between connected cells – so-called *clamp connections*, or *clamps*. According to Clémençon (2004), three main forms of clamp connections can be distinguished: (i) *closed clamp*, leaving no space between the hypha and anastomose body; (ii) *ring clamp* (= *medallion clamp*), leaving a hole or space between the hypha and anastomose body; and (iii) *verticillate clamps*, forming a cluster of two or more clamp connections around the same septum. There are also *pseudoclamps*, occuring sometimes in presomatogamic as well as postsomatogamic mycelium, when lateral anastomose initials did not reach the following cell body.

Branching pattern of hyphae is a good diagnostical feature. In polyporaceous fungi four types of hyphal branching can be detected: 1) *normal* (or *athelioid*) branching pattern, when hyphae are ramified at sharp angles, 2) *candelabriform branching* – the same, but finally branches are parallel (usually such branching pattern occurs in subhymenial layer), 3) *rectangular branching*, and 4) *parallel branching*, when verticillate pseudoclamp affiliations expand parallel to mother hypha.

Skeletal hyphae can keep an *axial inflation* in some annual polypore fruitbodies (so-called *skeleto-binding cells*, *sarcoskeletals*), but in many species, the main axis is still prominent, but already non-inflated (*arboriform* or *sympodially-branched sclerohyphae*). When appendages collapse, the remnant linear fragments called *fibrohyphae*. The walls of skeletals can be hyaline or pigmented (usually yellowish-, golden-, or rusty-brown). The *lumen* can be rather wide, but in many peripherical dendrites, it is narrow. Skeletal hyphae having narrow lumina named as *subsolid* or *solid*.

3.4. Hyphal systems

The presence and combination of certain types of hyphae determine the hyphal construction of basidiocarp. The history of hyphal systems concepts was considered by us earlier. In the present outline, we adhere to our recent concept (Zmitrovich, 2017), which combines two important dimensions in hyphal differentiation – the wall thickening and the physaloid segments elimination (Table 8).

Table 8

Types of hyphal systems of basidiomata of polyporaceous fungi
(according to Zmitrovich, 2017)

Type of hyphal system	Hyphal types, presented in basidiome				Examples
	1	*2*	*3*	*4*	
1. Monomitic					
– isomonomitic	+	–	–	–	*Epithele* spp.
– sarcomonomitic	+	+	–	–	*Cerioporus squamosus*, *Cladomeris umbellata*, *Lentinus tigrinus*
2. Sarcodimitic	+	–	+	–	*Lentinus* spp., *Cerioporus* spp.
3. Dimitic					
– with arboriform sclerohyphae	+	–	–	+	*Ganoderma*, *Fomes*, *Funalia*
– with sympodially branched sclerohyphae	+	–	–	+	*Trametes* spp., *Pycnoporus* spp., *Haploporus*
– with fibrohyphae	+	–	–	+	*Epithele* spp., *Grammothele*

Note: *1* – generative hyphae, *2* – sarcoskeletals, *3* – ramified skeletals with prominent axis, *4* – fibrohyphae.

3.5. Hymenium and its elements

The basic element of fertile basidiome surfaces is an exogeneously sporulating cell called *basidium*. Before spore producing, basidia are usually considered as *basidioles*. In polyporaceous fungi the hymenium is *euhymenium* (i.e. hymenium composed of *basidial clusters*) in its two variants: (i) *leptohymenium* (non-thickening hymenium: basidial clusters converge which leads to the development of thin pellicular layer), and (ii) *auxohymenium* (having thickened subhymenium).

Also, various types of *cystidia* can be observed in the hymenium of polyporaceous fungi. This term is applied to a heterogeneous assemblage of storage, excretory, and supporting «organs» (for a detailed review of cystidial theme see Donk, 1964, Eriksson et al., 1987, Clémençon, 2004, Zmitrovich et al., 2006). For the group in question, the following types of cystidia are usually reported.

3.5.1. Cystidial organs of hymenial/subhymenial origin. *Leptocystidia* – thin-walled, as a rule non-encrusted cystidia: *cystidioles* – hymenial leptocystidia, emerging at the same level as basidia; *hydroplerous gloeocystidia* – leptocystidia with oily (light-refracting) contents. *Lamprocystidia* – thick-walled, heavily encrusted cystidia. *Metuloids* – thick-walled, non-encrusted or apically-encrusted cystidia.

3.5.2. Cystidial organs of tramal origin. *Pseudocystidia* (*skeletocystidia*, *sclerids*) – thick-walled sterile elements, penetrating the hymenium as endings of skeletal (pseudoskeletal, thick-walled generative) hyphae. *Gloe-*

ocystidia – thin-walled elements, protruding the hymenium as endings of gloeoplerous hyphae.

In some polyporaceous fungi the hymenium enriched by hyphal endings – *hyphidia*, ramified (*dendrohyphidia*) or not. Hyphal fascicles protruding the hymenium are known as *pegs*.

3.5.3. Basidium morphology and terminology. The basidium of polyporoid fungi is *chiastic homobasidium*. This basidium type (in contrast to heterobasidium) is charaterized by weak differentiation into *hypo-* and *epibasidium* and into *pro/metabasidium* in its ontogenesis. The ratio between *hypobasidial* and *epibasidial segments* in the basidium has a certain diagnostic value: *clavate basidium* is a basidium with epibasidial segment longer than hypobasidial segment, and weakly developed or absent medial constriction; *cylindrical basidium* is a basidium with hypo- and epibasidial segments approximately equal in width, without evident medial constriction; *podobasidium* (*pedunculate*, *sinuose basidium*) is a basidium with epibasidial segment wider than flexuose hypobasidial segment; *urniform basidium* is a basidium with hypobasidial segment wider than epibasidial one; *utriform* (*utriculate*, *merulioid*) *basidium* is a basidium with hypo- and epibasidial segments approximately equal in width, with well-expressed medial constriction and often flexuose epibasidial segment.

3.5.4. Basidiospores and mitospores. Basidiospore initials start to develop within basidia during post-meiotic mitoses mainly by a holoblastic way. The components of basidial cytoplasm migrate into sporoid bodies, and when the process of maturing develops, dissimilative processes in cytoplasm slow down. A great diagnostic value has a form of dormant basidiospores (*ellipsoid*, *cylindrical*, *allantoid*, *sigmoid*, *amygdaloid*, *subglobose*) and a *sporoderm* features (see Spirin et al., 2005). Both LM and TEM research show clear heterogeneity of sporoderm, i. e. its multilayered nature. Among these structures *exine* (mostly *tectocorium*) has main diagnostic value. It can be smooth (the most of *Polyporaceae*), perforated, or ornamented (e. g. *Ganoderma*). *Perine* covers outer tectonic structures of exine.

Some kinds of *asexual propagules* (*mitospores*) may develope on mycelium in culture or within vegetative tissue of wild basidiocarps. There are two kinds of mitospores in polyporoid fungi: (i) *aleuria*, i. e. terminal or lateral swollen hyphal outgrowths, and (ii) *chlamydospores* in stict sense, i. e. specialized cells in hyphal filament having more or less thickened mantle and dormant protoplast (Clémençon, 2004).

3.5.5. Color reactions of cell wall. Fine structure of basidiospore and mitospore suface as well as vegetative hyphal filaments has an evident diagnostical meaning. Minimization of optical artifacts is possible due to use of various chemical reagents, from which *Melzer's reagent* and Toluidin (or Cotton) Blue are especially useful. Colour reaction with Melzer's reagent (i.e. iodine-starch reaction) becomes apparent if amorphous glucan matrix

of spore wall absorbs iodine. However, depending on the wall structure, reaction can be varying. The «iodine-starch complex» belongs to the substance class named acclusion compounds and placed between two other classes – solid intrusion solutions and true chemical compounds. The inclusion compound appears when one chemical substance (in our case – iodine) penetrates into the cavities of the other (for example, between «axes» and «branches» of glucan chains). The iodine molecules fasten to glucan structure due to electrostatic powers. Unlike true chemical compounds, iodine atoms not fix strictly within glucan structure, but form a long chain in which every iodine atom is combined with the neighbour by one electron. The colour of iodine chain is conditioned by length of cavity, and varying from bluish (cavity long) to brownish (cavity short). Iodine forms analogous compounds together with barbiturates, coumarins, and flavons. In mycology, iodine is commonly used in reactions, being a component of an organic-inorganic complex – Melzer's reagent. Intensity of reaction descends after heating, and increases when preparation is cooled and nitrites of alkaline metals are added. Colour variation depends on glucan concentration in a hyphal/spore wall, and has taxonomic significance. At the same time, oftenly the evaluation of colour reactions is rather subjective. Widespread gradation includes such categories as *seemingly amyloid* (pale mouse grey to light vinaceous grey), *weakly amyloid* (ash-grey to bluish grey), *amyloid* (dark bluish grey), *strongly amyloid* (vinaceous-grey to greyish violet), *weakly dextrinoid* (cinnamon-buff to olivaceous buff), *dextrinoid* (yellowish-brown), *strongly dextrinoid* (orange-brown). Thus, Melzer's reagent allows to show the peculiarities of fibrillar-crystalline wall matrix, and precludes to some degree the artifacts caused by minute structure of core wall. However, this stuff does not detect the shape of thin ectal sculpture because it has no affinity with denser hydrophobic matter. Cotton blue (CB) aids to detect granular matter and reconstruct the shape of wall surface (Locquin, 1943; Spirin et al., 2005). Due to its free NH_2- groups, this medium easily reacts with «acide» fragments of many lipoid and protein substances. In many cases, CB is very effective dye: it stains other matters, retaining its own colour. It is useful to morphological studies, since it colours superficial chondroproteins. The absorbtion of CB by any surface structure is usually termed as its *cyanophily*.

Chapter 4 Conspectus systematis Polyporacearum

POLYPORALES Gäum., Vergl. Morphol. Pilze: 503, 1926.
= *Aphyllophorales* Rea, British Basid.: 10, 1922 pro parte.
= *Poriales* Locquin, Bull. Jard. bot. Brux. 27: 560, 1957 pro parte.
= *Coriolales* Jülich, Bibl. Mycol. 85: 345, 1982.
= *Fomitopsidales* Jülich, Bibl. Mycol. 85: 347, 1982.
= *Ganodermatales* Jülich, Bibl. Mycol. 85: 347–348, 1982.
= *Grifolales* Jülich, Bibl. Mycol. 85: 348, 1982.
= *Hyphodermatales* Jülich, Bibl. Mycol. 85: 349, 1982.
= *Meruliales* Jülich, Bibl. Mycol. 85: 350, 1982.
= *Perenniporiales* Jülich, Bibl. Mycol. 85: 351, 1982.
= *Phaeolales* Jülich, Bibl. Mycol. 85: 351, 1982.
= *Phanerochaetales* Jülich, Bibl. Mycol. 85: 351–352, 1982.
= *Xenasmatales* Jülich, Bibl. Mycol. 85: 353, 1982 pro parte.
= *Phlebiales* Boidin, Mugnier et Canales, Mycotaxon 66: 486, 1998.
= *Podoscyphales* Boidin, Mugnier et Canales, Mycotaxon 66: 486, 1998.
= *Trametales* Boidin, Mugnier et Canales, Mycotaxon 66: 486, 1998.

Hyphae bearing a dolipore septa and perforated parenthesomata. Chiastic (2)4-spored homobasidia with an active spore discharge. Basidiospores not budding, thin-walled, rarely thick-walled, smooth or rarely with ornamented exosporium, as a rule inamyloid, sometimes dextrinoid, often cyanopilic. Hyphal system monomitic, pseudodimitic, dimitic (with fibrohyphae, or with branching skeletals – so-called trimitic). Generative hyphae with single or double clamp connections, pseudoclamps, or simple-septate, with inflated (physalohyphae) or non-inflated segments. Sclerohyphae fibrous, inflated or not, branched or not, thick-walled to subsolid, inamyloid, rarely weakly amyloid or dextrinoid, acyanophilic or cyanophilic.

Basidiomata gymnocarpic or mixangiocarpic, of hypochnoid, corticioid, stereoid, merulioid, irpicoid, porioid, scutigeroid, grifoloid, tyromycetoid, trametoid, fomitoid, scenidioid, polyporoid, or lentinoid habitus. Context non-pigmented or pigmented. Hymenophore smooths, folded, spinose, reticulate, poroid, or lamellate (lamellae developed from poroid hymenophore or laid primarily in radially-oriented ridges of 2–3 levels).

Xylotrophic (at least, lignotrophic) fungi, rarely facultative litter saprotrophs of mycorriza-formers. All the representatives have expressing or silent genes of laccases and peroxidases. Causes white or brown rot.

POLYPORACEAE Corda, Ic. Fung. 3: 49, 1839.
= *Ganodermataceae* Donk, Bull. Buitenz. Bot. Gdns. III 17: 474, 1948.
= *Poriaceae* Locquin, Bull. Jard. bot. Brux. 27: 560, 1957 pro parte.
= *Coriolaceae* Singer, Publ. Inst. Micol. Univ. Resife 304: 6, 1961.
= *Cryptoporaceae* Jülich, Bibl. Mycol. 85: 361, 1982.
= *Epitheleaceae* Jülich, Bibl. Mycol. 85: 366, 1982.
= *Fomitaceae* Jülich, Bibl. Mycol. 85: 367, 1982.
= *Grammotheleaceae* Jülich, Bibl. Mycol. 85: 369, 1982.
= *Haploporaceae* Jülich, Bibl. Mycol. 85: 370, 1982.
= *Hymenogrammaceae* Jülich, Bibl. Mycol. 85: 372, 1982.
= *Lentinaceae* Jülich, Bibl. Mycol. 85: 376, 1982.
= *Mycoboniaceae* Jülich, Bibl. Mycol. 85: 380, 1982.
= *Pachykytosporaceae* Jülich, Bibl. Mycol. 85: 382, 1982.
= *Perenniporiaceae* Jülich, Bibl. Mycol. 85: 383–384, 1982.
= *Sparsitubaceae* Jülich, Bibl. Mycol. 85: 390, 1982.
= *Trametaceae* Boidin, Mugnier et Canales, Mycotaxon 66: 487, 1998.

Basidiomata gymnocarpic or mixangiocarpic (*Lentinus* spp.) – of hypochnoid (*Epithele*), porioid, trametoid, fomitoid, scenidioid, polyporoid, or lentinoid habitus. Context non-pigmented, rarely pigmented. Hymenophore smooth (with a hyphal pegs), tubular, labyrinthine, or lamellate (lamellae developed from poroid hymenophore or laid primarily in radially-oriented ridges of 2–3 levels).

Hyphal system monomitic, sarcomonomitic, sarcodimitic, dimitic (with fibrohyphae, or sympodially-brached sclerohyphae, or arboriform sclerohyphae). Generative hyphae with single or double clamp connections, pseudoclamps, or simple-septate (some species of *Epithele*, *Picipes*). Sclerohyphae fibroid, inflated or uninflated, branched of with eliminated appendages, thick-walled to subsolid, inamyloid, rarely weakly amyloid or dextrinoid, acyanophilous or cyanophilous. Basidia (2)4-spored. Basidiospores thin-walled or thick-walled (*Ganodermateae*), smooth or with ornamented exosporium, inamyloid, in some cases dextrinoid, acyanophilous or cyanophilous.

Type genus: *Polyporus* [Mich.] Fr., Syst. Mycol. 1: 341, 1821.

Xylotrophic or at least lignotrophic fungi. Causes a white rot.

Subfamily I. POLYPOROIDEAE Fr., Syst. Orbis Veg.: 79, 1825.

Sclerohyphae branched with a prominent axial element, or fibrous (*Epitheleae*); basidiomata of various habitus; in trametoid representatives the context more or less melanized.

Tribe 1. P o l y p o r e a e Fr., Fl. Scan: 338, 1836.

Basidiomata of polyporoid, trametoid, or fibroporioid habitus; sclerohyphae weakly melanized, often hyaline.

ATROPORUS Ryvarden, Norw. J. Bot. 20: 2, 1973.

Basidiomata of favoloid habitus, annual to biennial, with short stem covered with blackish cuticle. Context cinnamon. Hyphal system sarcodimitic. Generative hyphae clamped. Skeletal hyphae hyaline to yellowish, arboriformly branched (dendrites with inflated axis), strongly dextrinoid. Cystidia none. Basidia clavate, 4-spored. Basidiospores ellipsoid to cylindrical, IKI–, CB–.

Type: *Polyporus diabolicus* Berk., 1856.

Well-known representatives: *Atroporus diabolicus* (Berk.) Ryvarden, Norw. Jl Bot. 20: 2 (1973).

A. rufoatratus (Berk.) Palacio, Reck et Robledo, Palacio, Grassi et Robledo, PlosOne, doi.org/10.1371/journal.pone.0186183, 2017.

CERARIOPORIA F. Wu, L. W. Zhou et J. Si in Wu, Zhou, Yuan, Tian et Si, Phytotaxa 280(1): 58, 2016.

Basidiomata of fibroporioid habitus, annual, resupinate, of ceraceous consistency. Context cinnamomescent, thin, subresinous. Hyphal system dimitic with fibrohyphae. Generative hyphae clamped. Skeletal hyphae hyaline, rarely branched, uninflated, thick-walled. Cystidia ventricose, thick-walled, apically finely encrusted. Basidia clavate, 4-spored with a basal clamp. Basidiospores fusiform, thin-walled, IKI–, CB–.

Monotypic.

Cerarioporia cystidiata F. Wu, L.W. Zhou et J. Si, in Wu, Zhou, Yuan, Tian et Si, Phytotaxa 280(1): 58, 2016.

CERIOPORUS Quél., Ench. Fung.: 167, 1886.

= *Melanopus* Pat., 1887.

= *Mycobonia* Pat., 1894.

= *Datronia* Donk, 1966.

= *Megasporoporiella* B. K. Cui, Y. C. Dai et Hai J. Li, 2013.

Basidiomata of polyporoid, chondrostereoid (so-called *Mycobonia*), trametoid to fibroporioid habitus, annual, stipitate, sessile or resupinate, of fleshy, fibrous or ceraceous consistency. Context white, fleshy to fibrous. Hyphal system sarcomonomitic, sarcodimitic, or dimitic with arboriform sclerohyphae. Generative hyphae clamped. Skeletal hyphae hyaline to golden-brown, regularly branched, dendrites with a prominent axis. Leptocystidia hymenial, fusoid or nearly so. Dendrohyphidia present or not. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, navicular, fusiform or amygdaloid, thin-walled, IKI–, CB+/CB–.

Type: *Boletus squamosus* Huds., 1778.

Cerioporus subgen. *Cerioporus*

Basidiomata of polyporoid habitus; context fleshy to tough; sclerohyphae hyaline, with strongly inflated axial element.

Cerioporus choseniae (Vassilkov) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

C. corylinus (Mauri) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

Cerioporus flavus (Sw.) Zmitr. comb. nov. (MB 827190) – Basionym: *Peziza flava* Sw., Prodr.: 150, 1788.

C. hygrocybe (M. Pieri et B. Rivoire) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

C. leptocephalus (Jacq.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

C. meridionalis (A. David) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

C. rangiferinus (Bolton) Zmitr., Bondartseva, Volobuev et I. Parmasto in Zmitr., Volobuev, Parmasto et Bondartseva, Nova Hedwigia 105(3–4): 322, 2017.

C. squamosus (Huds.) Quél., Enchir. Fung.: 166, 1886.

C. varius (Pers.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

C. vassilievae (Thorn) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

Cerioporus subgen. *Datronia* (Donk) Zmitr. ined.

Basidiomata of trametoid to fibroporioid habitus; context fibrous to ceraceous; sclerohyphae hyaline or golden-brown (sometimes finely encrusted), with a prominent, but not inflated axial element.

Cerioporus cavernulosus (Berk.) Zmitr. comb. nov. (MB 827127). – Basionym: *Polyporus cavernulosus* Berk., Hook. J. Bot. Kew Gard. Misc. 8: 235, 1856.

Cerioporus decipiens (Bres.) Zmitr. comb. nov. (MB 827117). – Basionym: *Trametes decipiens* Bres., Ann. mycol. 18(1/3): 40, 1920.

Cerioporus glabrus (Ryvarden) Zmitr. comb. nov. (MB 827118). – Basionym: *Datronia glabra* Ryvarden, Mycotaxon 28(2): 527, 1987.

Cerioporus laceratus (B. K. Cui et Hai J. Li) Zmitr. comb. nov. (MB 827128). – Basionym: *Megasporoporiella lacerata* B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 377, 2013.

Cerioporus melanocarpus (B. K. Cui, Hai J. Li et Y. C. Dai) Zmitr. comb. nov. (MB 827122). – Basionym: *Datroniella melanocarpa* B. K. Cui, Hai J. Li et Y. C. Dai in Li, Cui et Dai, Persoonia 32: 173, 2014.

C. mollis (Sommerf.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

Cerioporus orcomantus (Robledo et Rajchenb.) Zmitr. comb. nov. (MB 827119). – Basionym: *Datronia orcomanta* Robledo et Rajchenb. in Robledo, Urcelay, Domínguez et Rajchenberg, Can. J. Bot. 84(10): 1566, 2006.

Cerioporus parvisporus (Ryvarden) Zmitr. comb. nov. (MB 827120). – Basionym: *Datronia parvispora* Ryvarden, Syn. Fung. 32: 60, 2014.

Cerioporus pseudocavernulosus (B. K. Cui et Hai J. Li) Zmitr. comb. nov. (MB 827129). – Basionym: *Megasporoporiella pseudocavernulosa* B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 378, 2013.

Cerioporus rhododendri (Y. C. Dai et Y. L. Wei) Zmitr. comb. nov. (MB 827130). – Basionym: *Megasporoporia rhododendri* Y. C. Dai et Y. L. Wei in Dai, Wei et Wang, Ann. bot. fenn. 41(5): 323, 2004.

Cerioporus scutellatus (Schwein.) Zmitr. comb. nov. (MB 827123). – *Polyporus scutellatus* Schwein., Trans. Am. phil. Soc., New Series 4(2): 157, 1834.

Cerioporus sepiicolor (Corner) Zmitr. comb. nov. (MB 827121). – Basionym: *Trametes sepiicolor* Corner, Beih. Nova Hedwigia 97: 160, 1989.

C. stereoides (Fr.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

Cerioporus subcavernulosus (Y. C. Dai et Sheng H. Wu) Zmitr. comb. nov. (MB 827131). – Basionym: *Megasporoporia subcavernulosa* Y. C. Dai et Sheng H. Wu, Mycotaxon 89(2): 384, 2004.

Cerioporus subtropicus (B. K. Cui, Hai J. Li et Y. C. Dai) Zmitr. comb. nov. (MB 827124). – Basionym: *Datroniella subtropica* B. K. Cui, Hai J. Li et Y. C. Dai in Li, Cui et Dai, Persoonia 32: 175, 2014.

Cerioporus tibeticus (B. K. Cui, Hai J. Li et Y. C. Dai) Zmitr. comb. nov. (MB 827125). – Basionym: *Datroniella tibetica* B. K. Cui, Hai J. Li et Y. C. Dai in Li, Cui et Dai, Persoonia 32: 175, 2014.

Cerioporus tropicus (B. K. Cui, Hai J. Li et Y. C. Dai) Zmitr. comb. nov. (MB 827126). – Basionym: *Datroniella tropica* B. K. Cui, Hai J. Li et Y. C. Dai in Li, Cui et Dai, Persoonia 32: 176, 2014.

CLADOMERIS Quél., Enchir. fung.: 167, 1886.

= *Dendropolyporus* (Pouzar) Jülich, 1982.

Basidiomata of grifoloid habitus, annual, arising from sclerotium, multipileate with ramified stem. Context white, fleshy to fibrous when dry. Hyphal system sarcomonomitic. Generative hyphae clamped. Pseudoskeletal hyphae hyaline, regularly branched, dendrites with inflated axis; during basidiomata maturation turn into skeletal hyphae. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, IKI–, CB–.

Type: *Boletus umbellatus* Pers., 1801.

Monotypic.

Cladomeris umbellata (Pers.) Quél., Enchir. fung.: 167, 1886.

ECHINOCHAETE D. A. Reid, Kew Bull. 17(2): 283, 1963.

= *Dendrochaete* G. Cunn., 1965.

Basidiomata of favoloid habitus, annual, with rather short stem. Context whitish-pink to brown when dry. Hyphal system dimitic with arboriform sclerohyphae. Generative hyphae clamped. Skeletal hyphae golden to rusty brown, regularly branched (dendrites with a prominent axis), dextrinoid. Spinulose setoid elements present in the pilear surface, hymenium and dissepiments edge. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical to ellipsoid, IKI–, CB–.

Type: *Favolus megaloporus* Bres., 1913.

Well-known representatives: *Echinochaete brachypora* (Mont.) Ryvarden, Bull. Jard. Bot. natn. Belg. 48: 101, 1978.

E. cinnamomeosquamulosa (Henn.) D. A. Reid [ut «*cinnamomeosquamosula*»], Kew Bull. 17(2): 285, 1963.

E. maximipora Sotome et T. Hatt., Mycol. Progr. 8(2): 126, 2009.

E. ruficeps (Berk. et Broome) Ryvarden, Norw. J. Bot. 19: 231, 1972.

E. russiceps (Berk. et Broome) D. A. Reid, Kew Bull. 17(2): 285, 1963.

FAVOLUS Fr., Elench. 1: 44, 1828.

= *Pseudofavolus* Pat., 1900.

= *Royoporus* A. B. De, 1996.

Basidiomata of favoloid habitus, annual, with various stem. Context white to salmon. Hyphal system sarcodimitic. Generative hyphae simple-septate or clamped. Skeletal hyphae hyaline, rarely branched (dendrites with a prominent axis), indextrinoid. Cystidia none. Basidia clavate, 4-spored. Basidiospores cylindrical to navicular, IKI–, CB–.

Type: *Merulius daedaleus* Link, 1789.

Well-known representatives: *Favolus acervatus* (Lloyd) Sotome et T. Hatt., Fungal Div. 58: 254, 2013.

F. albostipes (Ryvarden et Iturr.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

F. biskeletalis (Corner) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

F. brasiliensis (Fr.) Fr., Linnaea 5: 511, 1830 [*Daedalea brasiliensis* Fr., 1821.

F. elongoporus (Drechsler-Santos et Ryvarden) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

F. emerici (Berk. ex Cooke) Imazeki, Bull. Tokyo Sci. Mus. 6: 95, 1943.

Favolus eos (Corner) Zmitr. comb. nov. (MB 827626). – Basionym: *Grifola eos* Corner, Beih. Nova Hedwigia 96: 65, 1989.

F. gracilisporus H. Lee, N. K. Kim et Y. W. Lim in Tibpromma et al., Fungal Diversity 83: 212, 2017.

F. ianthinus (Gibertoni et Ryvarden) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 33, 2016.

F. philippinensis Berk., London J. Bot. 1: 148, 1842.

F. pseudobetulinus (Murashk. ex Pilát) Sotome et T. Hatt., Fungal Div. 58: 260, 2013.

F. roseus Lloyd, Mycol. Writ. 7: 1157, 1922.

F. spathulatus (Jungh.) Lév., Ann. Sci. Nat. Bot. (ser. 3) 2: 203, 1844.

F. udus (Jungh.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 34, 2016.

MEGASPORIA B. K. Cui, Y. C. Dai et Hai J. Li in Li et Cui, Mycologia 105(2): 369, 2013.

Basidiomata of fibroporioid habitus, annual to biennial. Context pale buff. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae hyaline, rarely branched (dendrites with a prominent axis), weakly dextrinoid, CB+. Cystidia none. Basidia clavate, 4-spored. Basidiospores cylindrical, IKI–, CB–.

Type: *Poria hexagonoides* Speg., 1898.

Well-known representatives: *Megasporia cystidiolophora* (B. K. Cui et Y. C. Dai) B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 375, 2013.

M. ellipsoidea (B. K. Cui et P. Du) B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 375, 2013.

M. guangdongensis B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 371, 2013.

M. hengduanensis B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 374, 2013.

M. hexagonoides (Speg.) B. K. Cui, Y. C. Dai et Hai J. Li in Li et Cui, Mycologia 105(2): 375, 2013.

M. major (G. Y. Zheng et Z. S. Bi) B. K. Cui, Y. C. Dai et Hai J. Li in Li et Cui, Mycologia 105(2): 375, 2013.

M. violacea (B. K. Cui et P. Du) B. K. Cui, Y. C. Dai et Hai J. Li in Li et Cui, Mycologia 105(2): 375, 2013.

NEODICTYOPUS Palacio, Robledo, Reck et Drechsler-Santos, PlosOne, doi.org/10.1371/journal.pone.0186183, 2017.

Basidiomata of favoloid habitus, annual, with rather long stem covered with blackish cuticle. Context cream to cinnamon. Hyphal system sarcodimitic. Generative hyphae clamped. Skeletal hyphae hyaline, rarely branched (dendrites with inflated axis), weakly dextrinoid in superficial areas of basidiome. Leptocystidia hymenial, subulate. Basidia clavate, 4-spored. Basidiospores fusoid to navicular, IKI–, CB–.

Type: *Neodictyopus atlanticae* Palacio, Robledo et Drechsler-Santos, 2017.

Well-known representatives: *Neodictyopus dictyopus* (Mont.) Palacio, Robledo et Drechsler-Santos, PlosOne, doi.org/10.1371/journal. pone.0186183, 2017.

N. gugliottae Palacio, Grassi et Robledo, PlosOne, doi.org/ 10.1371/journal.pone.0186183, 2017.

NEOFAVOLUS Sotome et T. Hatt., Fungal Div. 58(1): 249, 2013.

= *Hexagonia* Poll., 1816 nec Fr., 1835.

Basidiomata of favoloid or lentinoid habitus, annual, with strongly reduced stem. Hymenophore favoloid to lamellate. Context white to cream. Hyphal system sarcodimitic. Generative hyphae clamped. Skeletal hyphae hyaline, arboriformly branched (dendrites with a prominent axis), indextrinoid. Cystidia none. Basidia clavate, 4-spored. Basidiospores cylindrical, IKI–, CB–.

Type: *Merulius alveolaris* DC., 1815.

Well-known representatives: *Neofavolus alveolaris* (DC.) Sotome et T. Hatt., Fungal Div. 58(1): 250, 2013.

N. cremeoalbidus Sotome et T. Hatt., Fungal Div. 58(1): 250, 2013.

N. mikawai (Lloyd) Sotome et T. Hatt., Fungal Div. 58(1): 251, 2013.

N. suavissimus (Fr.) J. S. Seelan, Justo et Hibbett in Seelan, Justo, Nagy, Grand, Redhead et Hibbett, Index Fungorum 308: 1, 2016.

Provisory position in the genus *Neofavolus*

Lentinus lamelliporus Har. et Pat., Bull. Mus. Nat. Hist. 8: 131, 1902.

PICIPES Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 35, 2016.

= *Melanopus* Pat., 1887 sensu Donk (1960). Nomen ambiguum.

Basidiomata of polyporoid habitus, annual, with central to lateral stem covered with a prominent cuticle. Context white, fleshy to fibrous when dry. Hyphal system sarcodimitic. Generative hyphae clamped or not. Skeletal hyphae hyaline to golden-brown, regularly branched, dendrites with inflated axis. Leptocystidia hymenial, fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, IKI–, CB–/CB+.

Type: *Boletus badius* Pers., 1801.

Well-known representatives: *Picipes admirabilis* (Peck) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. americanus (Vlasák et Y. C. Dai) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. austroandinus (Rajchenb. et Y. C. Dai) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. badius (Pers.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 35, 2016.

P. baishanzuensis J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 8, 2016.

P. conifericola (H. J. Xue et L. W. Zhou) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. fraxinicola (L. W. Zhou et Y. C. Dai) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. melanopus (Pers.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 36, 2016.

P. rhizophilus (Pat.) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016. – Bas.: *Polyporus rhizophilus* Pat., J. Bot. 8: 219, 1894.

P. submelanopus (H. J. Xue et L. W. Zhou) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 16, 2016.

P. subtropicus J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 10, 2016.

P. subtubaeformis J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 12, 2016.

P. taibaiensis (Y. C. Dai) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 17, 2016.

P. tibeticus J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 15, 2016.

P. tubaeformis (P. Karst.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 36, 2016.

P. virgatus (Berk. et M. A. Curtis) J. L. Zhou et B. K. Cui in Zhou, Zhu, Chen et Cui, PLoS ONE 11(8): e0159495, 17, 2016.

POLYPORUS [Mich.] Fr., Syst. Mycol. 1: 341, 1821.

Basidiomata of polyporoid habitus, annual, arising from a sclerotium, with scaled cap and central stem covered with a trichoderm. Context white, fleshy to fibrous when dry. Hyphal system sarcodimitic. Generative hyphae clamped. Skeletal hyphae hyaline, regularly branched, dendrites with inflated axis. Leptocystidia hymenial, fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores fusoid, IKI–, CB–.

Type: *Polyporus tuberaster* (Jacq. ex Pers.) Fr., 1821.[3]

Monotypic.

Polyporus tuberaster (Jacq. ex Pers.) Fr., Syst. Mycol. 1: 347, 1821.

[3] There are two variants of *Polyporus* lectotypification, by *Polyporus tuberaster* (Donk, 1933; Ryvarden, 1991), and *P. brumalis* (Clements, Shear, 1931). As it was shown above, the iconotype of *Polyporus tuberaster* refers to *Cerioporus rangiferinus* in modern concept. In the case of adoption of the Clements and Shear's typification, the genus *Polyporus* will include representatives of the *Polyporellus–Lentinus*-clade, whereas for *Polyporus tuberaster* it will be necessary to describe a new genus (the genus *Scutiger* don't fit too, because its iconotype (Paulet, 1835) also corresponds to pileate *Cerioporus rangiferinus*).

SZCZEPKAMYCES Zmitr. gen. nov. (MB 827628).

Basidiomata of trametoid-fibroporioid habitus, annual, persistant, nodulose, cushion-shaped, upper margin forms pseudopilei. Context white to cream, fibrous. Hyphal system sarcodimitic. Generative hyphae clamped. Skeletal hyphae hyaline, regularly branched, dendrites with inflated axis, appendages sympodially branched. Cystidia none. Basidia clavate to subturniform, 4-spored with a basal clamp. Basidiospores large, fusoid, IKI–, CB–. The genus *Megasporia* B. K. Cui, Y. C. Dai et Hai J. Li is similar, but differs by dextrinoid skeletals and uninflated basidiomata. The resupinate members of *Cerioporus* Quél. differ by less inflated skeletals. In a molecular respect, *Szczepkamyces* forms an independent lineage.

Etymology: the new genus was named in honor of the Polish mycologist Maciej Szczepka, who extensively studied the diversity and taxonomy of the *Polyporales* in Poland.

Type: *Trametes campestris* Quél., Mém. Soc. Émul. Montbéliard, Sér. 2 5: 286, 1872.

Monotypic.

Szczepkamyces campestris (Quél.) Zmitr. comb. nov. (MB 827629). – Basionym: *Trametes campestris* Quél., Mém. Soc. Émul. Montbéliard, Sér. 2 5: 286, 1872.

Tribe 2. E p i t h e l e a e Zmitr. trib. nov. (MB 827191)

Basidiomata of hypochnoid, corticioid-odontoid, ceriporioid, or fibroporioid habitus; sclerohyphae often reduced, mostly fibrous.

EPITHELE (Pat.) Pat., Essai Tax. Hyménomyc.: 59, 1900.

= *Hypochnus* sect. *Epithele* Pat., 1899.

Basidiomata of hypochnoid or corticioid-odontoid habitus, annual, membranous to ceraceous, sometimes spinose from emergent sterile pegs. Hyphal pegs (absent in one species) originating in subiculum, composed of tramal hyphae, skeletal hyphae, and hyphidia or dendrohyphidia. Context white. Hyphal system monomitic, dimitic with clamped or simple-septate generative hyphae; if dimitic then with thick-walled, hyaline or brown skeletal hyphae or microbinding hyphae. Hymenium a palisade of hyphidia or dendrohyphidia, cystidia, and basidia. Basidia clavate, cylindrical to subglobose, often with a stalk, (2)4-sterigmate. Basidiospores globose to allantoid, sometimes biapiculate, apiculus often distinct, refractive, often containing oil-like material, walls hyaline, rarely yellow or light brown, thin to thick, smooth, occasionally rugulose or echinulate, IKI–, CB–/CB+.

Type: *Athelia typhae* Pers., 1822.

Well-known representatives: *Epithele bambusae* (Burt) K. K. Nakasone, Sydowia 65: 64, 2013.

E. bambusina Rick in Rambo, Iheringia, Sér. Bot. 4: 87, 1959.

E. belizensis K. K. Nakasone, Sydowia 65: 68, 2013.

E. bisterigmata Boidin, Gilles et Duhem in Boidin et Gilles, Bull. mens. Soc. Linn. Lyon 69(9): 193, 2000.

E. ceracea K. K. Nakasone, Sydowia 65: 69, 2013.

E. cylindricosterigmata Han C. Wang et Sheng H. Wu, Mycologia 102(5): 1155, 2010.

E. efibulata Boidin, Lanq. et Gilles in Boidin et Lanquetin, Mycotaxon 16(2): 470, 1983.

E. horridula Rick, Brotéria, N. S. 9(36): 148, 1940.

E. hydnoides Burt, Ann. Missouri. Bot. Gdn 10: 188, 1923.

E. interrupta Bres., Bull. Jard. bot. État Brux. 4(1): 25, 1914.

E. lutea Han C. Wang et Sheng H. Wu, Mycologia 102(5): 1156, 2010.

E. macarangae Boidin et Lanq., Mycotaxon 16(2): 477, 1983.

E. malaiensis Boidin et Lanq., Mycotaxon 16(2): 479, 1983.

E. nikau G. Cunn., Trans. Roy. Soc. N. Z. 83: 629, 1956.

E. nivea Rick in Rambo, Iheringia, Sér. Bot. 4: 87, 1959.

E. ovalispora Boidin et Lanq., Mycotaxon 16(2): 482, 1983.

E. reunionis Nakasone, Sydowia 65: 90, 2013.

E. ryvardenii Nakasone, Sydowia 65: 92, 2013.

E. straminea Rick in Rambo, Iheringia, Sér. Bot. 4: 87, 1959.

E. subfusispora (Burds. et Nakasone) Hjortstam et Ryvarden, Syn. Fung. 20: 29, 2005.

E. sulphurea Burt, Ann. Missouri. Bot. Gdn 6: 265, 1920.

E. typhae (Pers.) Pat., Essai Tax. Hyménomyc.: 60, 1900.

GRAMMOTHELE Berk. et M. A. Curtis, J. Linn. Soc., Bot. 10(no. 46): 327, 1868.

Basidiomata of raduloid to fibroporioid habitus, annual. Context cream to pale buff. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae hyaline to golden-brown, rarely branched (dendrites with a prominent axis), weakly dextrinoid, CB+. Cystidia none, but dendrohyphidia present in most of species. Basidia clavate, 4-spored. Basidiospores lacrymoid to fusoid, thin- to thick-walled, dextrinoid or not, CB–/CB+.

Type: *Grammothele lineata* Berk. et M. A. Curtis, 1868.

Well-known representatives: *Grammothele africana* Ipulet et Ryvarden [ut «*africanus*»], Syn. Fung. 20: 91, 2005.

Well-known representatives: *G. bambusicola* Ryvarden in Hjortstam et Ryvarden, Mycotaxon 20(1): 148, 1984.

G. boliviana Karasiński [ut «*bolivianus*»], Nova Hedwigia 101: 103–110, 2015.

G. brasilensis Ryvarden, Syn. Fung. 33: 38, 2015.

G. ceracea Rick, Brotéria, N. S. 7: 13, 1938.

G. crocicreas (Ces.) Lloyd, Mycol. Writ. 7(Letter 70): 1232, 1923.

G. crocistroma Lloyd, Mycol. Writ. 7(Letter 71): 1243, 1924.

G. delicatula (Henn.) Ryvarden in Ryvarden et Johansen, Prelim. Polyp. Fl. E. Afr.: 37, 1980.

G. denticulata Y. C. Dai et L. W. Zhou, Mycologia 104(4): 920, 2012.

G. effusoreflexa S. Banerjee, Ann. Mycol. 34(1/2): 78, 1936.

G. fuligo (Berk. et Broome) Ryvarden, Trans. Br. mycol. Soc. 73(1): 15, 1979.

G. glauca (Cooke) P. Roberts in Hjortstam, Roberts et Spooner, Kew Bull. 64(2): 358, 2009.

G. hainanensis F. Wu et L.W. Zhou in Wu, Zhou, Ji, Tian et He, Phytotaxa 255(2): 162, 2016.

G. lacticolor Ryvarden, Syn. Fung. 33: 40, 2015.

G. lineata Berk. et M. A. Curtis, J. Linn. Soc., Bot. 10(no. 46): 327, 1868.

G. ochracea Ryvarden [ut «*ochraceus*»] in Hjortstam et Ryvarden, Nordic J. Bot. 2(3): 275, 1982.

G. pseudomappa P. H. B. Talbot, Bothalia 6: 59, 1951.

G. pulchella (Bres.) Ryvarden, Mycotaxon 33: 318, 1988.

G. quercina (Y. C. Dai) B. K. Cui et Hai J. Li in Li et Cui, Mycologia 105(2): 379, 2013.

G. subargentea (Speg.) Rajchenb., Mycotaxon 17: 280, 1983.

G. venezuelica Ryvarden, Syn. Fung. 33: 42, 2015.

HYMENOGRAMME Mont. et Berk., London J. Bot. 3: 329, 1844.

Basidiomata of raduloid habitus, annual, with hymenophore surface consisting of long anastomosing ridges with the hymenium restricted to the furrows between the ridges. Context white. Hyphal system monomitic. Generative hyphae clamped. Leptocystidia subulate, hymenial. Basidia clavate, 4-spored. Basidiospores broadly ellipsoid, IKI–, CB–.

Monotypic.

Hymenogramme javensis Mont. et Berk., London J. Bot. 3: 330, 1844.

LEIFIPORIA Y. C. Dai, F. Wu et C. L. Zhao in Zhao, Wu et Dai, Mycol. Progr. 15(7): 804, 2016.

Basidiomata of ceriporioid habitus, annual; pores angular, dissepiments thin, entire to slightly lacerate. Context white. Generative hyphae clamped, hyaline. Skeletal hyphae rarely branched (dendrites with subinvisible axis), hyaline, IKI–, CB–. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid, smooth, IKI–, CB–.

Type: *Leifiporia rhizomorpha* Y. C. Dai, F. Wu et C. L. Zhao, 2016.

Well-known representatives: *L. eucalypti* (Ryvarden) Y. C. Dai, F. Wu et C. L. Zhao in Zhao, Wu et Dai, Mycol. Progr. 15(7): 804, 2016.

L. rhizomorpha Y. C. Dai, F. Wu et C. L. Zhao in Zhao, Wu et Dai, Mycol. Progr. 15(7): 804, 2016.

POROGRAMME (Pat.) Pat., Essai Tax. Hyménomyc.: 63, 1900.

= *Poria* subgen. *Porogramme* Pat., 1899.

Basidiomata of ceriporioid habitus, annual, hymenophore small-pored to irpicoid, dissepiments mosltly sterile. Context cream, cinnamon, or red-colored. Hyphal system monomitic to pseudodimitic. Generative hyphae clamped, dextrinoid. Leptocystidia hyphoid, scattered. Basidia clavate, 4-spored. Basidiospores broadly ellipsoid, IKI–, CB–.

Type: *Porogramme dussii* (Pat.) Pat., 1900.

Well-known representatives: *P. albocincta* (Cooke et Massee) T. B. Gibertoni, J. Torrey bot. Soc. 142: 333, 2015.

P. aurantiotingens (Ellis et T. Macbr.) Pat., Essai Tax. Hyménomyc.: 64, 1900.

P. carneopallens Pat., Mém. Acad. Malgache 6: 11, 1928.

P. dussii (Pat.) Pat., Essai Tax. Hyménomyc.: 64, 1900.

P. graphica (Bres.) Pat., Essai Tax. Hyménomyc.: 64, 1900.

P. lateritia (Pat.) Pat., Essai Tax. Hyménomyc.: 64, 1900.

P. richeriae (Pat.) Pat., Essai Tax. Hyménomyc.: 64, 1900.

Tribe 3. Lentineae Fayod, Prodr. Am. Sci. Nat. Bot. VII, 9: 335, 1889.

Basidiomata of polyporoid, trametoid, fomitoid, scenidioid, lentinoid, or fibroporioid habitus; sclerohyphae mostly melanized, basidiospores mostly thin-walled.

AUSTRALOPORUS P. K. Buchanan et Ryvarden, Mycotaxon 31(1): 5, 1988.

Basidiomata of fomitoid to fibroporioid (phellinoid) habitus, perennial, with widely effused base. Context cinnamon-ochraceous, woody. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae hyaline, regularly branched (dendrites with inflated axis), dextrinoid. Leptocystidia fusoid, encrusted; pseudocystidia cylindrical, encrusted. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid to fusoid, IKI–, CB–.

Type: *Polyporus tasmanicus* Berk. in Hooker, 1859.

Monotypic.

Australoporus tasmanicus (Berk.) P. K. Buchanan et Ryvarden, Mycotaxon 31(1): 5, 1988.

DAEDALEOPSIS J. Schröt. in Cohn, Krypt. Fl. Schles. 3: 492, 1888.

Basidiomata of trametoid habitus, annual to perennial, mostly sessile on a narrow base. Context tan to cinnamon, suberose. Hyphal system dim-

itic. Generative hyphae clamped. Skeletal hyphae hyaline, dendroid (dendrites with inflated axis). Cystidia absent, but dendrohyphidia present in many species. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical to suballantoid, IKI–, CB–.

Type: *Boletus confragosus* Bolton, 1792.

Well-known representatives: *Daedaleopsis confragosa* (Bolton) J. Schröt. in Cohn, Krypt. Fl. Schles. 3: 492, 1889.

D. nitida (Durieu et Mont.) Zmitr. et V. Malysheva, Mikol. Fitopat. 47(6): 375, 2013.

D. purpurea (Cooke) Imazeki et Aoshima in Hara, Fl. East. Himal.: 619, 1966.

D. septentrionalis (P. Karst.) Niemelä, Karstenia 22: 11, 1982.

D. tenuis (Hook. in Kunth) Imazeki, Bull. Tokyo Sci. Mus. 6: 78, 1943.

Provisory position in the genus *Daedaleopsis*

D. papyroresupinata (S. Ito et S. Imai) Imazeki, Bull. Tokyo Sci. Mus. 6: 78, 1943.

D. pergamenea (Berk. et Broome) Ryvarden, Mycotaxon 20: 350, 1984.

D. sinensis (Lloyd) Y. C. Dai, Fungal Science, Taipei 11: 90, 1996.

Trametes mimetes (Wakef.) Ryvarden, Norw. J. Bot. 19: 236, 1972.

T. salina Corner, Beih. Nova Hedwigia 97: 149, 1989.

EARLIELLA Murrill, Bull. Torrey Bot. Cl. 32: 478, 1905.

Basidiomata of trametoid to fibroporioid habitus, annual to perennial, mostly with widely decurrent base. Context white to cream, suberose. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae hyaline, with sympodial branching pattern, subsolid to solid on a dendrite periphery. Cystidia absent, but yellow-brown clavate sclerids form a dense glued layer within a crust region. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid to cylindrical, tapering at both ends, IKI–, CB–.

Monotypic.

Earliella scabrosa (Pers.) Gilb. et Ryvarden, Mycotaxon 22: 364, 1985.

FOMES (Fr.) Fr., Summa veg. Scand., Sectio Post.: 319 (adnot.), 321, 1849.

= *Polyporus* subgen. *Fomes* Fr., 1836.

= *Xylopilus* P. Karst., 1882.

= *Ungulina* Pat., 1900.

= *Globifomes* Murrill, 1904.

= *Elfvingiella* Murrill, 1914.

Basidiomata of fomitoid habitus, perennial, mostly sessile. Context golden-brown to cinnamon, tough-suberose. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae golden to rusty-brown, with sympodial to dendroid branching pattern. Leptocystidia fusoid, hymenial, scle-

rids saccate, of hymenial or tramatic origin. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical to fusoid, IKI–, CB+.

Type: *Boletus fomentarius* L., 1753.

Well-known representatives: *Fomes fomentarius* (L.) Gillet, Hyménomycètes: 686, 1878.

F. graveolens (Schwein.) Cooke, Grevillea 13(no. 68): 118, 1885.

FUNALIA Pat., Essai taxon. Hym.: 95, 1900.

= *Trametella* Pinto-Lopes, 1952.

Basidiomata of trametoid to corioloid habitus, annual, sessile. Context tan, cinnamon, golden- to umber-brown, fibrose. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae golden to rusty-brown, with dendroid branching pattern, dextrinoid or not, CB+ or not. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid, cylindrical, or fusoid, IKI–, CB–.

Type: *Funalia mons-veneris* (Jungh.) Pat., 1900.

Well-known representatives: *Funalia aspera* (Jungh.) Zmitr. et V. Malysheva, Mikol. Fitopatol. 47(6): 375, 2013.

F. caperata (Berk.) Zmitr. et V. Malysheva, Mikol. Fitopatol. 47(6): 375, 2013.

F. floccosa (Jungh.) Zmitr. et V. Malysheva, Mikol. Fitopatol. 47(6): 375, 2013.

F. gallica (Fr.) Bondartsev et Singer, Ann. Mycol. 339: 62, 1941.

F. leonina (Klotzsch) Pat., Essai..: 95, 1900.

F. sanguinaria (Klotzsch) Zmitr. et V. Malysheva, Mikol. Fitopatol. 47(6): 375, 2013.

F. trogii (Berk. in Trog) Bondartsev et Singer, Ann. Mycol. 39: 62, 1941.

Provisory position in the genus *Funalia*

Trametes biogilvoides Corner, Beih. Nova Hedwigia 97: 81, 1989.

T. brunneoleuca (Berk.) Corner, Beih. Nova Hedwigia 97: 84, 1989.

T. byrsina (Mont.) Pat., Essai..: 93, 1900.

T. drummondii (Klotzsch) Ryvarden, Mem. N.Y. bot. Gdn 28: 202, 1976.

T. glabrorigens (Lloyd) Zmitr., Wasser et Ezhov, Int. J. Med. Mushrooms 14: 315, 2012.

T. hostmannii (Berk.) Zmitr., Wasser et Ezhov, Int. J. Med. Mushrooms 14: 317, 2012.

T. paxillosa Corner, Beih. Nova Hedwigia 97: 130, 1989.

T. strumosa (Fr.) Zmitr., Wasser et Ezhov, Int. J. Med. Mushrooms 14: 318, 2012.

T. telfairii (Klotzsch) Corner, Beih. Nova Hedwigia 97: 167, 1989.

Mollicarpus cognatus (Berk.) Ginns, Can. J. Bot. 62(3): 72, 1984.

HEXAGONIA Fr., Fl. Scan.: 339, 1835 (nom. conserv.)

= *Apoxona* Donk, 1969.

Basidiomata of trametoid, corioloid, scenidioid habitus, annual to perennial, hymenophore presented by large hexagonal pores. Context tan to deeply-brown, suberose to corneous. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae dendroid (dendrites with inflated axis), golden- to rusty-brown, IKI–, CB+ or not. Cystidia absent. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical to fusoid, IKI–, CB–/CB+.

Type: *Hexagonia hirta* (P. Beauv.) Fr. 1838.

Well-known representatives: *Hexagonia amplexens* Pat., Bull. Soc. Mycol. France 18(4): 299, 1902.

H. annamitica Pat. [ut «*Hexagona*»], Bull. trimest. Soc. Mycol. France 43: 31 (1927)

H. apiaria (Pers. in Freyc.) Fr., Epicr.: 497, 1838.

H. bivalvis (Pers.) Bres., Annls mycol. 11(5): 427, 1913.

H. culmicola Niemelä et Kotir., in Härkönen, Niemelä, Mbindo, Kotiranta et Piearce, Norrlinia 29: 200, 2015.

H. hirta (P. Beauv.) Fr., Epicr.: 496, 1838.

H. niam-niamensis P. Henn., Engler's Bot. Jahrb. 14: 348, 1892.

H. speciosa Fr., K. Vet. Akad. Handl.: 137, 1848.

LENTINUS Fr., Syst. Orbis Veg.1: 77, 1825.

= *Polyporellus* P. Karst., 1880.

= *Lentus* Lloyd ex Torrend, 1920.

Type: *Agaricus crinitus* L., 1763.

Basidiomata of lentinoid or polyporoid habitus, annual. Context white to tan, fibrous to suberose. Hyphal system sarcomonomitic or sarcodimitic. Generative hyphae clamped. Skeletal hyphae dendroid (dendrites with inflated axis), hyaline to rusty-brown, IKI– or amyloid (subgen. *Polyporellus*). Pseudocystidia present (subgen. *Lentinus*), mostly cylindrical. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, IKI–, CB–.

Lentinus subgen. *Lentinus*

Basidiomata of lentinoid habitus.

Sect. 1. *Lentinus*

Hyphal system sarcodimitic. Skeletal hyphae predominate in a mature basidiomata, yellowish to rusty-brown.

Well-known representatives: *Lentinus alpacus* Senthil. et S. K. Singh in Senthilarasu, Sharma et Singh, Mycotaxon 121: 70, 2013.

L. anastomosans Rick, Lilloa 2: 310, 1938.

L. anthocephalus (Lév.) Pegler, Bull. Jard. Bot. Natn. Belg. 41: 280, 1971.

L. araucariae Har. et Pat., J. Bot. 17: 11, 1903.

L. badius (Berk.) Berk., London J. Bot. 6: 491, 1847.

L. baguirmiensis Pat. et Har., Bull. Soc. mycol. France 24: 14, 1908.

L. bambusinus T. K. A. Kumar et Manim., Mycotaxon 92: 119, 2005.

L. bertieri (Fr.) Fr., Syst. Orbis Veg. 1: 77, 1825.

L. brunneofloccosus Pegler, Bull. Jard. Bot. Natnl Belg. 41: 278, 1971.

L. calyx (Speg.) Pegler, Kew Bull. Add. Ser. 9: 32, 1983.

L. cladopus Lév., Ann. Sci. Nat. Bot. (Ser. 3) 2: 174, 1844.

L. concavus (Berk.) Henn. in Engler et Prantl, Nat. Pflfam. 1: 224, 1900.

L. concentricus Karun., K. D. Hyde et Zhu L. Yang in Karun., Yang, Zhao, Vellinga, Bahkali, Chukeatirote et K. D. Hyde, Mycol. Progr. 10(4): 395, 2011.

L. concinnus Pat., Bull. Soc. Mycol. France 8: 47, 1892.

L. connatus Berk., London J. Bot. 1(3): 145, 1842.

L. crinitus (L.) Fr., Syst. Orbis veg. 1: 77, 1851.

L. dicholamellatus Manim. in Manim., Divya, Kumar, Vrinda et Pradeep, Mycotaxon 90(2): 312, 2004.

L. glabratus Mont. in La Sagra, Cuba Pl. Cell.: 424, 1842.

L. megacystidiatus Karun., K. D. Hyde et Zhu L. Yang in Karun., Yang, Zhao, Vellinga, Bahkali, Chukeatirote et K. D. Hyde, Mycol. Progr. 10(4): 393, 2011.

L. nigroosseus Pilát, Ann. Mycol. 34: 122, 1936.

L. polychrous Lév., Ann. Sci. Nat. Bot. (Ser. 3) 2: 175, 1844.

L. retinervis Pegler, Kew. Bull. Add. Ser. 9: 30, pl. 1b, 1983.

L. roseus Karun., K. D. Hyde et Zhu L. Yang in Karun., Yang, Zhao, Vellinga, Bahkali, Chukeatirote et K. D. Hyde, Mycol. Progr. 10(4): 392, 2011.

L. sajor-caju (Fr.) Fr., Epicr.: 393, 1838.

L. sclerogenus Sacc., Nuov. Giorn. Bot. Ital. 23: 230, 1916.

L. squarrosulus Mont., Ann. Sci. Nat. Bot. (ser. 2) 18: 21, 1842.

L. striatulus Lév., Ann. Sci. Nat. Bot. (Ser. 3) 5: 120, 1846.

L. stupeus Klotzsch, Linnaea 8: 480, 1833 [ut '*stupens*'].

L. swartzii Berk., Hook. London J. Bot. 2: 632, 1843.

L. tuber-regium (Fr.) Fr., Syn. generis Lentinus: 3, 1836.

L. umbrinus H. W. Reichardt, Verh. Zool.-Bot. Ges. Wien 16: 375, 1866.

L. villosus Klotzsch, Linnaea 8: 479, 1833.

L. zeyheri Berk., Hook. London J. Bot. 2: 514, 1843.

Sect. 2. *Tigrini*

Hyphal system sarcomonomitic. Pseudoskeletal (intermediate) hyphae predominate in mature basidiomata, all the hyphae are hyaline.

L. tigrinus (Bull.) Fr., Syst. Orbis Veg.: 78, 1825.

Lentinus subgen. *Polyporellus* (P. Karst.) Zmitr. ined.

Hyphal system sarcodimitic. Basidiomata of polyporoid habitus.

Well-known representatives: *L. arcularius* (Batsch) Zmitr., Int. J. Medicinal Mushr. 12(1): 88, 2010.

L. brumalis (Pers.) Zmitr., Int. J. Medicinal Mushr. 12(1): 88, 2010.

L. ferruginipes (Corner) Zmitr., Int. J. Med. Mushrooms 12(1): 88, 2010.

L. flexipes (Fr.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 34, 2016.

L. longiporus (Audet, Boulet et Sirard) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 34, 2016.

L. substrictus (Bolton) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 35, 2016.

L. tricholoma (Mont.) Zmitr., Int. J. Medicinal Mushr. 12(1): 88, 2010.

L. vossii (Kalchbr.) Zmitr. et Kovalenko, Int. J. Medicinal Mushr. 18(1): 35, 2016.

LIGNOSUS Lloyd ex Torrend, Brotéria, sér. bot. 18: 121, 1920.

Basidiomata of polyporoid habitus, annual, arising from a sclerotium, with basically two-lobed pileus and more or less central stipe covered with a smooth crust. Context white, fibrous. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae yellowish, rarely branched, dendrites with a prominent axis. Sclerids saccate, of subhymenial origin. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid to subglobose, IKI–, CB–.

Type: *Polyporus sacer* Afzel. ex Fr., 1837.

Well-known representatives: *Lignosus cameronensis* Chon S. Tan in Tan, Tay, Yap, Ng, Fung et Tan, Mycotaxon 123: 198, 2013.

L. dimiticus Ryvarden, Bull. Jard. Bot. Nat. Belg. 45: 198, 1975.

L. ekombitii Douanla-Meli in Douanla-Meli et Langer, Mycotaxon 86: 390, 2003.

L. goetzei (Henn.) Ryvarden [ut «*goetzii*»], Norw. J. Bot. 19: 232, 1972.

L. hainanensis B. K. Cui in Cui, Tang et Dai, Mycol. Progr. 10(3): 268, 2011.

L. rhinocerus (Cooke) Ryvarden, Norw. J. Bot. 19: 232, 1972.

L. sacer (Afzel. ex Fr.) Torrend, Brotéria, sér. bot. 18: 121, 1920.

L. tigris Chon S. Tan in Tan, Tay, Yap, Ng, Fung et Tan, Mycotaxon 123: 196, 2013.

MICROPORUS Beauv., Fl. Oware Benin Afr. 1: 12, 1805.

Basidiomata of polyporoid to corioloid habitus, annual, heel-footed to apodate, sessile. Context white, fibrous to suberous. Hyphal system pseu-

dodimitic. Generative hyphae clamped. Pseudoskeletal hyphae hyaline, rarely branched (dendrites with a prominent axis), true skeletal hyphae can be differentiated on basidiome surfaces. Cystidia not described, but pegs and cystidia-like elements were reported. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, IKI–, CB–.

Type: *Microporus perula* P. Beauv., 1804.

Well-known representatives: *Microporus affinis* (Blume et T. Nees) Kuntze, Rev. Gen. Pl. 3: 494, 1898.

M. quarrei (Beeli) D. A. Reid, Microscopy 32: 453, 1975.

M. vernicipes (Berk.) Kuntze, Rev. Gen. Pl. 3: 497, 1898.

M. xanthopus (Fr.) Kuntze, Rev. Gen. Pl. 3: 494, 1898.

NEOFOMITELLA Y. C. Dai, Hai J. Li et Vlasák in Li, Li, Vlasák et Dai, Mycotaxon 129(1): 12, 2015.

Basidiomata of fomitoid to fibroporioid habitus, annual to perennial, with widely effused base. Context tan to brown, fibrous. Hyphal system dimitic. Generative hyphae clamped. Skeletal hyphae hyaline, regularly branched (dendrites with inflated axis), IKI–, CB–. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid to cylindrical, IKI–, CB–.

Type: *Polyporus rhodophaeus* Lév., 1844.

Well-known representatives: *Neofomitella fumosipora* (Corner) Y. C. Dai, Hai J. Li et Vlasák in Li, Li, Vlasák et Dai, Mycotaxon 129(1): 12, 2015.

N. polyzonata Y. C. Dai, Hai J. Li et Vlasák in Li, Li, Vlasák et Dai, Mycotaxon 129(1): 12, 2014.

N. rhodophaea (Lév.) Y. C. Dai, Hai J. Li et Vlasák in Li, Li, Vlasák et Dai, Mycotaxon 129(1): 15, 2015.

POGONOMYCES Murrill, Bull. Torrey Bot. Cl. 31: 609, 1904.

Basidiomata of trametoid habitus, with peculiar echinulate upperside, annual to perennial, hymenophore presented by small hexagonal pores. Context deeply-brown, fibrous. Hyphal system dimitic. Generative hyphae clamped, yellowish. Skeletal hyphae dendroid (dendrites with inflated axis), rusty-brown, IKI–, CB+. Cystidia absent. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid, yellowish, IKI–, CB+.

Type: *Boletus hydnoides* Sw., 1806.

Monotypic.

Pogonomyces hydnoides (Sw.) Murrill, Bull. Torrey Bot. Cl. 31: 609, 1904.

Tribe 4. G a n o d e r m a t e a e Bondartsev et Singer, Ann. Mycol. 39: 58, 1941 nom. nud.; Imazeki, Bull. Tokyo Sci. Mus. 6: 99, 1932.

Basidiomata of polyporoid, trametoid, fomitoid, or fibroporioid habitus; sclerohyphae mostly melanized, basidiospores mostly thick-walled, CB+.

AMAURODERMA Murrill, Bull. Torrey Bot. Cl. 32: 366, 1905.

Basidiomata of polyporoid habitus, annual or reviving for a second season, centrally-laterally stipitate, pileus and stipe with distinct cortex or crust. Context ochraceous to deeply-brown, fibrous to suberous, often duplex. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with inflated axis), hyaline, golden- to rusty-brown, IKI–, CB+/CB–. Cystidia absent. Basidia clavate, 4-spored with a basal clamp. Basidiospores subglobose to cylindrical, with finely asperulate yellowish exosporium and smooth hyaline perisporium, IKI–, CB+.

Type: *Fomes regulicolor* Berk. ex Cooke, 1886.

Well-known representatives: *Amauroderma africanum* Ryvarden [ut «*africana*»], Syn. Fung. 18: 57, 2004.

A. amoiense J. D. Zhao et L. W. Hsu [ut «*amoiensis*»] in Zhao, Xu et Zhang, Acta Mycol. Sin. 2(3): 164, 1983.

A. andinum Ryvarden [ut «*andina*»] Syn. Fung. 18: 59, 2004.

A. argenteofulvum (Van der Byl) Doidge, Bothalia 5: 503, 1950.

A. aurantiacum (Torrend) Gibertoni et Bernicchia, Mycotaxon 104: 322, 2008.

A. auriscalpium (Pers.) Torrend, Brotéria, sér. bot. 18: 131, 1920.

A. bataanense Murrill, Bull. Torrey bot. Club 35: 407, 1908.

A. boleticeum (Pat. et Gaillard) Torrend, Brotéria, sér. bot. 18: 132, 1920.

A. brasiliense (Singer) Ryvarden [ut «*brasilensis*»], Syn. Fung. 19: 44, 2004.

A. buloloi Aoshima, Bull. natn. Sci. Mus., Tokyo, N.S. 14: 436, 1971.

A. calcigenum (Berk.) Torrend, Brotéria, sér. bot. 18: 129, 1920.

A. calcitum D. H. Costa Rezende et E. R. Drechsler-Santos, Phytotaxa 244(2): 109, 2016.

A. camerarium (Berk.) J. S. Furtado, Revisâo do gênero Amauroderma (Polyporaceae); Estudos baseados nas microestruturas do basidiocarpo: 140, 1968.

A. coltricioides T. W. Henkel, Aime et Ryvarden in Aime, Henkel et Ryvarden, Mycologia 95(4): 615, 2003.

A. concentricum J. Song, Xiao L. He et B. K. Cui in Song, Xing, Decock, He et Cui, Phytotaxa 260(1): 47, 2016.

A. congregatum Corner, Beih. Nova Hedwigia 75: 70, 1983.

A. conicum (Lloyd) Ryvarden, Mycotaxon 38: 88, 1990.

A. conjunctum (Lloyd) Torrend, Brotéria, sér. bot. 18: 133, 1920.

A. dayaoshanense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin. 6(1): 5, 1987.

A. deviatum Ryvarden, Syn. Fung. 19: 51, 2004.

A. ealaense (Beeli) Ryvarden, Norw. J. Bot. 19: 230, 1972.

A. exile (Berk.) Torrend, Brotéria, sér. bot. 18: 142, 1920.

A. faculum Henao-M., Caldasia 19: 134, 1997.

A. flabellatum Aime et Ryvarden, Syn. Fung. 23: 16, 2007.

A. floriformum A. C. Gomes-Silva, Ryvarden et T. B. Gibertoni in Gomes-Silva, Lima-Júnior, Malosso, Ryvarden et Gibertoni, Phytotaxa 227: 212, 2015.

A. fujianense J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 275, 1979.

A. fuscatum Otieno, Sydowia 22: 175, 1969.

A. fuscoporia Wakef., Bothalia 4(4): 948, 1948.

A. grandisporum Gulaid et Ryvarden [ut «*grandispora*»], Mycol. Helv. 10(1): 27, 1998.

A. guangxiense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin. 5(4): 221, 1986.

A. hongkongense L. Fan et B. Liu, Acta Mycol. Sin. 9(3): 202, 1990.

A. insulare (Har. et Pat.) Torrend, Brotéria, sér. bot. 18: 139, 1920.

A. leucosporum Corner, Beih. Nova Hedwigia 75: 72, 1983.

A. perplexum Corner, Beih. Nova Hedwigia 75: 82, 1983.

A. praetervisum (Pat.) Torrend, Brotéria, sér. bot. 18: 131, 1920.

A. preussii (Henn.) Steyaert, Persoonia 7(1): 107, 1972.

A. rugosum (Blume et T. Nees) Torrend, Brotéria, sér. bot. 18: 127, 1920.

A. schomburgkii (Mont. et Berk.) Torrend, Brotéria, sér. bot. 18: 140, 1920.

A. secedens Corner, Beih. Nova Hedwigia 75: 89, 1983.

A. sessile A. C. Gomes-Silva, Ryvarden et T. B. Gibertoni in Gomes-Silva, Lima-Júnior, Malosso, Ryvarden et Gibertoni, Phytotaxa 227: 220, 2015.

A. sprucei (Pat.) Torrend, Brotéria, sér. bot. 18: 121, 1920.

A. subrugosum (Bres. et Pat.) Torrend, Brotéria, sér. Bot. 18: 128, 1920.

A. trichodematum J. S. Furtado, Revisâo do gênero Amauroderma (Polyporaceae); Estudos baseados nas microestruturas do basidiocarpo: 311, 1968.

A. trulliforme (Lloyd) Torrend, Brotéria, sér. Bot. 18: 128, 1920.

A. unilaterum (Lloyd) Ryvarden, Mycotaxon 38: 101, 1990.

A. variabile (Berk.) Lloyd ex Wakef., Bull. Misc. Inf., Kew: 243, 1934.

A. wuzhishanense J. D. Zhao et X. Q. Zhang in Zhao et Zhang, Acta Mycol. Sin. 6(4): 208, 1987.

A. yunnanense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin., Suppl. 1: 268, 1987.

CRYPTOPORUS (Peck) Shear, Bull. Torrey bot. Club 29: 450, 1902.
= *Polyporus* sect. *Cryptoporus* Peck, 1880.

Basidiomata of trametoid habitus with hymenophore closed initially by skinny veil membrane, annual, sessile with a narrow base. Context white or creamish in outer veil membrane, fibrous. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with inflated axis), hyaline or yellowish, IKI–, CB–. Cystidia absent. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical to fusoid, thin-walled, IKI–, CB–.

Type: *Polyporus volvatus* Peck, 1875.

Well-known representatives: *Cryptoporus sinensis* Sheng H. Wu et M. Zang, Mycotaxon 74(2): 416, 2000.

C. volvatus (Peck) Shear, Bull. Torrey bot. Club 29: 450, 1902.

DICHOMITUS D. A. Reid, Revta Biol., Lisb. 5: 149, 1965.

Basidiomata of trametoid to fibroporioid habitus, annual to perennial. Context white or cream. Generative hyphae clamped, hyaline. Skeletal hyphae sympodially branched (dendrites with a prominent axis), hyaline or yellowish, IKI–, CB+. Cystidia absent. Basidia clavate, 4-spored with a basal clamp. Basidiospores subglobose to cylindrical, with finely asperulate yellowish exosporium and smooth hyaline perisporium IKI–, CB+/CB–.

Type: *Trametes squalens* P. Karst., 1886.

Well-known representatives: *Dichomitus affixus* (Corner) T. Hatt., Mycoscience 43(4): 307, 2002.

D. amazonicus Gomes-Silva, Ryvarden et Gibertoni, Mycol. Progr. 11(4): 882, 2012.

D. amygdalinus (Berk. et Ravenel) Ryvarden, Norw. J. Bot. 24: 217, 1977.

D. anoectoporus (Berk. et M. A. Curtis) Ryvarden, Mycotaxon 20(2): 331, 1984.

D. citricremeus Masuka et Ryvarden, Mycol. Res. 103(9): 1128, 1999.

D. costaricensis Ryvarden, Syn. Fung. 30: 33, 2012.

D. cylindrosporus Ryvarden, Syn. Fung. 23: 40, 2007.

D. ecuadorensis Ryvarden [ut «*ecuadoriensis*»] in Læssøe et Ryvarden, Syn. Fung. 27: 46, 2010.

D. efibulatus A. M. Ainsw. et Ryvarden, Syn. Fung. 25: 49, 2008.

D. epitephrus (Berk.) Ryvarden, Mycotaxon 20(2): 339, 1984.

D. eucalypti Ryvarden, Trans. Br. Mycol. Soc. 85(3): 539, 1985.

D. grandisporus Aime et Ryvarden, Syn. Fung. 23: 24, 2007.

D. hubeiensis Hai J. Li et B. K. Cui, Nordic J. Bot. 31(1): 118, 2013.

D. kirkii Masuka et Ryvarden, Mycol. Res. 103(9): 1129, 1999.
D. leucoplacus (Berk.) Ryvarden, Norw. J. Bot. 24: 222, 1977.
D. mexicanus (Ryvarden) Ryvarden, Syn. Fung. 23: 42, 2007.
D. newhookii P. K. Buchanan et Ryvarden, N. Z. J. Bot. 38(2): 256, 2000.
D. papuanus Quanten, Mycotaxon 59: 429, 1996.
D. pendulus Læssøe et Ryvarden, Syn. Fung. 27: 48, 2010.
D. perennis Ryvarden, Syn. Fung. 23: 40, 2007.
D. sinuolatus H. S. Yuan, Nova Hedwigia 97: 497, 2013.
D. squalens (P. Karst.) D. A. Reid, Revta Biol., Lisb. 5: 150, 1965.

DONKIOPORIA Kotl. et Pouzar, Persoonia 7(2): 214, 1973.
Basidiomata of fibroporioid habitus, perennial. Context brown, separated from the substratum by a black line. Generative hyphae clamped or not, hyaline. Skeletal hyphae sympodially branched (dendrites with a prominent axis), golden-brown, IKI–, CB+. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid, IKI–, CB–.
Type: *Boletus expansus* Desm., 1823.
Well-known representatives: *Donkioporia albidofusca* (Domański) Vlasák et Kout in Vlasák, Kout et Dvořák, Mycol. Progr. 9(1): 148, 2010.
D. expansa (Desm.) Kotl. et Pouzar, Persoonia 7(2): 214, 1973.

GANODERMA P. Karst., Rev. Mycol. 3: 17, 1881.
= *Placodes* Quél., 1886 nom. illeg.
= *Elfvingia* P. Karst., 1889.
= *Friesia* Lázaro Ibiza, 1916 nom. illeg.
= *Dendrophagus* Murrill, 1905.
= *Haddowia* Steyaert, 1972.
= *Humphreya* Steyaert, 1972.
= *Magoderna* Steyaert, 1972.
Basidiomata of polyporoid, trametoid or fomitoid habitus, annual to perennial, effused-reflexed, sessile, laterally to centrally stipitate, pileus and stipe with distinct cortex or crust, often laccate. Context white to deeply-brown, fibrous to suberous, often stratified or furnished by blackish lines. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with inflated axis), yellowish, golden- to rusty-brown, IKI–, CB+. Pileocystidia present in laccate species, cylindrical to clavate. Basidia clavate or pyriform, 4-spored with a basal clamp. Basidiospores somewhat elongated, but truncate, with echinulate, reticulate, or costate yellowish-brown exosporium and smoother hyaline perisporium, IKI–, CB+.
Type: *Boletus lucidus* Curtis, 1781.
Ganoderma subgen. *Ganoderma*

Basidiomata annual, upperside cover presented by hymenoderm, exosporium echinulate.

Ganoderma aureolum Steyaert, Bull. Jard. Bot. État Brux. 32: 101, 1962.

G. austrofujianense J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 268, 1979.

G. barretoi Torrend, Brotéria, sér. Bot. 8: 133, 1909.

G. baudonii Steyaert, Bull. Jard. Bot. État Brux. 32: 95, 1962.

G. bruggemanii Steyaert, Persoonia 7(1): 78, 1972.

G. calidophilum J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 270, 1979.

*G. capens*e (Lloyd) Teng, Chung-kuo Ti Chen-chun, [Fungi of China]: 760, 1963.

G. chalceum (Cooke) Steyaert, Bull. Jard. Bot. Nat. Belg. 37: 481, 1967.

G. chonoides Steyaert, Bull. Jard. Bot. État Brux. 32: 91, 1962.

G. cochlear (Blume et T. Nees) Merr., An interpretation of Rumphius's Herbarium Amboinense (Manila): 58, 1917.

G. curranii Murrill [ut «*currani*»], Bull. Torrey Bot. Club 35: 411, 1908.

G. dahlii (Henn.) Aoshima, Bull. Nat. Sci. Mus., Tokyo, N.S. 14: 429, 1971.

G. daiqingshanense J. D. Zhao, Acta Mycol. Sin. 8(1): 25, 1989.

G. duroporum Lloyd, Mycol. Writ. 6: 1076, 1920.

G. endochrum Steyaert, Bull. Jard. Bot. État Brux. 32: 101, 1962.

G. fassii Steyaert, Bull. Jard. Bot. État Brux. 31: 72, 1961.

G. fassioides Steyaert, Bull. Jard. Bot. État Brux. 31: 80, 1961.

G. fici Pat., Énum. Champ. Tunisie: 4, 1892.

G. flexipes Pat., Bull. Soc. Mycol. France 23: 75, 1907.

G. fuscum Steyaert, Bull. Jard. Bot. État Brux. 32: 102, 1962.

G. gilletii Steyaert, Bull. Jard. Bot. État Brux. 32: 95, 1962.

G. guinanense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin. 6(1): 4, 1987.

G. incrustatum (Fr.) Bres., Bot.-zool. Ergebnisse Samoa Salomon inseln: 2, 1910.

G. kunmingense J. D. Zhao, Acta Mycol. Sin. 8(1): 27, 1989.

G. lucidum (Curtis) P. Karst., Rev. Mycol. 3: 17, 1881.

Species of *Ganoderma lucidum*-complex that need a modern type studies

G. atkinsonii H. Jahn, Kotl. et Pouzar, Westfälische Pilzbriefe 11(6): 98, 1980.

G. carnosum Pat., Bull. Soc. Mycol. France 5(2,3): 66, 1889.

G. cervinum (Bres.) Sacc., Syll. fung. (Abellini) 23: 406, 1925.

G. curtisii (Berk.) Murrill, N. Amer. Fl. (New York) 9(2): 120, 1908.

G. dorsale (Lloyd) Torrend, Brotéria, sér. Bot. 18: 32, 1920.

G. galegense (Mont.) Pat., Bull. Soc. Mycol. France 5(2,3): 74, 1889.

G. hoploides Steyaert, Bull. Jard. Bot. État Brux. 31: 82, 1961.

G. japonicum (Fr.) Sawada, Rep. Govt Res. Inst. Dep. Agric., Formosa 51: 76, 1931.

G. lingzhi Sheng H. Wu, Y. Cao et Y. C. Dai in Cao, Wu et Dai, Fungal Diversity 56(1): 54, 2012.

G. meredithiae Adask. et Gilb. [ut «*meredithae*»], Mycotaxon 31(1): 251, 1988.

G. mongolicum Pilát, Annls mycol. 38(1): 78, 1940.

G. multipileum Ding Hou [ut «*multipilea*»], Quart. J. Taiwan Mus. 3: 101, 1950.

G. nitens Lázaro Ibiza, Revta R. Acad. Cienc. exact. fis. nat. Madr. 14: 104, 1916.

G. oerstedii (Fr.) Torrend, Bull. Torrey Bot. Club 29: 606, 1902.

G. rufoalbum (Bres. et Pat.) Pat., Bull. Soc. Mycol. France 30(3): 342, 1914.

G. sessiliforme Murrill, Bull. New York Bot. Gard. 8: 149, 1912.

G. sichuanense J. D. Zhao et X. Q. Zhang in Zhao, Xu et Zhang, Acta Mycol. Sin. 2(3): 159, 1983.

G. sinense J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 272, 1979.

G. subumbraculum Imazeki, Bull. Tokyo Sci. Mus. 1: 39, 1939.

G. valesiacum Boud., Bull. Soc. Mycol. France 11(1): 28, 1895.

G. vanmeelii Steyaert, Bull. Jard. Bot. État Brux. 31: 77, 1961.

G. luteomarginatum J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 274, 1979.

G. magniporum J. D. Zhao et X. Q. Zhang in Zhao, Xu et Zhang, Acta Mycol. Sin. 3(1): 15, 1984.

G. megalosporum Steyaert, Bull. Jard. Bot. État Brux. 32: 93, 1962.

G. melanophaeum Steyaert, Bull. Jard. Bot. État Brux. 32: 94, 1962.

G. microsporum R. S. Hseu in Hseu, Chen et Wang, Mycotaxon 35(1): 36, 1989.

G. multiplicatum (Mont.) Pat., Bull. Soc. Mycol. France 5(2, 3): 74, 1889.

G. neojaponicum Imazeki, Bull. Tokyo Sci. Mus. 1: 37, 1939.

G. ochrolaccatum (Mont.) Pat., Bull. Soc. Mycol. France 5(2, 3): 68, 1889.

G. pfeifferi Bres., in Patouillard, Bull. Soc. Mycol. France 5(2, 3): 70, 1889.

G. pygmoideum Steyaert, Bull. Jard. Bot. État Brux. 32: 103, 1962.

G. resinaceum Boud., in Patouillard, Bull. Soc. Mycol. France 5(2, 3): 72, 1890.

G. rothwellii Steyaert, Bull. Jard. Bot. Nat. Belg. 50: 158, 1980.

G. rotundatum J. D. Zhao, L. W. Hsu et X. Q. Zhang, Acta Microbiol. Sin. 19(3): 267, 1979.

G. sarasinii Steyaert, Bull. Jard. Bot. État Brux. 31: 80, 1961.

G. shandongense J. D. Zhao et L. W. Xu in Zhao, Zhang et Xu, Acta Mycol. Sin. 5(2): 90, 1986.

G. simaoense J. D. Zhao, Acta Mycol. Sin. 7(4): 209, 1988.

G. stipitatum (Murrill) Murrill, N. Amer. Fl. 9(2): 122, 1908.

G. tibetanum J. D. Zhao et X. Q. Zhang in Zhao, Xu et Zhang, Acta Mycol. Sin. 2(3): 162, 1983.

G. tropicum (Jungh.) Bres., Annls mycol. 8(6): 586, 1910.

G. trulla Steyaert, Persoonia 7(1): 83, 1972.

G. trulliforme Steyaert, Persoonia 7(1): 85, 1972.

G. tsugae Murrill, Bull. Torrey Bot. Club 29: 601, 1902.

G. weberianum (Bres. et Henn. ex Sacc.) Steyaert, Persoonia 7(1): 79, 1972.

G. zonatum Murrill, Bull. Torrey Bot. Club 29: 606, 1902.

Ganoderma subgen. *Humphreya* (Steyaert) Zmitr. ined.

Basidiomata annual, upperside cover presented by hymenoderm or anamixoderm, exosporium reticulate.

G. coffeatum (Berk.) J. S. Furtado, Persoonia 4(4): 383, 1967.

G. eminii Henn. [ut «*emini*»], Bot. Jb. 17: 24, 1893.

G. lloydii Pat. et Har., Bull. Soc. Mycol. France 28: 281, 1912.

G. reticulatosporum (Van der Byl) D. A. Reid [ut «*reticulatosporus*»], J. S. Afr. Bot. 39(2): 161, 1973.

Ganoderma subgen. *Haddowia* (Steyaert) Zmitr. ined.

Basidiomata annual, upperside cover presented by hymenoderm, exosporium costate.

Ganoderma aëtii (Steyaert) Zmitr. comb. nov. (MB 827630). – Basionym: *Haddowia aëtii* Steyaert, Persoonia 7(1): 109, 1972.

G. longipes (Lév.) Pat., Bull. Soc. Mycol. France 5(2, 3): 75, 1889.

G. neurosporum J. S. Furtado, Persoonia 4(4): 386, 1967.

Ganoderma subgen. *Elfvingia* (P. Karst.) Imazeki, Bull. Sci. Mus. Tokyo 1: 51–52, 1939.

Basidiomata perennial, fomitoid, upperside cover presented by anamixoderm, exosporium echinulate.

G. applanatum (Pers.) Pat., Hyménomyc. Eur. (Paris): 143, 1887.

G. australe (Fr.) Pat., Bull. Soc. Mycol. France 5(2,3): 65, 1889.

G. brownii (Murrill) Gilb., Mycologia 53(5): 505, 1962.

G. donkii Steyaert, Persoonia 7(1): 75, 1972.

G. lobatum (Cooke) G.F. Atk., Annls mycol. 6(3): 190, 1908.

G. mirabile C. J. Humphrey, Mycologia 30(3): 332, 1938.

G. orbiforme (Fr.) Ryvarden [ut «*orbiformum*»], Mycologia 92(1): 187, 2000.

G. philippii (Bres. et Henn. ex Sacc.) Bres., Iconogr. Mycol. 21: tab. 1014, 1932.

G. sanmingense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin. 6(1): 2, 1987.

G. tsunodae Yasuda, Bot. Mag., Tokyo 33: 139, 1919.

G. williamsianum Murrill, Bull. Torrey Bot. Club 34: 478, 1907.

Species of *Ganoderma australe*-complex that need a modern type studies

G. adspersum (Schulz.) Donk, Proc. Nederl. Akad. Wetensch. Ser. C 72: 273, 1969.

G. bawanglingense J. D. Zhao et X. Q. Zhang, Acta Mycol. Sin. 6(4): 205, 1987.

G. europaeum Steyaert, Bull. Jard. Bot. État Brux. 31: 70, 1961.

G. hoehnelianum Bres., Annls mycol. 10(5): 502, 1912.

G. impolitum Corner, Beih. Nova Hedwigia 75: 158, 1983.

G. koningsbergii (Lloyd) Teng, Chung-kuo Ti Chen-chun, [Fungi of China]: 760, 1963.

G. linhartii (Kalchbr.) Z. Igmándy, Acta phytopath. entom. Hung. 3: 237, 1968.

G. luteicinctum Corner, Beih. Nova Hedwigia 75: 159, 1983.

G. meijiangense J. D. Zhao [ut «*meijangense*»], Acta Mycol. Sin. 7(1): 16, 1988.

G. oroflavum (Lloyd) C. J. Humphrey, Philipp. J. Sci. 45(4): 503, 1931.

G. rhacodes Pat., Bull. Soc. Mycol. France 30(3): 343, 1914.

G. shangsiense J. D. Zhao, Acta Mycol. Sin. 7(1): 17, 1988.

G. tornatum (Pers.) Bres., Hedwigia 53: 55, 1912.

G. vanheurnii Steyaert, Persoonia 7(1): 69, 1972.

GRAMMOTHELOPSIS Jülich, Biblthca Mycol. 85: 397, 1982.

Basidiomata of fibroporioid to ceriporioid habitus, annual, adnate, soft corky. Context cream to pale. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae rarely branched (dendrites with subinvisible axial segment), hyaline to yellowish, mostly dextrinoid, CB+. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores oblong-ellipsoid, smooth, thick-walled, mostly dextrinoid, CB+.

Type: *Grammothelopsis macrospora* (Ryvarden) Jülich, 1982.

Well-known representatives: *Grammothelopsis asiatica* Y. C. Dai et B. K. Cui in Dai, Cui, Yuan, He, Wei, Qin, Zhou et Li, Ann. Bot. Fenn. 48(3): 220, 2011.

G. bambusicola Ryvarden et de Meijer, Syn. Fung. 15: 53, 2002.

G. incrustata A. David et Rajchenb., Mycotaxon 22(2): 299, 1985.

G. macrospora (Ryvarden) Jülich, Biblthca Mycol. 85: 400, 1982.

G. neotropica Robledo et Ryvarden, Syn. Fung. (Oslo) 23: 10, 2007.

G. puiggarii (Speg.) Rajchenb. et J. E. Wright [ut «*puiggari*»], Mycologia 79(2): 253, 1987.

G. subtropica B. K. Cui et C. L. Zhao, Mycotaxon 121: 292, 2013.

HAPLOPORUS Bondartsev et Singer ex Singer, Mycologia 36(1): 68, 1944.

Basidiomata of fomitoid or trametoid habitus, perennial. Hyphal system dimitic. Context white. Generative hyphae clamped, hyaline. Skeletal hyphae sympodially branched (dendrites with subinvisible axis), hyaline to yellowish, IKI+, CB+. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid, finely echinulate or granulate, dextrinoid, CB+.

Type: *Polyporus odorus* Sommerf., 1926.

Well-known representatives: *Haploporus amarus* X. L. Zeng et Y. P. Bai, Acta Mycol. Sin. 12(1): 13, 1993.

H. latisporus Juan Li et Y. C. Dai in Li, Dai et Yuan, Mycotaxon 99: 182, 2007.

H. odorus (Sommerf.) Bondartsev et Singer ex Singer, Mycologia 36(1): 68, 1944.

PACHYKYTOSPORA Kotl. et Pouzar, Česká Mykol. 17(1): 27, 1963.

Basidiomata of fibroporioid habitus, annual to perennial. Context white. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with a prominent axis), hyaline to yellowish, IKI+/IKI–, CB–. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores elongated – ellipsoid to fusoid, finely costate or granulate, amyloid or dextrinoid, CB+.

Type: *Polyporus tuberculosus* Fr., 1821.

Well-known representatives: *Pachykytospora alabamae* (Berk. et Cooke) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. nanospora A. David et Rajchenb., Mycotaxon 45: 137, 1992.

P. nepalensis T. Hatt. in Hattori, Adhikari, Suda et Doi, Bull. Nat. Sci. Mus., Tokyo, B 28(2): 29, 2002.

P. papyracea (Cooke) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. subtrametea (Pilát) Kotl. et Pouzar, Česká Mykol. 33: 130, 1979.

P. thindii Natarajan et Koland., Cryptog. Bot. 3: 195, 1993.

P. tuberculosa (Fr.) Kotl. et Pouzar, Česká Mykol. 17(1): 28, 1963.

P. wasseri Zmitr., Malysheva et Spirin, Ukr. Bot. Zh. 64(1): 42, 2007.

PERENNIPORIA Murrill, Mycologia 34(5): 595, 1942.

= *Hornodermoporus* Teixeira, 1933.

Basidiomata of fibroporioid (rarely trametoid) habitus, perennial. Context white to tan, fibrose to suberose. Hyphal system dimitic. Genera-

tive hyphae clamped, hyaline. Skeletal hyphae dendroid with a long fibroid appendages (dendrites with an inflated axial segment), hyaline to yellowish, IKI+/IKI–, CB+/CB–. Leptocystidia fusoid. Basidia clavate, (2)4-spored with a basal clamp. Basidiospores ellipsoid to subglobose with more or less truncated apex, smooth, thick-walled, strongly or weakly dextrinoid, amyloid, or Melzer-negative, CB+.

Type: *Boletus medulla-panis* Jacq., 1778.

Well-known representatives: *Perenniporia abyssinica* Decock et Bitew, Plant Ecology and Evolution 145(2): 273, 2012.

P. adnata Corner, Beih. Nova Hedwigia 96: 101, 1989.

P. africana Ipulet et Ryvarden, Syn. Fung. 20: 93, 2005.

P. albocinnamomea Corner [ut «*Perenniporis*»], Beih. Nova Hedwigia 96: 102, 1989.

P. alboferruginea Decock in Decock, Mossebo et Yombiyeni, Plant Ecology and Evolution 144(2): 227, 2011.

P. alboincarnata (Pat. et Gaillard) Decock et Ryvarden [ut «*alboincarnata*»], Cryptog. Mycol. 32(1): 14, 2011.

P. amazonica De Jesus et Ryvarden, Syn. Fung. 27: 74, 2010.

P. amylodextrinoidea Gilb. et Ryvarden, N. Amer. Polyp., 2: 511, 1987.

P. aridula B. K. Cui et C. L. Zhao in Zhao, Cui et Dai, Fungal Diversity 58: 48, 2012.

P. aurantiaca (A. David et Rajchenb.) Decock et Ryvarden, Mycol. Res. 103(9): 1140, 1999.

P. bambusicola Choeyklin, T. Hatt. et E. B. G. Jones, Fungal Diversity 36: 122, 2009.

P. bannaensis B. K. Cui et C. L. Zhao in Zhao, Cui et Dai, Fungal Diversity 58: 52, 2014.

P. bartholomaei (Peck) Gibertoni et Bernicchia in Gibertoni, Bernicchia et Ryvarden, Mycotaxon 97: 2, 2006.

P. centraliafricana Decock et Mossebo, Systematics and Geography of Plants 71(2): 608, 2002.

P. chromatica (Berk. et Cooke) Decock et Ryvarden, Mycol. Res. 103(9): 1142, 1999.

P. cinereofusca B. K. Cui et C. L. Zhao in Zhao, Shen et Cui, Mycoscience 55(5): 419, 2014.

P. compacta Ryvarden et Gilb., Mycotaxon 19: 140, 1984.

P. contraria (Berk. et M. A. Curtis) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. cremeopora Decock et Ryvarden, Mycologia 92(2): 355, 2000.

P. cunninghamii Decock, P. K. Buchanan et Ryvarden, Aust. Syst. Bot. 13(6): 834, 2000.

P. duplexa Ryvarden, Syn. Fung. 35: 40, 2016.

P. ellipsospora Ryvarden et Gilb., Mycotaxon 19: 140, 1984.

P. ellisiana (F. W. Anderson) Gilb. et Ryvarden, Mycotaxon 22(2): 365, 1985.

P. formosana T. T. Chang, Mycol. Res. 98(8): 954, 1994.

P. fulviseda (Bres.) Dhanda [ut «*Perenniporis*»] in Thind et Dhanda, Indian Phytopath. 33(3): 386, 1981.

P. globispora Ipulet et Ryvarden, Syn. Fung. 20: 94, 2005.

P. gomezii Rajchenb. et J. E. Wright, Mycotaxon 15: 306, 1982.

P. guyanensis Decock et Ryvarden, Cryptog. Mycol. 32(1): 21, 2011.

P. hainaniana B. K. Cui et C. L. Zhao, Mycologia 105(4): 946, 2013.

P. hattorii Y. C. Dai et B. K. Cui in Dai, Cui, Yuan, He, Wei, Qin, Zhou et Li, Ann. bot. fenn. 48(3): 224, 2011.

P. inflexibilis (Berk.) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. isabellina (Pat.) Ryvarden, Occ. Pap. Farlow Herb. Crypt. Bot. 18: 22, 1983.

P. koreana Y. Jang et J. J. Kim in Jang, Jang, Lim, Kim et Kim, Mycotaxon 130(1): 174, 2015.

P. lacerata B. K. Cui et C. L. Zhao in Zhao et Cui, Mycoscience 54(3): 232, 2013.

P. luteola B. K. Cui et C.L. Zhao in Zhao et Cui, Mycoscience 54(3): 235, 2013.

P. maackiae (Bondartsev et Ljub.) Parmasto in Dai et Niemelä, Ann. Bot. Aenn. 32(4): 223, 1995.

P. macropora B. K. Cui et C. L. Zhao, Mycologia 105(4): 947, 2013.

P. malvena (Lloyd) Ryvarden, Mycotaxon 35(2): 233, 1989.

P. martia (Berk.) Ryvarden [ut «*martius*»], Norw. J. Bot. 19: 143, 1972.

P. medulla-panis (Jacq.) Donk, Persoonia 5(1): 76, 1967.

P. meridionalis Decock et Stalpers, Taxon 55(3): 769, 2006.

P. mesoleuca (Petch) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. minor Y. C. Dai et H. X. Xiong, Mycotaxon 105: 60, 2008.

P. minutissima (Yasuda) T. Hatt. et Ryvarden, Mycotaxon 50: 37, 1994.

P. minutopora Ryvarden et Decock in Decock et Ryvarden, Mycologia 92(2): 356, 2000.

P. mundula (Wakef.) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. nanjenshana T. T. Chang et W. N. Chou, Mycol. Res. 104(5): 637, 2000.

P. nanlingensis B. K. Cui et C. L. Zhao in Zhao et Cui, Mycol. Progr. 11(2): 556, 2012.

P. oviformis G. Cunn. ex P. K. Buchanan et Ryvarden [ut «*oviforma*»], Mycotaxon 31(1): 25, 1988.

P. parvispora Decock et Ryvarden, Mycologia 92(2): 357, 2000.

P. pauciskeletalis Rajchenb., Sydowia 40: 238, 1988.

P. permacilenta (Corner) T. Hatt., Mycoscience 44(4): 271, 2003.

P. phloiophila Gilb. et M. Blackw., Mycotaxon 20(1): 85, 1984.

P. piceicola Y. C. Dai in Dai, Niemelä et Kinnunen, Ann. bot. fenn. 39(3): 173, 2002.

P. piperis (Rick) Rajchenb., Nordic J. Bot. 7(5): 555, 1987.

P. pyricola Y. C. Dai et B. K. Cui, Mycosystema 29(6): 815, 2010.

P. rosmarini A. David et Malençon, Bull. trimest. Soc. Mycol. France 94(4): 407, 1979.

P. rufidochmia (Corner) T. Hatt. et Sotome, Mycoscience 54(4): 302, 2013.

P. russeimarginata B. K. Cui et C. L. Zhao, Mycologia 105(4): 947, 2013.

P. sprucei Decock et Ryvarden, Mycologia 91(2): 388, 1999.

P. straminella (Bres.) Ryvarden, Mycotaxon 33: 323, 1988.

P. subacida (Peck) Donk, Persoonia 5(1): 76, 1967.

P. tenuis (Schwein.) Ryvarden, Norw. J. Bot. 20(1): 9, 1973.

P. tianmuensis B. K. Cui et C. L. Zhao in Zhao et Cui, Mycoscience 54(3): 236, 2013.

P. tibetica B. K. Cui et C. L. Zhao, Mycoscience 53(5): 366, 2012.

P. truncata (Lloyd) Ryvarden, Norw. J. Bot. 19: 233, 1972.

P. truncatospora (Lloyd) Ryvarden in Ryvarden, Xu et Zhao, Acta Mycol. Sin. 5(4): 228, 1986.

P. vanhullii Decock et Ryvarden, Index Fungorum 234: 1, 2015.

P. variegata Ryvarden et Gilb., Mycotaxon 19: 140, 1984.

P. voeltzkowii (Henn.) Ryvarden in Ryvarden et Johansen, Prelim. Polyp. Fl. E. Afr. : 478, 1980.

P. xantha Decock et Ryvarden, Mycol. Res. 103(9): 1139, 1999.

Species incertae sedis

P. cystidiata Y. C. Dai, W. N. Chou et Sheng H. Wu, in Dai, Wu et Chou, Mycotaxon 83: 209, 2002.

P. ferruginea Corner [ut «*Perenniporis*»], Beih. Nova Hedwigia 96: 106, 1989.

P. fraxinophila (Peck) Ryvarden, Norw. J. Bot. 19: 143, 1972.

P. ganodermoides Ryvarden, Gomes-Silva et Gibertoni, Syn. Fung. 35: 58, 2016.

P. penangiana Corner, Beih. Nova Hedwigia 96: 109, 1989.

P. semistipitata (Lloyd) Gilb. et Ryvarden, N. Amer. Polyp., Vol. 2: 530, 1987.

P. stipitata Ryvarden, Mycotaxon 28(2): 535, 1987.

PERENNIPORIELLA Decock et Ryvarden, Mycol. Res. 107(1): 94, 2003.

= *Flammeopellis* Y. C. Dai, B. K. Cui et C. L. Zhao in Zhao, He, Wanghe, Cui et Dai, 2014.

Basidiomata of trametoid habitus, annual to persisting, sessile, decurrent, or disc-forming. Context cream to rufous, suberose. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with an inflated axial segment), hyaline to yellowish, IKI+/IKI–, CB+. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores wide-ellipsoid to subglobose, smooth, thick-walled, dextrinoid, CB+.

Type: *Polyporus neofulvus* Lloyd, 1915.

Well-known representatives: *Perenniporiella bambusicola* (Y. C. Dai, B. K. Cui et C. L. Zhao) Zmitr. comb. nov. (MB 827285). – Basionym: *Flammeopellis bambusicola* Y. C. Dai, B. K. Cui et C. L. Zhao in Zhao, He, Wanghe, Cui et Dai, Mycol. Progr. 13(3): 777, 2014.

P. chaquenia Robledo et Decock, Mycologia 101(5): 662, 2009.

P. micropora (Ryvarden) Decock et Ryvarden, Mycol. Res. 107(1): 99, 2003.

P. neofulva (Lloyd) Decock et Ryvarden, Mycol. Res. 107(1): 94, 2003.

P. pendula Decock et Ryvarden, Mycol. Res. 107(1): 99, 2003.

P. tepeitensis (Murrill) Decock et R. Valenz., Cryptog. Mycol. 31(4): 424, 2010.

PHAEOTRAMETES J. E. Wright, Mycologia 58(4): 529, 1966.

Basidiomata of trametoid habitus, persisting, sessile, with umber-brown hirsute surface. Context basally chestnut, umber-brown in outer zone. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with an inflated axial segment), golden-brown, CB+. Cystidia none, but hyphoid paraphyses present. Basidia clavate, 4-spored with a basal clamp. Basidiospores obovoid with an obscure truncation, large, golden-brown, thick-walled, IKI–, CB+.

Type: *Hexagonia decipiens* Berk., 1845.

Monotypic.

Phaeotrametes decipiens (Berk.) J. E. Wright, Mycologia 58(4): 529, 1966.

PYROFOMES Kotl. et Pouzar, Reprium nov. Spec. Regni veg. 69: 140, 1964.

Basidiomata of fomitoid (phellinoid) to fibroporioid habitus, initially squalide or hispid, later covered with blackish rimose crust. Context orange-cinnamon, woody. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with subinvisible axial segment), golden-brown, dextrinoid, CB+. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores obovoid with a clear apical truncation and germ-pore, thick-walled, dextrinoid, CB+.

Type: *Polyporus demidoffii* Lév. in Demidov, 1842.

Well-known representatives: *Pyrofomes albomarginatus* (Zipp. ex Lév.) Ryvarden [ut «*albo-marginatus*»], Norw. J. Bot. 19: 236, 1972.

P. castanopsidis B. K. Cui et Y. C. Dai, Nova Hedwigia 93(3): 438, 2011.

P. demidoffii (Lév.) Kotl. et Pouzar, Reprium nov. Spec. Regni veg. 69: 14, 1964.

P. fulvoumbrinus (Bres.) A. David et Rajchenb., Mycotaxon 22(2): 313, 1985.

P. lateritius (Cooke) Ryvarden, Norw. J. Bot. 19(3): 236, 1972.

P. perlevis (Lloyd) Ryvarden, Norw. J. Bot. 19: 236, 1972.

P. tricolor (Murrill) Corner, Beih. Nova Hedwigia 96: 111, 1989.

SPARSITUBUS L. W. Hsu et J. D. Zhao, Acta Microbiol. Sin. 20(3): 236, 1980.

Basidiomata of trametoid habitus, sessile; pores develop as hymenophoral outgrowths bearing isolated «apical pores», separated each other by a distinct distance, circular. Context pinkish-buff, hard-corky to woody. Hyphal system dimitic. Generative hyphae clamped or not, hyaline. Skeletal hyphae dendroid (dendrites with subinvisible axial segment), golden-brown, dextrinoid, CB+. Cystidia none. Basidia barrel-shaped, 4-spored with a basal clamp. Basidiospores broadly ellipsoid to subglobose, yellowish, fairly thick- to thick-walled, asperulate, mostly collapsed when mature, IKI–, CB+.

Type: *Sparsitubus nelumbiformis* L. W. Hsu et J. D. Zhao, 1980.

Monotypic.

S. nelumbiformis L. W. Hsu et J. D. Zhao, Acta Microbiol. Sin. 20(3): 237, 1980.

TOMOPHAGUS Murrill, Torreya 5: 197, 1905.

Basidiomata mostly of large sizes, of polyporoid or fomitoid habitus, annual to persisting, sessile, laterally to with distinct laccate crust. Context soft to spongy, ivory-white. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae dendroid (dendrites with strongly inflated axis), yellowish, IKI–, CB+. Pileocystidia present, subclavate. Basidia clavate or pyriform, 4-spored with a basal clamp. Basidiospores ovate, truncate, with echinulate, yellowish-brown exosporium and smooth hyaline perisporium, IKI–, CB+.

Type: *Polyporus colossus* Fr., 1851.

Well-known representatives: *Tomophagus cattienensis* X. T. Le et J. M. Moncalvo, Mycol. Progr. 11(3): 777, 2012.

T. colossus (Fr.) Murrill, Torreya 5: 197, 1905.

TRUNCOSPORA Pilát, Sb. Nár. Mus. v Praze, Rada B, Prír. Vedy 9(2): 108, 1953.

= *Loweporus* J. E. Wright, 1976.

= *Abundisporus* Ryvarden, 1999.

Basidiomata of trametoid habitus, annual to persisting, sessile to widely decurrent or resupinate. Context tough-spongy, white to tan. Hyphal system dimitic. Generative hyphae clamped, hyaline or yellowish. Skeletal hyphae rarely branched, of dendroid appearance (dendrites with more or less inflated axis), yellowish, dextrinoid, CB+. Leptocystidia fusoid or hyphoid; in some species these elements absent. Basidiospores ovate or ellipsoid, often flattened, with a prominent wall, yellowish to brownish, smooth, dextrinoid, CB+.

Type: *Polyporus ochroleucus* Berk., 1845.

Well-known representatives: *Truncospora arizonica* Spirin et Vlasák in Spirin, Kout et Vlasák, Nova Hedwigia 100: 162, 2015.

T. atlantica Spirin et Vlasák in Spirin, Kout et Vlasák, Nova Hedwigia 100: 166, 2015.

Truncospora castanea (Corner) Zmitr. comb. nov. (MB 827298). – Basionym: *Loweporus castaneus* Corner, Beih. Nova Hedwigia 96: 86, 1989.

T. detrita (Berk.) Decock, Cryptog. Mycol. 32(4): 389, 2011.

T. floridana Vlasák et Spirin in Spirin, Kout et Vlasák, Nova Hedwigia 100: 167, 2015.

Truncospora fuscopurpurea (Pers.) Zmitr. comb. nov. (MB 827300). – Basionym: *Polyporus fuscopurpureus* Pers. in Gaudichaud-Beaupré in Freycinet, Voy. Uranie., Bot.: 172, 1827.

Truncospora japonica (Yasuda) Zmitr. comb. nov. (MB 827303). – Basionym: *Trametes japonica* Yasuda, Bot. Mag., Tokyo 32: 356, 1918.

Truncospora livida (Kalchbr.) Zmitr. comb. nov. (MB 827304) – Basionym: *Polyporus lividus* Kalchbr. in Cooke, Grevillea 10(no. 55): 103, 1882.

T. macrospora B. K. Cui et C. L. Zhao, Phytotaxa 87(2): 33, 2013.

T. mexicana Vlasák, Spirin et Kout in Spirin, Kout et Vlasák, Nova Hedwigia 100: 167, 2015.

Truncospora mollissima (B. K. Cui et C. L. Zhao) Zmitr. comb. nov. (MB 827306). – Basionym: *Abundisporus mollissimus* B. K. Cui et C. L. Zhao in Zhao, Chen, Song et Cui, Mycol. Progr. 14(no. 38): 5, 2015.

T. oboensis Decock, Cryptog. Mycol. 32(4): 385, 2011.

T. ochroleuca (Berk.) Pilát, Sb. Nár. Mus. v Praze, Rada B, Prír. Vedy 9(2): 108, 1953.

T. ohiensis (Berk.) Pilát, Sb. Nár. Mus. v Praze, Rada B, Prír. Vedy 9(2): 108, 1953.

T. ornata Spirin et Bukharova in Spirin, Kout et Vlasák, Nova Hedwigia 100: 170, 2015.

Truncospora pubertatis (Lloyd) Zmitr. comb. nov. (MB 827308). – Basionym: *Polyporus pubertatis* Lloyd, Mycol. Writ. 4 (Syn. Apus): 358, 1915.

Truncospora quercicola (Y. C. Dai) Zmitr. comb. nov. (MB 827313). – Basionym: *Abundisporus quercicola* Y. C. Dai in Dai, Niemelä et Kinnunen, Ann. bot. fenn. 39(3): 171, 2002.

Truncospora roseoalba (Jungh.) Zmitr. comb. nov. (MB 827314). – Basionym: *Polyporus roseoalbus* Jungh., Verh. Batav. Genootsch. Kunst. Wet. 17(2): 43, 1838.

Truncospora sclerosetosa (Decock et Laurence) Zmitr. comb. nov. (MB 827315). – Basionym: *Abundisporus sclerosetosus* Decock et Laurence, Cryptog. Mycol. 21(1): 28, 2000.

Truncospora tephrophora (Mont.) Zmitr. comb. nov. (MB 827316). – Basionym: *Polyporus tephroporus* Mont., Annls Sci. Nat., Bot., sér. 3 4: 358, 1845.

T. tropicalis Vlasák et Spirin in Spirin, Kout et Vlasák, Nova Hedwigia 100: 171, 2015.

Truncospora violacea (Wakef.) Zmitr. comb. nov. (MB 827317). – Basionym: *Polystictus violaceus* Wakef., Bull. Misc. Inf., Kew(3): 72, 1916.

T. wisconsinensis C. L. Zhao et Pfister in Zhao, Xu et Pfister, Phytotaxa 257(1): 93, 2015.

VANDERBYLIA D. A. Reid, J. S. Afr. Bot. 39(2): 166, 1973.

= *Pseudopiptoporus* Ryvarden, 1980.

Basidiomata of trametoid to fomitoid or fibroporioid habitus, annual to persisting, sessile to widely decurrent or resupinate. Context woody-suberose, tan to umber-brown. Hyphal system dimitic. Generative hyphae clamped, hyaline or yellowish. Skeletal hyphae of dendroid appearance (dendrites with inflated axis), umber-brown, dextrinoid, CB+. Cystidia none. Basidiospores lacrymoid to ellipsoid, truncated or not, thick-walled, brownish, smooth, dextrinoid, CB+.

Type: *Polyporus vicinus* Lloyd, 1924.

Well-known representatives: *Vanderbylia borneensis* Corner, Beih. Nova Hedwigia 86: 242, 1987.

V. devians (Bres.) D. A. Reid, Contr. Bolus Herb. 7: 55, 1975.

V. fraxinea (Bull.) D. A. Reid, S. Afr. J. Bot. 39(2): 166, 1973.

V. latissima (Bres.) D. A. Reid, J. S. Afr. Bot. 39(2): 167, 1973.

V. nigroapplanata (Van der Byl) D.A. Reid, Contr. Bolus Herb. 7: 62, 1975.

V. peninsularis Corner, Beih. Nova Hedwigia 86: 247, 1987.

V. subincarnata Corner, Beih. Nova Hedwigia 86: 250, 1987.

V. ungulata D. A. Reid, J. S. Afr. Bot. 39(2): 166, 1973.

V. vicina (Lloyd) D. A. Reid, J. S. Afr. Bot. 39(2): 166, 1973.

YUCHENGIA B. K. Cui et Steffen in Zhao, Cui et Steffen, Nordic J. Bot. 31(3): 333, 2013.

Basidiomata of fibroporioid habitus, perennial. Context white, fibrose; tube layers subceraceous. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae rarely branched, dendroid with a long fibroid appendages, hyaline to yellowish, amyloid, CB+. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores ellipsoid with truncated apex, smooth, thick-walled, weakly amyloid, CB+.

Type: *Trametes narymica* Pilát, 1936.

Monotypic.

Yuchengia narymica (Pilát) B. K. Cui, C. L. Zhao et Steffen in Zhao, Cui et Steffen, Nordic J. Bot. 31(3): 333, 2013.

Subfamily II. TRAMETOIDEAE Pinto-Lopes, Mem. Soc. Brot. 8: 161, 1952.

Sclerohyphae sympodially branched with subinvisible axial element; basidiomata of trametoid habitus; the context white, cream, or carmine-red.

ARTOLENZITES Falck, Hausswammforsch 3: 37, 1909.

Basidiomata of trametoid habitus, annual to persisting, sessile on a local attachment area, or on short stem furnished by basal disc; hymenophore of variable form: partly poroid, partly sinuous-daedaloid and radially split, partly purely lamellate with straight to sinuous lamellae; pileus of intermixed structure without incrustations. Context ivory to tan, suberose. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae yellowish, sympodially branched, subsolid, CB–. Pseudocystidia as ends of subhymenial skeletals. Basidia clavate, 4-spored with a basal clamp. Basidiospores oblong-ellipsoid to cylindrical, thin-walled, IKI–, CB–.

Monotypic.

Artolenzites elegans (Spreng.) Teixeira, Rev. Bras. Bot. 13: 138, 1986.

CELLULARIELLA Zmitr. et V. Malysheva, Index Fungorum 180: 1, 2014.

= *Cellularia* Bull., 1784 nom. illeg.

Basidiomata of trametoid or scenidioid habitus, annual to persisting, sessile on a local attachment area; hymenophore poroid with large favoloid or hexagonoid pores, daedaloid and radially split, or purely lamellate with straight lamellae; pileus of intermixed structure with cornescent surface. Context white to tan, suberose. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae hyaline, sympodially branched, CB–. Pseudocystidia as ends of subhymenial skeletals. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, thin-walled, IKI–, CB–.

Type: *Lenzites acuta* Berk., London J. Bot. 1: 146, 1842.

Well-known representatives: *Cellulariella acuta* (Berk.) Zmitr. et V. Malysheva, Index Fungorum 180: 1, 2014.

C. warnieri (Dur. et Mont.) Zmitr. et V. Malysheva, Index Fungorum 180: 1, 2014.

CORIOLOPSIS Murrill, Bull. Torrey Bot. Cl. 32: 358, 1905.

Basidiomata of trametoid, scenidioid, or corioloid habitus, annual to persisting, sessile on a local attachment area; hymenophore poroid with some hexagonoid tendency; pileus of trichodermoid structure. Context fibrous, duplex: lower part ochraceous to golden-brown, upper part tan, of looser consistency. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae yellowish to golden-brown, sympodially branched, green in CB. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores oblong-ellipsoid, thin-walled, IKI–, CB–.

Type: *Polyporus occidentalis* Klotzsch, 1833.

Well-known representative: *Coriolopsis polyzona* (Pers.) Ryvarden, Norw. J. Bot. 19: 230, 1972.

Provisory position in the genus *Coriolopsis*

Trametes variegata (Berk.) Zmitr., Wasser et Ezhov, Int. J. Med. Mushrooms 14: 315, 2012.

CUBAMYCES Murrill, Bull. Torrey Bot. Cl. 32: 480, 1905.

=? *Leiotrametes* Welti et Courtec., 2012.

Basidiomata of trametoid or corioloid habitus, annual, sessile; hymenophore poroid with small slightly ceraceous pores; pileus of intermixed structure with ceraceous surface and ochraceous intraparietal pigment. Context white to ivory, suberose. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae hyaline, sympodially branched, CB–. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, thin-walled, IKI–, CB–.

Type: *Cubamyces cubensis* (Mont.) Murrill, Bull. Torrey Bot. Cl. 32: 480, 1905.

Provisory position in the genus *Cubamyces*

Leiotrametes lactinea (Berk.) Welti et Courtec. in Welti, Moreau, Favel, Courtecuisse, Haon, Navarro, Taussac et Lesage-Meessen, Fungal Diversity 55(1): 60, 2012.

Trametes menziesii (Berk.) Ryvarden, Norw. J. Bot. 19(3): 236, 1972.

T. marianna (Pers.) Ryvarden, Persoonia 7: 309, 1973.

LENZITES Fr., Fl. Sc.: 339, 1835.

= *Leucolenzites* Falck, 1909.

Basidiomata of trametoid habitus, annual, sessile; hymenophore poroid with radially elongated pores, daedaleoid, or lamellate; pileus of

trichodermoid or intermixed structure, subtomentose or matt. Context white, coriaceous. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae hyaline, sympodially branched, subsolid, CB–. Pseudocystidia of tramal origin, acute. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, thin-walled, IKI–, CB–.

Type: *Agaricus betulinus* L., 1753.

Lenzites betulina (L.) Fr., Epicr.: 405, 1838.

L. gibbosa (Pers.) Hemmi, Ann. phytopath. Soc. Japan 9: 12, 1939.

Provisory position in the genus *Lenzites*

Lenzites vespacea (Pers.) Pat., Essai..: 91, 1900.

Trametes barbulata Corner, Beih. Nova Hedwigia 97: 75, 1989.

T. benevestita Corner, Beih. Nova Hedwigia 97: 77–78.

PILATOTRAMA Zmitr. gen. nov. (MB 827332).

Basidiomata of trametoid or corioloid habitus, annual to persisting, sessile; hymenophore poroid with angular pores; pileus of intermixed structure with brown intraparietal pigment and external resinous deposites. Context white to cream, tough-fibrous. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae hyaline, sympodially branched, CB+. Cystidia none. Basidia clavate, 4-spored with a basal clamp. Basidiospores lacrymoid, with a distinct wall, dextrinoid or not, CB+. Causes a white rot. The genus *Cubamyces* Murrill is similar, but differs by CB– basidiospores and the absence of resinous deposites on a cuticular area. Phylogenetically, this lineage can be clearly delineated, too.

Etymology: the new genus was named in honor of the famous Czech mycologist Albert Pilát.

Type: *Trametes ljubarskyi* Pilát, 1937.

Monotypic.

Pilatotrama ljubarskyi (Pilát) Zmitr. comb. nov. (MB 827333). – Basionym: *Trametes ljubarskyi* Pilát, Bull. trimestr. Soc. Mycol France 52: 309, 1937.

PYCNOPORUS P. Karst., Rev. Mycol. 3: 18, 1881.

Basidiomata of trametoid or corioloid habitus (in young stages tyromycetoid), annual to persisting, with carmine-red deposites at surfaces, sessile; hymenophore poroid with angular pores; pileus of intermixed structure with incrustations at hyphal apex. Context orange to carmin-red, tough-fibrous. Hyphal system pseudodimitic, then dimitic. Generative hyphae clamped, hyaline. Pseudoskeletal and skeletal hyphae sympodially branched, covered with pigment crystals (pycnoporin, cinnabaric acid, tramesanguin, phenoxason – Téllez-Téllez et al., 2016), CB–. Leptocystidia hyphoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores short-cylindrical to ovate, thin-walled, IKI–, CB–.

Type: *Boletus cinnabarinus* Jacq., 1776.

Well-known representatives: *Pycnoporus cinnabarinus* (Jacq.) P. Karst., Rev. Mycol. 3: 18, 1881.

P. puniceus (Fr.) Ryvarden, Norw. J. Bot. 19: 236, 1972.

P. sanguineus (L.) Murrill, Bull. Torrey Bot. Cl. 31: 421, 1904.

SCLERODEPSIS Cooke, Grevillea 19: 49, 1890.

Basidiomata of scenidioid to corioloid habitus, annual to persisting, sessile or decurrent, often marginally proliferating with hispid to matt upperside and often splitting to dentate hymenophore; pileus of trichodermoid structure. Context cream. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae sympodially branched, hyaline, subsolid, CB–. Cystidia none, hyphal pegs occasionally present. Basidia clavate, 4-spored with a basal clamp. Basidiospores oblong-ellipsoid, thin-walled, IKI–, CB–.

Type: *Sclerodepsis berkeleyi* Cooke, 1890.

Well-known representatives: *Sclerodepsis berkeleyi* Cooke, Grevillea 19: 49, 1890.

S. maxima (Mont.) Ryvarden, Norw. J. Bot. 19: 236, 1972.

S. meyenii (Klotzsch) Ryvarden, Norw. J. Bot. 19: 236, 1972.

TRAMETES Fl. Sc.: 339, 1835.

= *Hansenia* P. Karst., 1880.

= *Coriolus* Quél., 1886.

= *Poronidulus* Murrill, 1904.

= *Pseudotrametes* Bondartsev et Singer ex Singer, 1944.

Basidiomata of trametoid to corioloid habitus, annual to persisting, sessile or decurrent to subresupinate; pileus of trichodermoid structure. Context white. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae sympodially branched, hyaline, thick-walled, CB+/CB–. Leptocystidia fusoid. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, thin-walled, IKI–, CB–.

Type: *Boletus suaveolens* L., 1753 fide Ryvarden, 1991.

Well-known representatives: *Trametes cingulata* Berk., Hooker's J. Bot. 6: 164, 1854.

T. conchifera (Schwein.) Pilát in Kavina et Pilát, Atl. Champ. Eur. 3: 264, 1939.

T. ectypa (Berk. et M. A. Curtis) Gilb. et Ryvarden, N. Amer. Polyp. 2: 740, 1987.

T. hirsuta (Wulfen) Lloyd, Mycol. Writ. 7: 1319, 1924.

T. junipericola Manjon, Moreno et Ryvarden, Boll. Soc. Micol. Castellana 8: 47, 1984.

T. manilaensis (Lloyd) Teng, Fung. China: 763, 1963.

T. membranacea (Sw.) Kreisel, Monogr. Cien. Univ. Havana 16: 83, 1971.

T. multicolor (Schaeff.) Jülich, Persoonia 11: 427, 1982.

T. orientalis (Yasuda) Imazeki, Bull. Tokyo Sci. Mus. 6: 73, 1943.

T. pocas (Berk.) Ryvarden, Mycotaxon 20: 351, 1984.

T. pubescens (Schumach.) Pilát in Kavina et Pilát, Atl. Champ. Eur. 3: 268, 1939.

T. sediliensis Corner, Beih. Nova Hedwigia 97: 159, 1989.

T. suaveolens (Fr.) Fr., Epicr.: 491, 1838.

T. subectypa (Murrill) Gilb. et Ryvarden, N. Amer. polyp. 2: 758, 1987.

T. supermodesta Ryvarden et Iturr., Mycologia 95: 1074, 2003.

T. tephroleuca Berk., Hooker's J. Bot. 6: 165, 1854.

T. versicolor (L.) Lloyd, Mycol. notes 65: 1045, 1921.

T. villosa (Sw.) Kreisel, Monogr. Cien. Univ. Havana 16: 83, 1971.

Subfamily III. LOPHARIOIDEAE Zmitr. subfam. nov. (MB 827514)

Sclerohyphae fibrous; basidiomata of stereoid or corticioid habitus, hymenophore uneven of various topography, thickening, hydnoid, or poroid; the context pigmented or not.

DENTOCORTICIUM (Parmasto) M. J. Larsen et Gilb., Norw. Jl Bot. 21(3): 225, 1974.

= *Fuscocerrena* Ryvarden, 1982.

Basidiomata of corticioid, stereoid, or corioloid habitus, annual to persisting; hymenophore costate, tuberculate, toothed or poroid. Context whitish to brown. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae rarely sympodially branched to fibrous, yellowish to brown, thick-walled, CB–. Fusoid leptocystidia and/or dendrohyphidia present. Basidia clavate-utriform, 4-spored with a basal clamp. Basidiospores ellipsoid-cylindrical, thin-walled, IKI–, CB–.

Type: *Laeticorticium ussuricum* Parmasto, 1965.

Well-known representatives: *Dentocorticium bicolor* (P. H. B. Talbot) Nakasone et S. H. He in Liu, Nakasone, Wu, He et Dai, MycoKeys 32: 42, 2018.

D. portoricense (Spreng. ex Fr.) Nakasone et S. H. He in Liu, Nakasone, Wu, He et Dai, MycoKeys 32: 42, 2018.

D. sulphurellum (Peck) M. J. Larsen et Gilb., Norw. Jl Bot. 21(3): 226, 1974.

D. taiwanianum (H. C. Wang et Sheng H. Wu) Nakasone et S. H. He in Liu, Nakasone, Wu, He et Dai, MycoKeys 32: 43, 2018.

D. ussuricum (Parmasto) M. J. Larsen et Gilb., Norw. Jl Bot. 21(3): 226, 1974.

DEXTRINOPORUS H. S. Yuan in Yuan et Qin, Mycol. Progr. 17(6): 774, 2018.

Basidiomata of tyromycetoid habitus, annual, sessile; hymenophore poroid, as a single tube layer. Context pinkish-cream, duplex: lower layer distinctly zonate. Hyphal system monomitic. Generative hyphae clamped, with a prominent wall, hyaline, dextrinoid, CB+. Cystidia none, but dendrohyphidida present. Basidia clavate-utriform, 4-spored with a basal clamp. Basidiospores broadly-ellipsoid, hyaline, thin-walled, IKI–, CB–.

Type: *Dextrinoporus aquaticus* H. S. Yuan in Yuan et Qin, 2018.

Monotypic.

D. aquaticus H. S. Yuan in Yuan et Qin, Mycol. Progr. 17(6): 776, 2018.

LOPHARIA Kalchbr. et MacOwan in Kalchbrenner, Grevillea 10(no. 54): 58, 1881.

Basidiomata of stereoid habitus, annual to perennial; hymenophore smooth to tuberculate. Context ivory-cream to tan. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae mostly fibrous, hyaline, thick-walled, CB–/CB+. Pseudocystidia robust, thick-walled, encrusted or not. Basidia clavate-utriform, 4-spored with a basal clamp. Basidiospores large, ellipsoid-cylindrical, thin-walled, IKI–, CB–. Causes a white rot.

Type: *Lopharia lirellosa* Kalchbr. et MacOwan, 1881.

Well-known representatives: *Lopharia ayresii* (Berk. ex Cooke) Hjortstam, Mycotaxon 54: 188, 1995.

L. cinerascens (Schwein.) G. Cunn., Trans. Roy. Soc. N. Z. 83(4): 622, 1956.

L. mirabilis (Berk. et Broome) Pat., Bull. Soc. mycol. Fr. 11(1): 14, 1895.

L. pseudocinerascens Boidin et Gilles, Bull. Soc. mycol. Fr. 118(2): 96, 2003.

L. resupinata S. H. He, S. L. Liu et Y. C. Dai in Liu, Nakasone, Wu, He et Dai, MycoKeys 32: 29, 2018.

L. sinensis S. H. He, S. L. Liu et Y. C. Dai in Liu, Nakasone, Wu, He et Dai, MycoKeys 32: 33, 2018.

Chapter 5 Taxonomical overview of residual *Polyporales*

The present chapter is intended to show a phylogenetic context where the phylogenetic radiation known as *Polyporaceae* is nested. The rank relations of taxa outlined are maintained on the canvas of our concept, whereas the phylogenetic relationships between groups are coordinated with the GenBank trees concatenation. The order of families presentation follows from our current understanding of sequences divergence (the place for *Polyporaceae* family would have to be located between *Grifolaceae* and *Meruliaceae* in the *Polyporales*-crown). In the taxonomic overview we have proposed some results of our long-term experience in generic concepts, some of which, as we hope, will be certainly useful in other polypores studies.

Ischnodermataceae Jülich, Bibl. Mycol. 85: 374, 1982.

Basidiomata gymnocarpic, annual, of tyromycetoid habitus. Context ochraceous to light-brown and separated from the tomentum by a distinct black zone which becomes a crust on the pileus whrn the tomentum wears away. Hymenophore poroid, as a single tube layer. Hyphal system sarcodimitic. Generative hyphae with clamp connections, hyaline. Pseudoskeletal hyphae thick-walled and inflated, yellowish-brown. Cystidia none. Basidia clavate, (2)4-spored. Basidiospores cylindrical and slightly curved, thin-walled, smooth, Melzer's negative, acyanophilous. Xylotrophic fungi. Causes a white rot.

Type genus: *Ischnoderma* P. Karst., 1879. Monotypic family.

This family represents a basal line of the *Polyporales* (Justo et al., 2017). It is difficult to say whether this is an artifact or not. In morphological respect, the family gravitates to *Grifolaceae*/*Polyporaceae*-group. A single genus *Ischnoderma* is characterized by rather specialized (basically, a tyromycetoid) morphotype, the presence of physalohyphae, but weakly developed fibrodimiticism that can indeed be interpreted as plesiomorphy.

ISCHNODERMA P. Karst., Meddn Soc. Fauna Flora fenn. 5: 38, 1879.

Type: *Boletus resinosus* Schrad., 1794. Examples: *Ischnoderma benzoinum* (Wahlenb.) P. Karst., *I. brasiliense* Corner, *I. resinosum* (Schrad.) P. Karst., *I. rosulatum* (G. Cunn.) P. K. Buchanan et Ryvarden, *I. solomonense* Corner.

Incrustoporiaceae Jülich, Biblthca Mycol. 85: 373, 1982.

Basidiomata gymnocarpic, annual, of tyromycetoid, ceriporioid, or fibroporioid habitus. Context white to hyaline. Hyphal system monomitic, pseudodimitic, or dimitic with fibrohyphae. Generative hyphae with clamp connections, hyaline. Pseudoskeletal and skeletal hyphae hyaline, often deliquescent. Leptocystidia of

various types present or absent. Basidia clavate, (2)4-spored. Basidiospores cylindrical to allantoid, thin-walled, smooth, Melzer's negative, acyanophilous. Xylotrophic fungi. Causes a white rot.

Type genus: *Incrustoporia* Domański, 1963.

GLOEOPORELLUS Zmitr. gen. nov. (MB 827569).

Basidiomata of tyromycetoid to ceriporioid habitus with narrowly reflexed or totally prostrate pilei of apricot to carmine red coloration; hymenophore poroid with 2–3-layered pores, cornescent, carmine red. Context apricot, ceraceous. Hyphal system dimitic. Generative hyphae clamped, hyaline. Skeletal hyphae regularly branched, thick-walled, pigmented, CB+. Leptocystidia hyphoid. Basidia short-clavate, 4-spored with a basal clamp. Basidiospores allantoid, thin-walled, IKI–, CB–. Causes a white rot. The closely related genus is *Skeletocutis* Kotl. et Pouzar, but this genus differs from *Gloeoporellus* by uncolored context and by less branched skeletals.

Etymology: the name refers to another genus, *Gloeoporus* Mont. which have a superficial resemblence in hymenophoral area.

Type: *Polyporus merulinus* Berk. in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 254, 1860. ≡ *Gloeoporellus merulinus* (Berk. in Hooker) Zmitr. comb. nov. (MB 827570). – Basionym: *Polyporus merulinus* Berk. in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 254, 1860. ?Monotypic.

INCRUSTOPORIA Domański, Acta Soc. Bot. Pol. 32: 737, 1963.

Type: *Poria stellae* Pilát, 1953. Examples: *Incrustoporia biguttulata* (Romell) Zmitr. comb. nov. (MB 827565). – *Poria biguttulata* Romell in Pilát, Bull. trimest. Soc. mycol. Fr. 48(1): 44, 1932); *Incrustoporia borealis* (Niemelä) Zmitr. comb. nov. (MB 827564). – Basionym: *Skeletocutis borealis* Niemelä, Acta bot. fenn. 161: 7, 1998; *Incrustoporia brevispora* (Niemelä) Zmitr. comb. nov. (MB 827566). – Basionym: *Skeletocutis brevispora* Niemelä, Acta bot. fenn. 161: 10, 1998; *Incrustoporia chrysella* (Niemelä) Zmitr. comb. nov. (MB 827567). – Basionym: *Skeletocutis chrysella* Niemelä, Acta bot. fenn. 161: 13, 1998; *I. nivea* (Jungh.) Ryvarden; *Incrustoporia papyracea* (A. David) Zmitr. comb. nov. (MB 827568). – *Skeletocutis papyracea* A. David, Naturaliste Can. 109(2): 254, 1982; *I. stellae* (Pilát) Domański; *I. subincarnata* (Peck) Domański; etc.

PILOPORIA Niemelä, Karstenia 22(1): 13, 1982.

Type: *Antrodia sajanensis* Parmasto, 1962. Examples: *Piloporia indica* Ganesh et Ryvarden; *P. sajanensis* (Parmasto) Niemelä.

SKELETOCUTIS Kotl. et Pouzar, Česká Mykol. 12(2): 103, 1958.

Type: *Polyporus amorphus* Fr., 1815. Examples: *Skeletocutis amorpha* (Fr.) Kotl. et Pouzar, *S. carneogrisea* A. David, *S. lilacina* A. David et Jean Keller.

TYROMYCES P. Karst., Revue mycol., Toulouse 3(no. 9): 17, 1881.

Type: *Polyporus chioneus* Fr., 1815. Examples: *Tyromyces chioneus* (Fr.) P. Karst.; *T. galactinus* (Berk.) J. Lowe; *Tyromyces odorus* (Sacc.) Zmitr. comb. nov. (MB 827572). – Basionym: *Poria odora* Sacc., Syll. fung. 6: 294, 1888; etc.

Fomitopsidaceae Jülich, Biblthca Mycol. 85: 367, 1982.

= *Adustoporiaceae* Audet, 2018.
= *Amyloporiaceae* Audet, 2018.
= *Dacryobolaceae* Jülich, 1982.

= *Fibroporiaceae* Audet, 2018.
= *Laetiporaceae* Jülich, 1982.
= *Lentoporiaceae* Audet, 2018.
= *Phaeolaceae* Jülich, 1982.
= *Pycnoporellaceae* Audet, 2018.
= *Rhodoniaceae* Audet, 2018.
= *Sarcoporiaceae* Audet, 2018.
= *Sparassidaceae* Jülich, 1982.

Basidiomata gymnocarpic, annual or perennial, of ceriporioid, tyromycetoid, trametoid, corioloid, fomitoid, daedaleoid, rarely sparassidoid, corticioid or phlebioid habitus. Context white, apricot, cream, tan to cinnamon or yellow- or rusty-brown. Hyphal system monomitic, pseudodimitic, or dimitic with fibrohyphae or simpodially branched skeletal hyphae. Generative hyphae with clamp connections or not, hyaline or golden-brown. Pseudoskeletal and skeletal hyphae hyaline or brown. Leptocystidia and pseudocystidia of various types present or absent. Basidia clavate, (2)4-spored. Basidiospores ellipsoid to subglobose, cylindrical to allantoid, thin- to thick-walled, smooth, Melzer's negative, CB – or CB+. Xylotrophic fungi. Causes a brown rot.

Type genus: *Fomitopsis* P. Karst., 1881.

This is a rather large group of *Polyporales* which includes xylotrophic taxa characterized by brown wood decay and a wide range of morphotypes differentiation, parallel to that of the *Polyporaceace* family. It is possible, a secondary transition to target cellulose oxidation there was evolved in the *Polyporales* once (*Fomitopsidaceae*) (Nagy et al., 2015) or thrice (*Fomitopsidaceae*, *Auriporia*, and *Leptoporus*) (Justo et al., 2017). It is interesting that Corner (1990) has united some taxa as *Daedalea* or *Fomitopsis* (*Fomitopsidaceae*) with widely interpreted genus *Trametes* (*Polyporaceae*) – so uniform are anatomy details in basidiome structure in both groups. Progress in understanding a phylogenetic structure of the family is associated with a wide range studies (Rajchenberg et al., 2011; Ortiz-Santana et al., 2013; Spirin et al., 2013; Chen, Cui, 2015; Han et al., 2016; Haight et al., 2016; Song, Cui, 2017). Some unnamed molecular phylogenetic lines of the family were formally delineated by Audet (2017a–j, 2018 a–g). An expressed internal phylogenetic structure of the family usually provokes to split the *Fomitopsidaceae* into several taxa of family level, but we are kept from this procedure. First of all, we want to demonstrate a more robust basic structure of the *Polyporales*. Secondly, because in morphological respect all these «families» are either heterogeneous or overlapping in characteristics in a significant part, formally they are practically not distinguishable.

Daedalea-group

BRUNNEOPORUS Audet, Mushrooms nomenclatural novelties 2: [1], 2017.

Type: *Trametes malicola* Berk. et M. A. Curtis, 1856. Examples: *Brunneoporus malicola* (Berk. et M. A. Curtis) Audet; *Brunneoporus hyalinus* (Spirin, Miettinen et Kotir.) Zmitr. comb. nov. (MB 827584). – Basionym: *Antrodia hyalina* Spirin, Miettinen et Kotir., Mycol. Progr. 12(1): 56, 2013; *Brunneoporus juniperinus* (Murrill) Zmitr. comb. nov. (MB 827583). – Basionym: *Agaricus juniperinus* Murrill, Bull. Torrey bot. Club 32(2): 85, 1905.

DAEDALEA Pers., Syn. meth. fung. 2: 500, 1801.

Type: *Agaricus quercinus* L., 1753. Examples: *D. dickinsii* Yasuda, *D. dochmia* (Berk. et Broome) T. Hatt., *D. hydnoides* I. Lindblad et Ryvarden, *D. neotropica* D. L. Lindner, Ryvarden et T. J. Baroni, *D. pseudodochmia* (Corner) T. Hatt., *D. quercina* (L.) Pers., *D. radiata* B. K. Cui et Hai J. Li, *D. sprucei* Berk., *D. stevensonii* Petr.

NEOANTRODIA Audet, Mushrooms nomenclatural novelties 6: [1], 2017.

Type: *Polyporus serialis* Fr., 1821. Examples: *Neoantrodia alaskana* (D. V. Baxter) Audet, *N. angusta* (Spirin et Vlasák) Audet, *N. calcitrosa* (Spirin et Miettinen) Audet, *N. flavimontis* (Vlasák et Spirin) Audet, *N. infirma* (Renvall et Niemelä) Audet, *N. kmetii* (Vlasák) Audet, *N. leucaena* (Y. C. Dai et Niemelä) Audet, *N. morganii* (Lloyd) Audet, *N. primaeva* (Renvall et Niemelä) Audet, *N. serialiformis* (Kout et Vlasák) Audet, *N. serialis* (Fr.) Audet, *N. serrata* (Vlasák et Spirin) Audet, *N. variiformis* (Peck) Audet.

NIVEOPOROFOMES B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Mycol. Progr. 80: 360, 2016.

Type: *Polyporus spraguei* Berk. et M. A. Curtis, 1872 ≡ *Niveoporofomes spraguei* (Berk. et M. A. Curtis) B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Mycol. Progr. 80: 360, 2016. Monotypic.

RANADIVIA Zmitr. gen. nov. (MB 827585)

Basidiomata of corioloid to fibroporioid habitus, annual, sessile on foot or widely decurrent to resupinate, often in imbricate clusters; hymenophore as a single tube layer; pores small-sized, often sinuose; pore surface cream-buff with a pinkish tint. Context white-buff to cinnamon, with pinkish tints. Hyphal system dimitic. Generative hyphae clamped, hyaline to yellowish. Skeletal hyphae sympodially branched, golden-brown, thick-walled to subsolid, CB–. Leptocystidia clavate to fusoid, pseudocystidia cylindrical and finely encrusted. Basidia clavate, 4-spored with a basal clamp. Basidiospores cylindrical, slightly curved, thin-walled, IKI–, CB–. From closely related genus *Daedalea* Pers. a newly established genus differs by thinner corioloid (not trametoid-fomitoid) basidiomata with prostrate and imbricate tendency and pinkish tint in all the tissues.

Etymology: the new genus was named in honor of the Indian mycologist Kiran Ranadive, who extensively studied the diversity and taxonomy of the *Polyporales* in India.

Type: *Daedalea allantoidea* M. L. Han, B. K. Cui et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 357, 20. Examples: *Ranadivia africana* (Johans. et Ryvarden) Zmitr. comb. nov. (MB 827587). – Basionym: *Daedalea africana* I. Johans. et Ryvarden in Ryvarden et Johansen, Prelim. Polyp. Fl. E. Afr.: 304, 1980; *Ranadivia allantoidea* (M. L. Han, B. K. Cui et Y. C. Dai) Zmitr. comb. nov. (MB 827586). – Basionym: *Daedalea allantoidea* M. L. Han, B. K. Cui et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 357, 2016; *Ranadivia modesta* (Kunze ex Fr.) Zmitr. comb. nov. (MB 827588). – Basionym: *Polyporus modestus* Kunze ex Fr., Linnaea 5: 519, 1830; *Ranadivia stereoides* (Fr.) Zmitr. comb. nov. (MB 827589). – Basionym: *Daedalea stereoides* Fr., Nova Acta R. Soc. Scient. upsal., Ser. 3 1(1): 99, 1855.

RHODOFOMES Kotl. et Pouzar, Česká Mykol. 44(4): 235, 1990.

Type: *Boletus roseus* Alb. et Schwein., 1805. Examples: *Rhodofomes cajanderi* (P. Karst.) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. carneus* (Blume et T. Nees) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. incarnatus* (K. M. Kim, J. S. Lee et H. S. Jung) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. roseus* (Alb. et Schwein.) Vlasák, *Rh. subfeei* (B. K. Cui et M. L. Han) B. K. Cui, M. L. Han et Y. C. Dai.

RHODOFOMITOPSIS B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 365, 2016.

Type: *Polyporus feei* Fr., 1830. *Rhodofomitopsis africana* (Mossebo et Ryvarden) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. cupreorosea* (Berk.) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. feei* (Fr.) B. K. Cui, M. L. Han et Y. C. Dai, *Rh. lilacinogilva* (Berk.) B. K. Cui, M. L. Han et Y. C. Dai.

RUBELLOFOMES B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 366, 2016.

Type: *Fomitopsis cystidiata* B. K. Cui et M. L. Han in Han et Cui, 2014. Examples: *Rubellofomes cystidiatus* (B. K. Cui et M. L. Han) B. K. Cui, M. L. Han et Y. C. Dai, *R. minutisporus* (Rajchenb.) B. K. Cui, M. L. Han et Y. C. Dai.

UNGULIDAEDALEA B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 366, 2016.

Type: *Fomitopsis fragilis* B. K. Cui et M. L. Han in Han et Cui, 2014 ≡ *Ungulidaedalea fragilis* (B. K. Cui et M. L. Han) B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Fungal Diversity 80: 367, 2016. Monotypic.

Fomitopsis-group

ANTRODIOPSIS Audet, Mushrooms nomenclatural novelties 1: [1], 2017.

Type: *Poria oleracea* R. W. Davidson et Lombard, 1947 ≡ *Antrodiopsis oleracea* (R. W. Davidson et Lombard) Audet, Mushrooms nomenclatural novelties 1: [1], 2017. Monotypic.

BUGLOSSOPORUS Kotl. et Pouzar, Česká Mykol. 20: 82, 1966.

Type: *Boletus quercinus* Schrad., 1794. Examples: *Buglossoporus brunneiflavus* Corner, *B. eucalypticola* M. L. Han, B. K. Cui et Y. C. Dai, *B. flavus* Corner, *B. malesianus* Corner, *B. marmoratus* Corner, *B. quercinus* (Schrad.) Kotl. et Pouzar; etc.

CARTILOSOMA Kotl. et Pouzar, Česká Mykol. 12(2): 101, 103, 1958.

Type: *Trametes subsinuosa* Bres., 1903. Example: *Cartilosoma ramentaceum* (Berk. et Broome) Teixeira, *C. rene-hentic* B. Rivoire, Trichiès et Vlasák.

FLAVIDOPORIA Audet, Mushrooms nomenclatural novelties 4: [1], 2017.

Type: *Poria pulvinascens* Pilát, 1953. Examples: *Flavidoporia mellita* (Niemelä et Penttilä) Audet, *F. pulverulenta* (B. Rivoire) Audet, *F. pulvinascens* (Pilát) Audet.

FOMITOPSIS P. Karst., Meddn Soc. Fauna Flora fenn. 6: 9, 1881.

Type: *Boletus pinicola* Sw., 1810. Examples: *Fomitopsis betulina* (Bull.) B. K. Cui, M. L. Han et Y. C. Dai, *F. pinicola* (Sw.) P. Karst. coll.

FRAGIFOMES B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Mycol. Progr. 80: 360, 2016.

Type: *Fomitopsis niveomarginata* L. W. Zhou et Y. L. Wei, 2012 ≡ *Fragifomes niveomarginatus* (L. W. Zhou et Y. L. Wei) B. K. Cui, M. L. Han et Y. C. Dai in Han, Chen, Shen, Song, Vlasák, Dai et Cui, Mycol. Progr. 80: 360, 2016. Monotypic.

NEOLENTIPORUS Rajchenb., Nordic Jl Bot. 15(1): 105, 1995.

Type: *Polyporus maculatissimus* Lloyd, 1922. Examples: *Neolentiporus maculatissimus* (Lloyd) Rajchenb, *N. squamosellus* (Bernicchia et Ryvarden) Bernicchia et Ryvarden.

PILATOPORUS Kotl. et Pouzar, Česká Mykol. 44(4): 229, 1990.

Type: *Polyporus palustris* Berk. et M. A. Curtis in Berkeley, 1872. Examples: *Pilatoporus canus* (B. K. Cui, Hai J. Li et M. L. Han) Zmitr. comb. nov. (MB 827602). – Basionym: *Fomitopsis cana* B. K. Cui, Hai J. Li et M. L. Han, Mycol. Progr. 12(4): 710, 2013; *Pilatoporus durescens* (Overh. ex J. Lowe) Zmitr. comb. nov. (MB 827603). – Basionym: *Polyporus durescens* Overh. ex J. Lowe, Mycotaxon 2(1): 65, 1975; *P. epileucinus* (Pilát) Kotl. et Pouzar; *Pilatoporus hemitephrus* (Berk.) Zmitr. comb. nov. (MB 827604). – Basionym: *Polyporus hemitephrus* Berk. in Hooker, Bot. Antarct. Voy. Erebus Terror 1839–1843, II, Fl. Nov.-Zeal.: 179, 1855; *P. ibericus* (Melo et Ryvarden) Kotl. et Pouzar; *P. meliae* (Underw.) Kotl. et Pouzar; *P. nivosus* (Berk.) Kotl. et Pouzar; *P. palustris* (Berk. et M. A. Curtis) Kotl. et Pouzar; *Pilatoporus ostreiformis* (Berk.) Zmitr. comb. nov. (MB 827605). – Basionym: *Polyporus ostreiformis* Berk., J. Linn. Soc., Bot. 16(no. 89): 46, 1878; *Pilatoporus subtropicus* (B. K. Cui et Hai J. Li) Zmitr. comb. nov. (MB 827606). – Basionym: *Fomitopsis subtropica* B. K. Cui et Hai J. Li, Mycol. Progr. 12(4): 712, 2013.

Antrodia-group

ANTRODIA P. Karst., Meddn Soc. Fauna Flora fenn. 5: 40, 1879.

Type: *Polyporus serpens* Fr., 1818. Examples: *Antrodia heteromorpha* (Fr.) Donk, *A. macra* (Sommerf.) Niemelä, *A. serpens* (Fr.) P. Karst., *A. subserpens* B. K. Cui et Yuan Y. Chen, *A. tanakae* (Murrill) Spirin et Miettinen; etc.

DENTIPORUS Audet, Mushrooms nomenclatural novelties 3: [1], 2017.

Type: *Antrodia albidoides* A. David et Dequatre, 1985 ≡ *Dentiporus albidoides* (A. David et Dequatre) Audet, Mushrooms nomenclatural novelties 3: [1], 2017. Monotypic.

LENTOPORIA Audet, Mushrooms nomenclatural novelties 5: [1], 2017.

Type: *Poria carbonica* Overh., 1943 ≡ *Lentoporia carbonica* (Overh.) Audet, Mushrooms nomenclatural novelties 5: [1], 2017. Monotypic.

MELANOPORIA Murrill, N. Amer. Fl. 9(1): 14, 1907.

Type: *Polyporus niger* Berk., 1845 ≡ *Melanoporia nigra* (Berk.) Murrill, N. Amer. Fl. 9(1): 15, 1907. ?Monotypic.

Amyloporia-group

AMYLOPORIA Singer, Mycologia 36(1): 67, 1944.

Type: *Polyporus vulgaris* var. *calceus* Fr., 1821. Examples: *Amyloporia sinuosa* (Fr.) Rajchenb., Gorjón et Pildain, *A. subxantha* (Y. C. Dai et X. S. He) B. K. Cui et Y. C. Dai, *A. turkestanica* (Pilát) Bondartsev, *A. xantha* (Fr.) Bondartsev et Singer.

ANTHOPORIA Karasiński et Niemelä, Polish Bot. J. 61(1): 8, 2016.

Type: *Polyporus albobrunneus* Romell, 1911 ≡ *Anthoporia albo-*

brunnea (Romell) Karasiński et Niemelä, Polish Bot. J. 61(1): 8, 2016. Monotypic.

FIBROPORIA Parmasto, Consp. System. Corticiac.: 176, 1968.

Type: *Boletus vaillantii* DC. in de Candolle et Lamarck, 1815. Examples: *Fibroporia gossypium* (Speg.) Parmasto, *F. norrlandica* (Berglund et Ryvarden) Niemelä, *F. pseudorennyi* (Spirin) Spirin, *F. vaillantii* (DC.) Parmasto.

RESINOPORIA Audet, Mushrooms nomenclatural novelties 7: [1], 2017.

Type: *Physisporus crassus* P. Karst., 1889. Examples: *Resinoporia cincta* (Spirin, Vlasák et Miettinen) Audet, *R. crassa* (P. Karst.) Audet, *R. cretacea* (K. Runnel, Spirin et A. Lõhmus) Audet, *R. ferox* (Long et D. V. Baxter) Audet, *R. ignobilis* (Spirin et Vlasák) Audet, *R. ladiana* (Spirin et Runnel) Audet, *R. piceata* (K. Runnel, Spirin et Vlasák) Audet, *R. pinea* (B. K. Cui et Y. C. Dai) Audet, *R. pini-cubensis* (Vampola, Kotl. et Pouzar) Audet, *R. sitchensis* (D. V. Baxter) Audet, *R. sordida* (Ryvarden et Gilb.) Audet.

RHODONIA Niemelä, Karstenia 45(2): 79, 2005.

Type: *Polyporus placenta* Fr., 1861. Examples: *Rhodonia placenta* (Fr.) Niemelä, K. H. Larss. et Schigel, *Rh. tianshanensis* Yuan Yuan et L. L. Shen, 2017.

Postia-group

AMYLOCYSTIS Bondartsev et Singer in Singer, Mycologia 36(1): 66, 1944.

Type: *Polyporus lapponicus* Romell, 1911. *Amylocystis lapponica* (Romell) Bondartsev et Singer, *A. unicolor* T. Hatt.

DACRYOBOLUS Fr., Summa veg. Scand., Sectio Post.: 404, 1849.

Type: *Hydnum sudans* Alb. et Schwein., 1805. Examples: *Dacryobolus costratus* (Rehill et B. K. Bakshi) S. S. Rattan, *D. gracilis* H. S. Yuan, *D. karstenii* (Bres.) Oberw. ex Parmasto, *D. montanus* X. Z. Wan et H. S. Yuan, *D. phalloides* Manjón, Hjortstam et G. Moreno, *D. sudans* (Alb. et Schwein.) Fr.

JAHNOPORUS Nuss, Hoppea 39: 176, 1980.

Type: *Fomes hirtus* Cooke, 1885. Examples: *Jahnoporus brachiatus* Spirin, Vlasák et Miettinen, *J. hirtus* (Cooke) Nuss, *J. oreinus* Spirin, Vlasák et Miettinen, *J. pekingensis* (J. D. Zhao et L. W. Xu) Y. C. Dai.

OLIGOPORUS Bref., Unters. Gesammtgeb. Mykol. 8: 114, 1888.

Type: *Oligoporus farinosus* Bref., 1888. Examples: *Oilgoporus rennyi* (Berk. et Broome) Donk, *O. sericeomollis* (Romell) Bondartseva; etc.

OSTEINA Donk, Schweiz. Z. Pilzk. 44: 86, 1966.

Type: *Polyporus obductus* Berk., 1845. Examples: *Osteina obducta* (Berk.) Donk; *Osteina undosa* (Peck) Zmitr. comb. nov. (MB 827611). – Basionym: *Polyporus undosus* Peck, Ann. Rep. N. Y. St. Mus. nat. Hist. 34: 42, 1883.

POSTIA Fr., Hymenomyc. eur.: 586, 1874.

Type: *Polyporus lacteus* Fr.,1821. Examples: *Postia alni* Niemelä et Vampola, *P. caesia* (Schrad.) P. Karst., *P. lactea* (Fr.) P. Karst., *P. luteocaesia* (A. David) Jülich, *P. tephroleuca* (Fr.) Jülich, *P. leucomallella* (Murrill) Jülich; etc.

SPONGIPORUS Murrill, Bull. Torrey bot. Club 32(9): 474, 1905.

Type: *Polyporus leucospongia* Cooke et Harkn., 1883. Examples: *Spongiporus balsameus* (Peck) A. David; *Spongiporus floriformis* (Quél.) Zmitr. comb. nov. (MB

827612). – Basionym: *Polyporus floriformis* Quél. in Bres., Fungi trident. 1(1): 61, 1884; *S. guttulatus* (Sacc.) A. David; *S. hibernicus* (Berk. et Broome) Jülich; *S. leucospongia* (Cooke et Harkn.) Murrill; *Spongiporus perdelicatus* (Murrill) Zmitr. comb. nov. (MB 827613). – Basionym: *Tyromyces perdelicatus* Murrill, Mycologia 4(2): 95, 1912; *S. stipticus* (Pers.) A. David; etc.

TAIWANOFUNGUS Sheng H. Wu, Z. H. Yu, Y. C. Dai et C. H. Su in Wu, Yu, Dai, Chen, Su, Chen, Hsu et Hwang, Fungal Science, Taipei 19(3, 4): 110, 2004.

Type: *Ganoderma camphoratum* M. Zang et C. H. Su, 1990. Examples: *Taiwanofungus camphoratus* (M. Zang et C. H. Su) Sheng H. Wu, Z. H. Yu, Y. C. Dai et C. H. Su, *T. salmoneus* (T. T. Chang et W. N. Chou) Sheng H. Wu, Z. H. Yu, Y. C. Dai et C. H. Su.

Ryvardenia-group

RYVARDENIA Rajchenb., Nordic Jl Bot. 14(4): 436, 1994.

Type: *Polyporus cretaceus* Lloyd, 1915. Examples: *Ryvardenia campyla* (Berk.) Rajchenb., *R. cretacea* (Lloyd) Rajchenb.

GILBERTSONIA Parmasto, Harvard Pap. Bot. 6(1): 179, 2001.

Type: *Fibroporia angulopora* M. J. Larsen et Lombard, 1983 ≡ *Gilbertsonia angulospora* (M. J. Larsen et Lombard) Parmasto. Monotypic.

LARICIFOMES Kotl. et Pouzar, Česká Mykol. 11(3): 158, 1957.

Type: *Boletus officinalis* Vill., 1788 ≡ *Laricifomes officinalis* (Vill.) Kotl. et Pouzar. ?Monotypic.

«*Phaeolaceae*»-group

KUSAGHIPORIA Hussein J., Tibell S. et Tibuhwa, Mycology 9(2): 139, 2018.

Type: *Kusaghiporia usambarensis* Hussein J., Tibell S. et Tibuhwa. Monotypic.

LAETIPORUS Murrill, Bull. Torrey bot. Club 31(11): 607, 1904.

Type: *Laetiporus speciosus* Battarra ex Murrill, 1904. Examples: *L. ailaoshanensis* B. K. Cui et J. Song, *L. baudonii* (Pat.) Ryvarden, *L. caribensis* Banik et D. L. Lindner, *L. conifericola* Burds. et Banik, *L. cremeiporus* Y. Ota et T. Hatt., *L. discolor* (Klotzsch) Corner, *L. gilbertsonii* Burds., *L. huroniensis* Burds. et Banik, *L. medogensis* J. Song et B. K. Cui, *L. miniatus* (P. Karst.) Overeem, *L. montanus* Černý ex Tomšovský et Jankovský, *L. persicinus* (Berk. et M. A. Curtis) Gilb., *L. portentosus* (Berk.) Rajchenb., *L. squalidus* R. M. Pires, Motato-Vásq. et Gugliottta, *L. sulphureus* (Bull.) Murrill, *L. xinjiangensis* J. Song, Y. C. Dai et B. K. Cui, *L. zonatus* B. K. Cui et J. Song.

PHAEOLUS (Pat.) Pat., Essai Tax. Hyménomyc.: 86, 1900.

Type: *Polyporus schweinitzii* Fr., 1821. Examples: *Phaeolus amazonicus* M. A. De Jesus et Ryvarden, *Ph. schweinitzii* (Fr.) Pat.

WOLFIPORIA Ryvarden et Gilb., Mycotaxon 19: 141, 1984.

Type: *Sclerotium cocos* Schwein., 1822. Examples: *Wolfiporia cartilaginea* Ryvarden, *W. castanopsis* Y. C. Dai, *W. curvispora* Y. C. Dai, *W. dilatohypha* Ryvarden et Gilb., *W. extensa* (Peck) Ginns, *W. pseudococos* F. Wu, J. Song et Y. C. Dai, *W. sulphurea* (Burt) Ginns.

«*Sparassidaceae*/*Crustoderma*/*Pycnoporellus*»-clade

CRUSTODERMA Parmasto, Consp. System. Corticiac.: 87, 1968.

Type: *Corticium dryinum* Berk. et M. A. Curtis, 1873. Examples:

Crustoderma borbonicum Boidin et Gilles, *C. carolinense* Nakasone, *C. corneum* (Bourdot et Galzin) Nakasone, *C. dryinum* (Berk. et M. A. Curtis) Parmasto, *C. efibulatum* Kotir. et Saaren., *C. fibuligerum* (K. S. Thind et S. S. Rattan) Duhem, *C. flavescens* Nakasone et Gilb., *C. fuscatum* Gilb. et Nakasone, *C. gigacystidium* Gilb. et Hemmes, *C. longicystidiatum* (Litsch.) Nakasone, *C. marianum* Nakasone, C. nakasoneae Gilb. et M. Blackw., C. opuntiae Nakasone et Gilb., *C. patricium* (G. Cunn.) Nakasone, *C. resinosum* (H. S. Jacks. et Dearden) Gilb., *C. sabinicum* (Manjón et G. Moreno) Nakasone, *C. testatum* (H. S. Jacks. et Dearden) Nakasone, *C. triste* (Litsch. et S. Lundell) Duhem, *C. vulcanense* (Gilb. et Adask.) Gilb. et Nakasone.

PYCNOPORELLUS Murrill, Bull. Torrey bot. Club 32(9): 489, 1905.

Type: *Polyporus fibrillosus* P. Karst., 1859. Examples: *Pycnoporellus alboluteus* (Ellis et Everh.) Kotl. et Pouzar, *P. fulgens* (Fr.) Donk.

SARCOPORIA P. Karst., Hedwigia 33: 15, 1894.

Type: *Sarcoporia polyspora* P. Karst., 1894. Examples: *S. longitubulata* Vlasák et Spirin, *S. neotropica* Ryvarden, *S. polyspora* P. Karst.

SPARASSIS Fr., Novit. fl. svec. 5(cont.): 80, 1819.

Type: *Clavaria crispa* Wulfen in Jacq., 1781. Examples: *Sparassis americana* R. H. Petersen, *S. brevipes* Krombh., *S. crispa* (Wulfen) Fr., *S. cystidiosa* Desjardin et Zheng Wang, *S. laminosa* Fr., *S. latifolia* Y. C. Dai et Zheng Wang, *S. minoënsis* Blanco-Dios et Zheng Wang, *S. spathulata* (Schwein.) Fr., *S. subalpina* Q. Zhao, Zhu L. Yang et Y. C. Dai.

Gelatoporiaceae Miettinen, Justo et Hibbett in Justo, Miettinen, Floudas, Ortiz-Santana, Sjökvist, Lindner, Nakasone, Niemelä, Larsson, Ryvarden et Hibbett, Fungal Biology 121(9): 820, 2017.

Basidiomata gymnocarpic, annual or perennial, of ceriporioid, fibroporioid or sessile hydnoid habitus. Context white to cream. Hyphal system monomitic, or dimitic with fibrohyphae or sympodially branched skeletal hyphae. Generative hyphae with clamp connections, hyaline. Pseudoskeletal and skeletal hyphae hyaline or yellowish. Leptocystidia or pseudocystidia of various types present or absent. Basidia clavate, (2)4-spored. Basidiospores cylindrical to allantoid, thin-walled, smooth, Melzer's negative, CB–. Xylotrophic fungi. Causes a white or brown rot.

Type genus: *Gelatoporia* Niemelä, 1985.

This is a compact group which morphologically echoes to the *Polyporaceae* gives a separate lineage on multigene trees (Justo et al., 2017). Concerning the type of rot produced this group is heterogeneous. Physalohyphae-bearing representatives are absent in this group, and as a whole, their polymorphism spectrum is rather narrow. We keep this line as a separate family since the rRNA trees show that this group belongs to a basal radiation of the *Polyporales*.

AURIPORIA Ryvarden, Norw. Jl Bot. 20: 2, 1973.

Type: *Poria aurea* Peck, 1890. Examples: *Auriporia aurea* (Peck) Ryvarden, *A. aurulenta* A. David, Tortič et Jelić, *A. brasilica* G. Coelho, *A. pileata* Parmasto.

CINEREOMYCES Jülich, Biblthca Mycol. 85: 396, 1982.

Type: *Polyporus lindbladii* Berk., 1872. Examples: *Cinereomyces dilu-*

tabilis (Log.-Leite et J. E. Wright) Miettinen, *C. lindbladii* (Berk.) Jülich.

CINEREOMYCETELLA Zmitr. gen. nov. (MB 827618).

Basidiomata of fibroporioid habitus, annual, widely effused, hymenophore a single tube layer, soft. Subiculum byssoid, white. Hyphal system monomitic in tubes and moderately dimitic in subiculum. Generative hyphae with clamp connections, hyaline, CB–. Leptocystidia fusoid, thin-walled. Basidia clavate, with a central constriction, 4-spored, clamped at the base. Basidiospores ellipsoid, thin-walled, IKI–, CB–. Causes a white rot. From similar genus *Cinereomyces* Jülich differs by monomitic tubes and ellipsoid (vs. cylindrical) basidiospores.

Etymology: the generic name refers to another generic name, *Cinereomyces* Jülich.

Type: *Poria overholtsii* Pilát, Stud. Bot. Čechoslav. 3: 2, 1940 ≡ *Cinereomycetella overholtsii* (Pilát) Zmitr. comb. nov. (MB 827619). – Basionym: *Poria overholtsii* Pilát, Stud. Bot. Čechoslav. 3: 2, 1940. Monotypic.

GELATOPORIA Niemelä, Karstenia 25(1): 22, 1985.

Type: *Poria subvermispora* Pilát, 1940. Examples: *Gelatoporia griseoincarnata* Spirin et Zmitr., *G. subvermispora* (Pilát) Niemelä.

MYCOLEPTODONOIDES Nikol., Bot. Mater. Otd. Sporov. Rast. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 8: 117, 1952.

Type: *Mycoleptodonoides vassiljevae* Nikol., 1952. Examples: *M. aitchisonii* (Berk.) Maas Geest., *M. pergamenea* (Yasuda) Aoshima et H. Furuk., *M. pusilla* (Brot.) K. A. Harrison, *M. sharmae* K. Das, Stalpers et Stielow, *M. tropicalis* H. S. Yuan et Y. C. Dai, *M. vassiljevae* Nikol.

OBBA Miettinen et Rajchenb., Mycol. Progr. 11(1): 141, 2012.

Type: *Ceriporiopsis rivulosa* var. *valdiviana* Rajchenb., 1995. Examples: *Obba rivulosa* (Berk. et M. A. Curtis) Miettinen et Rajchenb., *O. valdiviana* (Rajchenb.) Miettinen et Rajchenb.

SEBIPORA Miettinen in Miettinen et Rajchenb., Mycol. Progr. 11(1): 144, 2012.

Type: *Sebipora aquosa* Miettinen, 2012. Monotypic.

Grifolaceae Jülich, Biblthca Mycol. 85: 369, 1982.

Basidiomata gymnocarpic, annual, of grifoloid habitus. Context white. Hyphal system sarcomonomitic. Generative hyphae with clamp connections, hyaline. Basidia clavate, 4-spored. Basidiospores ellipsoid to subglobose, with prominent wall, smooth, Melzer's negative, CB+. Xylotrophic fungi. Causes a white root decay.

Type genus: *Grifola* Gray, 1821.

Monotypic family.

This monotypic family represents a sister group of the *Polyporaceae*. The morphological echo of this sarcomonomitic group keeps in such crown genera as *Cerioporus* Quél., *Cladomeris* Quél., *Lentinus* Fr. (*Polyporaceae*), *Bjerkandera* P. Karst. and *Climacodon* P. Karst. (*Meruliaceae*).

GRIFOLA Gray, Nat. Arr. Brit. Pl. 1: 643, 1821.

Type: *Boletus frondosus* Dicks., 1785. Examples: *Grifola amazonica* Ryvarden, *G. armeniaca* Corner, *G. frondosa* (Dicks.) Gray, *G. gargal* Singer, *G. sordulenta* (Mont.) Singer.

Meruliaceae Rea, British Basid.: 620, 1922.
= *Bjerkanderaceae* Jülich, 1982.
= *Cerrenaceae* Miettinen, Justo et Hibbett, 2017.
= *Hapalopilaceae* Jülich, 1982.
= *Hyphodermataceae* Jülich, 1982.
= *Irpicaceae* Spirin et Zmitr., 2003.
= *Mycorrhaphiaceae* Jülich, 1982.
= *Panaceae* Miettinen, Justo et Hibbett, 2017.
= *Phanerochaetaceae* Jülich, 1982.
= *Phlebiaceae* Jülich, 1982; Boidin, Mugnier et Canales, 1998 illeg.
= *Podoscyphaceae* D. A. Reid, 1965.
= *Steccherinaceae* Parmasto, 1968.

Basidiomata gymnocarpic – of corticioid, athelioid, merulioid, phlebioid, stereoid, ceriporioid, fibroporioid, tyromycetoid, trametoid, polyporoid, or lentinoid habitus. Context non-pigmented or brightly pigmented. Hymenophore smooth, tuberculate or costate, primarily or secondary spinose or toothed, folded, tubular, or lamellate (lamellae laid primarily in radially-oriented ridges of 2–3 levels). Hyphal system monomitic, pseudodimitic or dimitic with prevalence of uninflated fibrohyphae. Generative hyphae with single or double clamp connections, pseudoclamps, or simple-septate. Sclerohyphae fibroid, uninflated, rarely branched, Melzer's negative. Basidia with prominent central constriction, clavate to cylindrical, (2)4-spored. Basidiospores thin-walled, rarely thick-walled, smooth, mostly Melzer's negative, acyanophilous or cyanophilous. Xylotrophic or at least lignotrophic fungi. Causes a white rot.

Type genus: *Merulius* Fr., 1821.

As it can be seen from the aforementioned diagnosis, this family has evolved in many respects parallelly to the *Polyporaceae*, giving similar life forms radiation, and the diagnosting of two families is rather difficult issue. The *Meruliaceae* contains mostly monomitic polypores and in this family more widely presented non-poroid (corticioid, merulioid, etc.) morphotypes. Dimitic species are characterized by fibrohyphae without any traces of sarcoskeletals, as it is observed in many polyporaceous species. Phylogenetically, the family is characterized by clear internal radiation, but all these lineages cannot be differentiated on the basis of morphological patterns, so we prefer to divide the family into non-ranked groupings. Currently, prevail an idea of raising the rank of these groups to family level, but we have rejected this idea because such a procedure will make invisible a deeper divergence of the *Polyporales* (*Grifolaceae*, *Gelatoporiaceae*, *Incrustoporiaceae*, *Fomitopsidaceae*, *Ischnodermataceae*). The progress in knowledge on this family is associated with activity of a wide range of collectives (Tomšovský et al., 2010; Tomšovský, 2012, 2016; Zmitrovich, Malysheva, 2014; Floudas, Hibbett, 2015; Zhao et al., 2015; Zmitrovich et al., 2015; Miettinen et al., 2016; Wu et al. 2016; Zhao, Wu, 2017; Jung et al., 2018; Papp, Dima, 2018; Westphalen et al., 2018; Wu et al., 2018).

Phanerochaete-group

BJERKANDERA P. Karst., Meddn Soc. Fauna Flora fenn. 5: 38, 1879.

Type: *Boletus adustus* Willd., 1787. Examples: *Bjerkandera adusta* (Willd.) P. Karst., *B. atroalba* (Rick) Westph. et Tomšovský, *B. fumosa* (Pers.) P. Karst., *B. microfumosa* Ryvarden, *B. subsimulams* Murrill.

DONKIA Pilát, Bull. trimest. Soc. mycol. Fr. 52(3): 328, 1937.

Type: *Hydnum pulcherrimum* Berk. et M. A. Curtis, 1849. Examples: *Donkia pulcherrima* (Berk. et M. A. Curtis) Pilát, ?*D. sanguinea* (Beeli) Maas Geest.

EFIBULELLA Zmitr. gen. nov. (MB 827351).

Basidiomata of phlebioid habitus, annual, widely effused, hymenophore cornescent, warted to smooth. Subiculum cornescent, hyaline. Hyphal system monomitic. Generative hyphae without clamp connections, hyaline, encrusted with resinous granules and deliquescent, CB–. Leptocystidia cylindrical, thin-walled. Basidia cylindrical, with a central constriction, somewhat sinuose, 4-spored, simple-septate at the base. Basidiospores ellipsoid, thin-walled, IKI–, CB–. Causes a white rot. From similar genus *Byssomerulius* Parmasto differs by cornescent (vs. byssoid) subiculum and cylindrical leptocystidia.

Etymology: the generic name refers to another generic name, *Efibula* Sheng H. Wu.

Type: *Grandinia deflectens* P. Karst., Bidr. Känn. Finl. Nat. Folk 37: 239, 1882. ≡ *Efibulella deflectens* (P. Karst.) Zmitr. comb. nov. (MB 827352). – Basionym: *Grandinia deflectens* P. Karst., Bidr. Känn. Finl. Nat. Folk 37: 239, 1882. Monotypic.

HAPALOPILUS P. Karst., Revue mycol., Toulouse 3(no. 9): 18, 1881.

Type: *Boletus rutilans* Pers., 1798. Examples: *Hapalopilus rutilans* (Pers.) Murrill, *H. eupatorii* (P. Karst.) Spirin et Miettinen, *H. percoctus* Miettinen, *H. ribicola* (P. Karst.) Spirin et Miettinen.

HYPHODERMELLA J. Eriksss. et Ryvarden, Cortic. N. Eur. 4: 579, 1976.

Type: *Grandinia corrugata* Fr., 1874. Examples: *Hyphodermella brunneocontexta* Duhem et Buyck, *H. corrugata* (Fr.) J. Eriksss. et Ryvarden, *H. manukeaensis* Gilb. et Hemmes, *H. densa* Melo et Hjortstam, *H. ochracea* (Bres.) Duhem.

OXYCHAETE Miettinen in Miettinen, Spirin, Vlasák, Rivoire, Stenroos et Hibbett, MycoKeys 17: 19, 2016.

Type: *Polyporus cervinogilvus* Jungh., 1838 ≡ *Oxychaete cervinogilva* (Jungh.) Miettinen, in Miettinen, Spirin, Vlasák, Rivoire, Stenroos et Hibbett, MycoKeys 17: 20, 2016. Monotypic.

PHAEOPHLEBIOPSIS Floudas et Hibbett, Fungal Biology 119: 707, 2015.

Type: *Phaeophlebiopsis caribbeana* D. Floudas et Hibbett, 2015. Example: *Ph. ignerii* Floudas et Hibbett; *Phaeophlebiopsis himalayensis* (Dhingra) Zmitr. comb. nov. (MB 827387). – Basionym: *Phlebiopsis himalayensis* Dhingra, Nova Hedwigia 44(1–2): 222, 1987; *Phaeophlebiopsis lamprocystidiata* (Sheng H. Wu) Zmitr. comb. nov. (MB 827388). – Basionym: *Phanerochaete lamprocystidiata* Sheng H. Wu, Mycotaxon 90(2): 426, 2004; *Ph. peniophoroides* (Gilb. et Adask.) Floudas et Hibbett; *Phaeophlebiopsis ravenelii* (Cooke) Zmitr. comb. nov. (MB 827389). – Basionym: *Peniophora ravenelii* Cooke, Grevillea 8(no. 45): 21, 1879.

PHANERINA Miettinen in Miettinen, Spirin, Vlasák, Rivoire, Stenroos et Hibbett, MycoKeys 17: 21, 2016.

Type: *Polyporus melleus* Berk. et Broome, 1873 ≡ *Phanerina mellea* (Berk. et Broome) Miettinen in Miettinen, Spirin, Vlasák, Rivoire, Stenroos et Hibbett, MycoKeys 17: 22, 2016.

PHANEROCHAETE P. Karst., Bidr. Känn. Finl. Nat. Folk 48: 426, 1889.

Type: *Thelephora alnea* Fr., 1821. Examples: *Phanerochaete aculeata* Hallenb., *Ph. argillacea* Sheng H. Wu, *Ph. arizonica* Burds. et Gilb., *Ph. australis* Jülich, *Ph. burtii* (Romell ex Burt) Parmasto, *Ph. calotricha* (P. Karst.) J. Erikss. et Ryvarden, *Ph. chrysosporium* Burds., *Ph. citrinosanguinea* Floudas et Hibbett, *Ph. conifericola* Floudas et Hibbett, *Ph. cumulodentata* (Nikol.) Parmasto, *Ph. ericina* (Bourdot) J. Erikss. et Ryvarden, *Ph. inflata* (B. S. Jia et B. K. Cui) Miettinen, *Ph. laevis* (Fr.) J. Erikss. et Ryvarden, *Ph. livescens* (P. Karst.) Volobuev et Spirin, *Ph. magnoliae* (Berk. et M. A. Curtis) Burds., *Ph. parmastoi* Sheng H. Wu, *Ph. pseudomagnoliae* Koker, Burds. et B. J. H. Janse, *Ph. sanguinea* (Fr.) Pouzar, *Ph. sanguineocarnosa* Floudas et Hibbett, *Ph. sordida* (P. Karst.) J. Erikss. et Ryvarden, *Ph. stereoides* Sheng H. Wu, *Ph. subceracea* (Burt) Burds., *Ph. taiwaniana* Sheng H. Wu, *Ph. velutina* (DC.) P. Karst.

PHLEBIOPSIS Jülich, Persoonia 10(1): 137, 1978.

Type: *Thelephora gigantea* Fr., 1815. Examples: *Phlebiopsis brunneocystidiata* (Sheng H. Wu) Miettinen, *Ph. castanea* (Lloyd) Miettinen et Spirin, *Ph. crassa* (Lév.) Floudas et Hibbett, *Ph. flavidoalba* (Cooke) Hjortstam, *Ph. friesii* (Lév.) Spirin et Miettinen, *Ph. gigantea* (Fr.) Jülich, *Ph. laxa* (Sheng H. Wu) Miettinen.

PIREX Hjortstam et Ryvarden in Hallenberg, Hjortstam et Ryvarden, Mycotaxon 24: 287, 1985.

Type: *Radulum concentricum* Cooke et Ellis, 1885 ≡ *Pirex concentricus* (Cooke et Ellis) Hjortstam et Ryvarden in Hallenberg, Hjortstam et Ryvarden, Mycotaxon 24: 289, 1985. Monotypic.

POROSTEREUM Pilát, Bull. trimest. Soc. mycol. Fr. 52(3): 330, 1937.

Type: *Porostereum phellodendri* Pilát 1937. Examples: *Porostereum spadiceum* (Pers.) Hjortstam et Ryvarden, *P. sharpianum* (A. L. Welden) Hjortstam et Ryvarden.

RHIZOCHAETE Gresl., Nakasone et Rajchenb., Mycologia 96(2): 261, 2004.

Type: *Rhizochaete brunnea* Gresl., Nakasone et Rajchenb., 2004. Examples: *Rhizochaete americana* (Nakasone, C. R. Bergman et Burds.) Gresl., Nakasone et Rajchenb., *Rh. belizensis* Nakasone, K. Draeger et B. Ortiz, Rh. borneensis (Jülich) Gresl., Nakasone et Rajchenb., *Rh. brunnea* Gresl., Nakasone et Rajchenb., *Rh. filamentosa* (Berk. et M. A. Curtis) Gresl., Nakasone et Rajchenb, *Rh. flava* (Burt) Nakasone, K. Draeger et B. Ortiz, *Rh. fouquieriae* (Nakasone et Gilb.) Gresl., Nakasone et Rajchenb., *Rh. percitrina* (P. Roberts et Hjortstam) Nakasone, *Rh. radicata* (Henn.) Gresl., Nakasone et Rajchenb, *Rh. rhizomorphosulphurea* (B. K. Bakshi et Suj. Singh) Nakasone, *Rh. sulphurina* (P. Karst.) K. H. Larss., *Rh. sulphurosa* (Bres.) Chikowski, K. H. Larss. et Gibertoni, *Rh. violascens* (Fr.) K. H. Larss.

RIOPA D. A. Reid, Revue Mycol. 33: 244, 1969.

Type: *Riopa davidii* D. A. Reid, 1969. Examples: *R. metamorphosa* (Fuckel) Miettinen et Spirin, *R. pudens* Miettinen.

TERANA Adans., Fam. Pl. 2: 5, 1763.

Type: *Byssus coerulea* Lam., 1779 ≡ *Terana coerulea* (Lam.) Kuntze, Revis. gen. pl. 2: 872, 1891.

Byssomerulius-group

BYSSOMERULIUS Parmasto, Izv. Akad. Nauk Estonsk. SSR, Ser. Biol. 16: 383, 1967.

Type: *Thelephora corium* Pers., 1801. Examples: *Byssomerulius armeniacus* Parmasto, *B. auratus* (Bourdot et Galzin) Ţura, Zmitr., Wasser et Spirin, *B. avellaneus* (Bres.) Parmasto, *B. corium* (Pers.) Parmasto, *B. jose-ferreirae* (D. A. Reid) Zmitr., *B. tuberculatus* (P. Karst.) Zmitr., *Byssomerulius tropicus* (Sheng H. Wu) Zmitr. comb. nov. (MB 827353). – Basionym: *Efibula tropica* Sheng H. Wu, Acta bot. fenn. 142: 25, 1990. It is possible, some residual *Phanerochaete* species will be adopted here: *Phanerochaete exilis* (Burt) Burds., *Ph. ginnsii* Sheng H. Wu, *Ph. xerophila* Burds., etc.

CANDELABROCHAETE Boidin, Cahiers de La Maboké 8(1): 24, 1970.

Type: *Candelabrochaete africana* Boidin, 1970. Examples: *C. langloisii* (Pat.) Boidin, *C. septocystidia* (Burt) Burds. The genus, poorly known in light of modern methods, therefore, we don't expand an examples range.

CERACEOMYCES Jülich, Willdenowia, Beih. 7: 146, 1972.

Type: *Corticium tessulatum* Cooke, 1878. Examples: *C. atlanticus* K. H. Larss. et Chikowski, *C. austroandinus* Gresl. et Rajchenb., *C. eludens* K. H. Larss., *C. microsporus* K. H. Larss., *C. serpens* (Tode) Ginns, *C. tessulatus* (Cooke) Jülich.

CERIPORIA Donk, Revis. Niederl. Homobasidiomyc. 2: 170, 1933.

Type: *Polyporus viridans* Berk. et Broome, 1861. Examples: *Ceriporia aurantiocarnescens* (Henn.) M. Pieri et B. Rivoire, *C. reticulata* (Hoffm.) Domański, *C. viridans* (Berk. et Broome) Donk. Within recently described species diversity of *Ceriporia*, the most of species phylogenetically belong to not yet described genera of *Byssomerulius*-group: 1) *C. purpurea* (Fr.) Donk, 2) *C. pierii* B. Rivoire, Miettinen et Spirin, etc., 3) *C. spissa* (Schwein. ex Fr.) Rajchenb., 4) *C. pseudocystidiata* B. S. Jia et Y. C. Dai, etc.

CYTIDIELLA Pouzar, Česká Mykol. 8: 128, 1954.

Type: *Cytidiella melzeri* Pouzar, 1954. Examples: *C. albomellea* (Bondartsev) Parmasto; *Cytidiella nitidula* (P. Karst.) Zmitr. comb. nov. (MB 827368). – Basionym: *Corticium nitidulum* P. Karst., Meddn Soc. Fauna Flora fenn. 6: 11, 1881.

EMMIA Zmitr., Spirin et Malysheva in Zmitr., Malysheva et Spirin, Mycena 6: 33, 2006.

Type: *Polyporus latemarginatus* Durieu et Mont. in Mont., 1856. Examples: *E. lacerata* (N. Maekawa, Suhara et R. Kondo) F. Wu, Jia J. Chen et Y. C. Dai, *E. latemarginata* (Durieu et Mont.) Zmitr., Spirin et Malysheva.

ERASTIA Niemelä et Kinnunen in Niemelä, Kinnunen, Larsson, Schigel et Larsson, Karstenia 45(2): 76, 2005.

Type: *Polyporus salmonicolor* Berk. et M. A. Curtis, 1849. Examples: *Erastia ochraceolateritia* (Bondartsev) Zmitr. comb. nov. (MB 827384). – Basionym: *Poria ochraceolateritia* Bondartsev, Botanicheskie Materialy 5: 21, 1940; *E. salmonicolor* (Berk. et M. A. Curtis) Niemelä et Kinnunen.

GLOEOPORUS Mont. in Sagra, Annls Sci. Nat., Bot., sér. 2 17: 126, 1842.

Type: *Gloeoporus conchoides* Mont., 1842. Examples: *G. hainanensis* Yuan Yuan et Jia J. Chen, *G. pan-*

nocinctus (Romell) J. Erikss., *G. thelephoroides* (Hook.) G. Cunn.

HYDNOPOLYPORUS D. A. Reid, Persoonia 2(2): 151, 1962.

Type: *Polystictus fimbriatus* Cooke, 1886. Examples: *Hydnopolyporus fimbriatus* (Cooke) D. A. Reid, *H. palmatus* (Hook.) O. Fidalgo.

IRPEX Fr. ex Fr., Elench. fung. 1: 142, 1828.

Type: *Sistotrema lacteum* Fr., 1818. Examples: *Irpex flavus* Klotzsch, *I. lacteus* (Fr.) Fr.

LEPTOPORUS Quél., Enchir. fung.: 175, 1886.

Type: *Boletus mollis* Pers., 1796 ≡ *Leptoporus mollis* (Pers.) Quél., Enchir. fung.: 175, 1886. ?Monotypic.

MERULIOPSIS Bondartsev in Parmasto, Izv. Akad. Nauk Estonsk. SSR, Ser. Biol. 8: 274, 1959.

Type: *Xylomyzon taxicola* Pers., 1825. Examples: *M. albostraminea* (Torrend) Jülich et Stalpers; *Meruliopsis cystidiata* (Ryvarden) P. E. Jung et Y. W. Lim; *M. taxicola* (Pers.) Bondartsev; *Meruliopsis variegata* (B. S. Jia et Y. C. Dai) Zmitr. comb. nov. (MB 827369). – Basionym: *Ceriporia variegata* B. S. Jia et Y. C. Dai, Mycol. Progr. 13(1): 88, 2014.

PHANEROITES Hjortstam et Ryvarden, Syn. Fung. 27: 30, 2010.

Type: *Radulum subquercinum* Henn. in Warburg 1899 ≡ *Phaneroites subquercinus* (Henn.) Hjortstam et Ryvarden, Syn. Fung. 27: 31, 2010. Monotypic.

RESINIPORUS Zmitr. gen. nov. (MB 827371).

Basidiomata of ceriporioid habitus, annual, orbicular, confluent into large effused patches or local stalactite-like formations; hymenophore poroid, ceraceous, with resinous deposites. Subiculum white to cream, soft-fibrous. Hyphal system pseudodimitic. Generative hyphae with clamp connections, hyaline, often encrusted with resinous granules, CB–. Pseudoskeletal hyphae thick-walled, yellowish, with scattered phanerochaetoid clamps, CB+. Leptocystidia hyphoid, intrahymenial. Basidia utriform, with a central constriction, 4-spored, with clamp at the base. Basidiospores oblong-ellipsoid to lacrymoid, thin-walled, IKI–, CB–. Causes a white rot. From genus *Raduliporus* Spirin et Zmitr. differs by cartilaginous tube layer and prominent thick-walled hyphae in the subiculum.

Etymology: the name refers to hymenophore features in the genus representatives.

Type: *Polyporus resinascens* Romell, Ark. Bot. 11(no. 3): 20, 1911. Examples: *Resiniporus resinascens* (Romell) Zmitr. comb. nov. (MB 827372). – Basionym: *Polyporus resinascens* Romell, Ark. Bot. 11(no. 3): 20, 1911; *Resiniporus pseudogilvescens* (Pilát) Zmitr. comb. nov. (MB 827373). – Basionym: *Poria pseudogilvescens* Pilát, Bull. trimest. Soc. mycol. Fr. 51(3–4): 378, 1936.

RADULIPORUS Spirin et Zmitr. in Zmitr., Malysheva et Spirin, Mycena 6: 24, 2006.

Type: *Polyporus aneirinus* Sommerf., 1826 ≡ *Raduliporus aneirinus* (Sommerf.) Spirin et Zmitr. in Zmitr., Malysheva et Spirin, Mycena 6: 24, 2006. Monotypic.

STEREOPHLEBIA Zmitr. gen. nov. (MB 827385).

Basidiomata of chondrostereoid to phlebioid habitus, prostrate to reflexed with differentiated upper tomentum; hymenophore smooth or irregularly costate or tuberculate, ceraceous to cartilaginous. Subiculum white, byssoid to soft-fibrous. Hyphal system monomitic. Genera-

tive hyphae with clamp connections, hyaline, often encrusted with crystalline matter, in hymenium deliquescent, CB–. Cystidia none. Basidia cylindrical, with a central constriction, 4-spored, clamped. Basidiospores short-cylindric, slightly curved, thin-walled, IKI–, CB–. Causes a white rot. From similar genus *Hermanssonia* Zmitr. differs by byssoid subiculum and curved basidiospores, from *Byssomerulius* differs by regularly clamped hyphae.

Etymology: the name refers to other generic names, *Stereum* Hill. ex Pers. and *Phlebia* Fr.

Type: *Grandinia tuberculata* Berk. et M. A. Curtis, Hooker's J. Bot. Kew Gard. Misc. 1: 237, 1849 ≡ *Stereophlebia tuberculata* (Berk. et M. A. Curtis) Zmitr. comb. nov. (MB 827386). – Basionym: *Grandinia tuberculata* Berk. et M. A. Curtis, Hooker's J. Bot. Kew Gard. Misc. 1: 237, 1849. Monotypic.

TRAMETOPSIS Tomšovský, Czech Mycol. 60(1): 7, 2008.

Type: *Boletus cervinus* Schwein., 1822. Examples: *Trametopsis aborigena* Gómez-Mont. et Robledo, *T. brasiliensis* (Ryvarden et de Meijer) Gómez-Mont. et Robledo, *T. cervina* (Schwein.) Tomšovský, *T. luteocontexta* (Ryvarden et de Meijer) Gómez-Mont., Robledo et Drechsler-Santos.

VITREOPORUS Zmitr. gen. nov. (MB 827381).

Basidiomata of tyromycetoid habitus with two-layered context, hymenophore poroid with sterile or fertile dissepiments, gelatinose, cornescent. Upper context soft-fibrous, white or ivory, with black line near the tubes; tube layer citrine, honey-brown, or with lilaceous tints, cartilaginous. Hyphal system pseudodimitic. Generative hyphae with clamp connections, hyaline, often encrusted with granules, CB–. Pseudoskeletal hyphae thick-walled, yellowish, with singular clamps, CB+. Leptocystidia fusoid or hyphoid, intrahymenial. Basidia short-clavate, with a central constriction, 4-spored, with clamp at the base. Basidiospores allantoid, thin-walled, IKI–, CB–. Causes a white rot. Closely related genus *Gloeoporus* Mont. is similar, but differs by thinner contextual/subicular layer, only slightly curved basidiospores, longer basidia, and simple-septate or nodose-septate hyphae.

Etymology: the new genus was named because of the glassy tube layer.

Type: *Polyporus dichrous* Fr., Observ. Mycol. 1: 125, 1815. Examples: *Vitreoporus africanus* (P. E. Jung et Y. W. Lim) Zmitr. comb. nov. (MB 827693). – Basionym: *Gloeoporus africanus* P. E. Jung et Y. W. Lim, Mycol. Progress 17: 859, 2018; *Vitreoporus citrinoalbus* (Yuan Yuan et Jia J. Chen) Zmitr. comb. nov. (MB 827383). – Basionym: *Gloeoporus citrinoalbus* Yuan Yuan et Jia J. Chen in Yuan, Ji, Wu, He et Chen, Nova Hedwigia 103(1–2): 171; 2016; *Vitreoporus dichrous* (Fr.) Zmitr. comb. nov. (MB 827382). – Basionym: *Polyporus dichrous* Fr., Observ. mycol. 1: 125, 1815; *Vitreoporus orientalis* (P. E. Jung et Y. W. Lim) Zmitr. comb. nov. (MB 827694). – Basionym: *Gloeoporus orientalis* P. E. Jung et Y. W. Lim, Mycol. Progress 17: 860, 2018.

Phlebia-group

AURANTIPORUS Murrill, Bull. Torrey bot. Club 32(9): 487, 1905.

Type: *Polyporus pilotae* Schwein., 1832. Examples: *Aurantiporus croceus* (Pers.) Murrill; *Aurantiporus mayaensis* (Ginns, D. L.

Lindner et T. J. Baroni) Zmitr. comb. nov. (MB 827390). – Basionym: *Aurantiopileus mayaensis* Ginns, D. L. Lindner et T. J. Baroni, N. Amer. Fung. 5(4): 4, 2010; *Aurantiporus roseus* (C. L. Zhao et Y. C. Dai) Zmitr. comb. nov. (MB 827391). – Basionym: *Ceriporiopsis rosea* C. L. Zhao et Y. C. Dai in Zhao, Wu, Liu et Dai, Nova Hedwigia 101(3–4): 409, 2015.

CLIMACODON P. Karst., Revue mycol., Toulouse 3(no. 9): 20, 1881.

Type: *Hydnum septentrionale* Fr., 1821. Examples: *Climacodon annamensis* (Har. et Pat.) Maas Geest., *C. septentrionalis* (Fr.) P. Karst. There are several fleshy effused-reflexed hydnums, not studied in molecular respect. They are not given here.

CRUSTODONTIA Hjortstam et Ryvarden, Syn. Fung. 20: 36, 2005.

Type: *Corticium chrysocreas* Berk. et M. A. Curtis, 1873 ≡ *Crustodontia chrysocreas* (Berk. et M. A. Curtis) Hjortstam et Ryvarden, Syn. Fung., 20: 36, 2005. Monotypic.

GEESTERANIA Westphalen, Tomšovský et Rajchenb., Persoonia 41: 134, 2018.

Type: *Poria carneola* Bres., 1896. Examples: *Geesterania carneola* (Bres.) Westphalen et Rajchenb., *G. davidii* Westphalen et Rajchenb.

HERMANSSONIA Zmitr. gen. nov. (MB 827446).

Basidiomata of phlebioid habitus, large; prostrate to reflexed with upper pruina; hymenophore radially-costate or tuberculate, ceraceous to cartilaginous. Subiculum white, mostly gelatinized. Hyphal system monomitic. Generative hyphae with clamp connections, hyaline, often encrusted with crystalline matter, in hymenium deliquescent, CB–. Cystidia none. Basidia cylindrical, with a central constriction, 4-spored, clamped. Basidiospores large, cylindrical, straight, thin-walled, IKI–, CB–. Causes a white rot. The genus *Stereophlebia* Zmitr. is similar, but differs by byssoid subiculum and smaller basidiospores with allantoid tendency. Phylogenetically, the genus gravitates to *Merulius* Fr. vicinities.

Etymology: the new genus was named in honor of the Swedish mycologist and lichenologist Janolof Hermansson, who extensively studied the diversity and taxonomy of various fungal groups of North European old forests.

Type: *Phlebia centrifuga* P. Karst., Meddn Soc. Fauna Flora fenn. 6: 10, 1881. ≡ *Hermanssonia centrifuga* (P. Karst.) Zmitr. comb. nov. (MB 827447). – Basionym: *Phlebia centrifuga* P. Karst., Meddn Soc. Fauna Flora fenn. 6: 10, 1881. Monotypic.

HYDNOPHLEBIA Parmasto, Izv. Akad. Nauk Estonsk. SSR, Ser. Biol. 16: 384, 1967.

Type: *Hydnum chrysorhizon* Torr., 1822. Examples: *Hydnophlebia canariensis* Telleria, M. Dueñas et M. P. Martín, *H. chrysorhiza* (Torr.) Parmasto, *H. omnivora* (Shear) Hjortstam et Ryvarden. It is possible, a bit more residual *Phlebia* species can be introduced into this genus after further molecular testing, e. g. *Phlebia acanthocystis* Gilb. et Nakasone, *Ph. coccineofulva* Schwein., *Ph. ludoviciana* (Burt) Nakasone et Burds., *Ph. subochracea* (Alb. et Schwein.) J. Erikss. et Ryvarden.

LUTEOPORIA F. Wu, Jia J. Chen et S. H. He in Wu, Yuan, Chen et He, Phytotaxa 263(1): 37, 2016.

Type: *Luteoporia albomarginata* F. Wu, Jia J. Chen et S. H. He in Wu, Yuan, Chen et He, Phytotaxa 263(1): 37, 2016. Monotypic.

MERULIUS Fr., Syst. mycol. 1: 326, 1821.

Type: *Merulius tremellosus* Schrad., 1794. Examples: *Merulius hydnoideus* (Schwein.) Zmitr. comb. nov. (MB 827513). – Basionym: *Phlebia hydnoidea* Schwein., Trans. Am. phil. Soc., New Series 4(2): 165, 1832; *M. incarnatus* Schwein.; *Merulius natnahaliensis* (Nakasone et Burds.) Zmitr. comb. nov. – Basionym: *Phlebia nantahaliensis* Nakasone et Burds., Mycotaxon 54: 348, 1995; *M. tremellosus* Schrad.

MYCOACIA Donk, Medded. Nedl. Mycol. Ver. 18–20: 150, 1931.

Type: *Hydnum fuscoatrum* Fr., 1814. Examples: *Mycoacia aurea* J. Erikss. et Ryvarden; *M. fuscoatra* (Fr.) Donk; *Mycoacia gilvescens* (Bres.) Zmitr. comb. nov. (MB 827436). – Basionym: *Poria gilvescens* Bres., Annls mycol. 6(1): 40, 1908; *Mycoacia kunmingensis* (C. L. Zhao) Zmitr. comb. nov. (MB 827435) – Basionym: *Ceriporiopsis kunmingensis* C. L. Zhao in Zhao et Wu, Mycol. Progr. 16(1): 98, 2017]; *M. kurilensis* Parmasto; *Mycoacia livida* (Pers.) Zmitr. comb. nov. (MB 827437). – Basionym: *Corticium lividum* Pers., Observ. mycol. 1: 38, 1796; *Mycoacia lividina* (Hjortstam) Zmitr. comb. nov. (MB 827439). – *Phlebia lividina* Hjortstam, Mycotaxon 54: 190, 1995; *M. meridionalis* Burds. et Nakasone; *M. nothofagi* (G. Cunn.) Ryvarden.

MYCOACIELLA J. Erikss. et Ryvarden in Eriksson, Hjortstam et Ryvarden, Cortic. N. Eur. 5: 901, 1978.

Type: *Resinicium bisporum* Stalpers, 1976. Examples: *M. badia* (Pat.) Hjortstam et Ryvarden, *M. bispora* (Stalpers) J. Erikss. et Ryvarden, *M. brunnea* (Jülich) Hjortstam et Spooner, *M. dusenii* (Henn.) Hjortstam et Ryvarden, *M. hinnulea* (Bres.) Hjortstam et Ryvarden.

ODORIA V. Papp et Dima, Mycol. Progr. 17(3): 323, 2018.

Type: *Phaeolus albosordescens* subsp. *alborubescens* Bourdot et Galzin, 1925 ≡ *Odoria alborubescens* (Bourdot et Galzin) V. Papp et Dima, Mycol. Progr. 17(3): 323, 2017. Monotypic.

PAPPIA Zmitr. gen. nov. (MB 827392).

Basidiomata of tyromycetoid habitus, large; tube layer glazing when dry. Upper context soft-fibrous, white (unchanged in KOH), pinkish to pale-umber when dry, cornescent; tube layer thick, honey-brown, then umber-brown, glazing when dry. Hyphal system monomitic. Generative hyphae with clamp connections, hyaline, in trama thin-walled, CB–, in upper context rather thick-walled, CB+. In internal tissues, the aleuria and chalmydospores are produced, ellipsoid to globose, thick-walled, CB+. Cystidia none. Basidia clavate, with a central constriction, 4-spored, with clamp at the base. Basidiospores ellipsoid to subglobose, IKI–, CB–. Causes a white heartrot of living hardwoods. The genus *Odoria* V. Papp et Dima is similar but differs by thicker basidiospore wall, the absence of chlamydospores and the context turning red under KOH.

Etymology: the new genus was named in honor of the Hungarian mycologist Viktor Papp, who extensively studied the diversity and taxonomy of the *Polyporales* in Europe.

Type: *Polyporus fissilis* Berk. et M. A. Curtis, Hooker's J. Bot. Kew Gard. Misc. 1: 234, 1849 ≡ *Pappia fissilis* (Berk. et M. A. Curtis) Zmitr. comb. nov. (MB 827393). – Basionym: *Polyporus fissilis* Berk. et M.

A. Curtis, Hooker's J. Bot. Kew Gard. Misc. 1: 234, 1849. Monotypic.

PHLEBIA Fr., Syst. mycol. 1: 426, 1821.

Type: *Phlebia radiata* Fr., 1821. Examples: *Ph. acerina* Peck, *Ph. floridensis* Nakasone et Burds., *Ph. radiata* Fr., *Ph. setulosa* (Berk. et M. A. Curtis) Nakasone, *Ph. tremelloidea* (Bres.) Parmasto; etc.

PHLEBIPORIA Jia J. Chen, B. K. Cui et Y. C. Dai in Chen et Cui, Mycol. Progr. 13(3): 568, 2014.

Type: *Phlebiporia bubalina* Jia J. Chen, B. K. Cui et Y. C. Dai, 2013. Monotypic.

SARCODONTIA Schulzer in Schulzer, Kanitz et Knapp, Verh. zool.-bot. Ges. Wien 16(Abh.): 41, 1866.

Type: *Sarcodontia mali* Schulzer, 1866. Examples: *Sarcodontia setosa* (Pers.) Donk, *S. uda* (Fr.) Nikol.

SCOPULOIDES (Massee) Höhn. et Litsch., Wiesner Festschrift: 57, 58, 1908.

Type: *Peniophora hydnoides* Cooke et Massee, 1888. Examples: *Scopuloides hydnoides* (Cooke et Massee) Hjortstam et Ryvarden, *S. subgelatinosa* Nakasone.

«*Steccherinaceae*»-group

ANTELLA Miettinen in Miettinen et Ryvarden, Ann. bot. fenn.: 158, 2016.

Type: *Antrodiella niemelaei* Vampola et Vlasák, 2011. Examples: *Antella americana* (Ryvarden et Gilb.) Ryvarden, *A. chinensis* (H. S. Yuan) Miettinen.

ANTRODIELLA Ryvarden et I. Johans., Prelim. Polyp. Fl. E. Afr.: 256, 1980.

Type: *Polyporus semisupinus* Berk. et M. A. Curtis, 1872. Examples: *A. citripileata* H. S. Yuan, *A. ellipsospora* (Pilát) Niemelä et Miettinen, *A. faginea* Vampola et Pouzar, *A. genistae* (Bourdot et Galzin) A. David, *A. ichnusana* Bernicchia, Renvall et Arras, *A. leucoxantha* (Bres.) Miettinen et Niemelä, *A. onychoides* (Egeland) Niemelä, *A. pachycheiles* (Ellis et Everh.) Miettinen et Niemelä, *A. pallasii* Renvall, Johann. et Stenlid, *A. pallescens* (Pilát) Niemelä et Miettinen, *A. romellii* (Donk) Niemelä, *A. semisupina* (Berk. et M. A. Curtis) Ryvarden, *A. serpula* (P. Karst.) Spirin et Niemelä; etc.

ATRAPORIELLA Ryvarden, Syn. Fung. 23: 38, 2007.

Type: *Atraporiella neotropica* Ryvarden, 2007. Examples: *A. neotropica* Ryvarden, *A. yunnanensis* C. L. Zhao.

AUSTERIA Miettinen in Miettinen et Ryvarden, Ann. bot. fenn.: 159, 2016.

Type: *Polyporus citreus* Berk., 1872 ≡ *Austeria citrea* (Berk.) Miettinen in Miettinen et Ryvarden, Ann. bot. fenn.: 159, 2016. Monotypic.

BUTYREA Miettinen in Miettinen et Ryvarden, Ann. bot. fenn.: 161, 2016.

Type: *Physisporus luteoalbus* P. Karst., 1887. Examples: *Butyrea luteoalba* (P. Karst.) Miettinen, *B. japonica* (Núñez et Ryvarden) Miettinen et Ryvarden.

CABALODONTIA M. Piątek, Polish Bot. J. 49(1): 2, 2004.

Type: *Odontia queletii* Bourdot et Galzin, 1914 ≡ *Cabalodontia queletii* (Bourdot et Galzin) Piątek, Polish Bot. J. 49(1): 3, 2004. ?Monotypic.

CAUDICICOLA Miettinen, M. Kulju et Kotir. in Kotiranta, Kulju et Miettinen, Ann. bot. fenn. 54: 163, 2017.

Type: *Caudicicola gracilis* Miettinen, M. Kulju et Kotir. in Kotiranta, Kulju et Miettinen, Ann. bot. fenn. 54: 163, 2017. Monotypic.

CITRIPORA Miettinen in Miettinen et Ryvarden, Ann. bot. fenn.: 163, 2016.

Type: *Citripora bannaensis* Miettinen 2016. Examples: *C. afrocitrina* (Ipulet et Ryvarden) Miettinen et Ryvarden, *C. bannaensis* Miettinen.

ELAPHROPORIA Z. Q. Wu et C. L. Zhao in Wu, Xu, Shen, Liu, Luo et Zhao, MycoKeys 29: 88, 2018.

Type: *Elaphroporia ailaoshanensis* Z. Q. Wu et C. L. Zhao in Wu, Xu, Shen, Liu, Luo et Zhao, MycoKeys 29: 89, 2018. Monotypic.

ETHEIRODON Banker, Bull. Torrey bot. Club 29: 441, 1902.

Type: *Odontia fimbriata* Pers., 1796 ≡ *Etheirodon fimbriatus* (Pers.) Zmitr. comb. nov. (MB 827450). – Basionym: *Odontia fimbriata* Pers., Observ. mycol. 1: 88, 1796. ?Monotypic.

FLABELLOPHORA G. Cunn., Polyp. N. Zeal.: 261, 88, 1965.

Type: *Polyporus superpositus* Berk., 1872. Examples: *Flabellophora aurantiaca* Corner, *F. brevipes* Corner, *F. deceptiva* Corner, *F. fasciculata* Ryvarden et Iturr., *F. flaviporus* Corner, *F. inconspicua* Corner, *F. intertexta* Corner, *F. kinabaluensis* Corner, *F. latipora* Corner, *F. licmophora* (Massee) Corner, *F. nana* Corner, *F. obtorta* Corner, *F. ochracea* Corner, *F. parva* Corner, *F. squamosa* Corner, *F. superposita* (Berk.) G. Cunn., *F. variabilis* Corner, *F. velutinosa* Corner.

FLAVIPORUS Murrill, Bull. Torrey bot. Club 32(7): 360, 1905.

Type: *Polyporus rufoflavus* Berk. et M. A. Curtis, 1868. Examples: *Flaviporus brownii* (Humb.) Donk, *F. citrinellus* (Niemelä et Ryvarden) Ginns, *F. delicatus* A. David et Rajchenb., *F. hunua* (G. Cunn.) Ginns, *F. tenuis* Westphalen, Rajchenb. et Tomšovský.

FRANTISEKIA Spirin et Zmitr., Czech Mycol. 59(2): 142, 2007.

Type: *Poria fissiliformis* Pilát, 1940. Examples: *Frantisekia fissiliformis* (Pilát) Spirin et Zmitr., ?*F. mentschulensis* (Pilát ex Pilát) Spirin.

JUNGHUHNIA Corda, Anleit. Stud. Mykol., Prag: 195, 1842.

Type: *Laschia crustacea* Jungh., 1838 ≡ *Junghuhnia crustacea* (Jungh.) Ryvarden, Persoonia 7(1): 18, 1972. ?Monotypic.

LAMELLOPORUS Ryvarden, Mycotaxon 28(2): 529, 1987.

Type: *Lamelloporus americanus* Ryvarden, Mycotaxon 28(2): 529, 1987. Monotypic.

LOWEOMYCES (Kotl. et Pouzar) Jülich, Persoonia 11(4): 424, 1982.

Type: *Polyporus fractipes* Berk. et M. A. Curtis, 1872. Examples: *Loweomyces fractipes* (Berk. et M. A. Curtis) Jülich, *L. sibiricus* (Penzina et Ryvarden) Spirin, *L. spissus* Westph., Tomšovský et Rajchenb., *L. tomentosus* Westph., Tomšovský et Rajchenb., *L. wynneae* (Berk. et Broome) Jülich.

METULOIDEA G. Cunn., Bull. N. Z. Dept. Sci. Industr. Res., Pl. Dis. Div. 164: 250, 263, 1965.

Type: *Trametes tawa* G. Cunn., 1948. Examples: *Metuloidea cinnamomea* (Iturr. et Ryvarden) Miettinen et Ryvarden, *M. fragrans* (A. David et Tortic) Miettinen, *M. murashkinskyi* (Burt) Miettinen et Spirin, *M. rhinocephala* (Berk.) Miettinen, *M. tawa* (G. Cunn.) G. Cunn.

MYCORRHAPHIUM Maas Geest., Persoonia 2(3): 394, 1962.

Type: *Hydnum adustum* Schwein., 1822. Examples: *Mycorrhaphium adustulum* (Banker) Ryvarden, *M. adustum* (Schwein.) Maas Geest., *M. africanum* Mossebo et Ryvarden, *M. citrinum* Ryvarden,

M. insulare (Pat.) Maas Geest., *M. pusillum* (Brot.) Maas Geest., *M. sessile* H. S. Yuan et Y. C. Dai, *M. stereoides* (Cooke) Maas Geest.

NIEMELAEA Zmitr., Ezhov et Khimich, Agriculture and Forestry 61(4): 27, 2015.

Type: *Poria consobrina* Bres., 1925. Examples: *Niemelaea balaenae* (Niemelä) V. Papp, *N. consobrina* (*B*res.) Zmitr., Ezhov et Khimich, *N. cremea* (Parmasto) Zmitr., Ezhov et Khimich.

NIGROPORUS Murrill, Bull. Torrey bot. Club 32(7): 361, 1905.

Type: *Polyporus vinosus* Berk., 1852. Examples: *Nigroporus durus* (Jungh.) Murrill, *N. macroporus* Ryvarden et Iturr., *N. scalaris* (Fr.) Ryvarden, *N. stipitatus* Douanla-Meli et Ryvarden, *N. ussuriensis* (Bondartsev et Ljub.) Y. C. Dai et Niemelä, *N. vinosus* (Berk.) Murrill.

STECCHERINUM Gray, Nat. Arr. Brit. Pl. 1: 651, 1821.

Type: *Hydnum ochraceum* Pers. in Gmelin, 1792. Examples: *Steccherinum autumnale* (Spirin, Zmitr. et Malysheva) Miettinen, *S. collabens* (Fr.) Vesterh., *S. bourdotii* Saliba et A. David, *S. meridionale* (Rajchenb.) Westphalen, Tomšovský et Rajchenberg, *S. neonitidum* Westphalen et Tomšovský, *S. nitidum* (Pers.) Vesterh., *S. ochraceum* (Pers. in Gmelin) Gray, *S. polycystidiferum* (Rick) Westphalen, Tomšovský et Rajchenb., *S. pseudozilindianum* (Parmasto) Vesterh., *S. robustius* (J. Erikss. et S. Lundell) J. Erikss., *S. tenue* Burds. et Nakasone, *S. tenuispinum* Spirin, Zmitr. et Malysheva, *S. undigerum* (Berk. et M. A. Curtis) Westphalen et Tomšovský; etc.

TRULLELLA Zmitr. gen. nov. (MB 827466).

Basidiomata of polyporoid, corioloid or fibroporioid habitus, annual, with poroid or dentate hymenophore. Hyphal system monomitic in sterile context and dimitic in tube trama. Generative hyphae with clamp connections, hyaline, CB+, skeletal hyphae mostly hyaline, fibroid, CB+. Leptocystidia short-clavate. Basidia short clavate, with a central constriction, 4-spored, with clamp at the base. Basidiospores phaseoleform to allantoid, smooth, thin-walled, IKI–, CB–. Causes a white rot. The genus *Antrodiella* Ryvarden et I. Johans. is similar but differs by dimitic context, acyanophilous generative hyphae and less curved basidiospores.

Etymology: the new genus is corresponded to the genus *Trulla* Miettinen et Ryvarden, but not *Trulla* T. M. Harris, 1979, *Pinopsida*.

Type: *Antrodiella dentipora* Ryvarden et Iturr., Mycologia 95(6): 1066, 2003. Examples: *Trullella crustulina* (Bres.) Zmitr. comb. nov. (MB 827467). – Basionym: *Polyporus crustulinus* Bres., Hedwigia 56(4,5): 293, 1915; *Trullella dentipora* (Ryvarden et Iturr.) Zmitr. comb. nov. (MB 827468). – Basionym: *Antrodiella dentipora* Ryvarden et Iturr., Mycologia 95(6): 1066, 2003; *Trullella duracina* (Pat.) Zmitr. comb. nov. (MB 827469). – Basionym: *Leptoporus duracinus* Pat., Bull. Soc. mycol. Fr. 18(2): 174, 1902; *Trullella meridae* (Miettinen et Ryvarden) Zmitr. comb. nov. (MB 827470). – Basionym: *Trulla meridae* Miettinen et Ryvarden, Ann. bot. fenn. 53: 170, 2016; *Trullella ochrotinctella* (Murrill) Zmitr. comb. nov. (MB 827471). – Basionym: *Coriolus ochrotinctellus* Murrill, N. Amer. Fl. 9(1): 22, 1907; *Trullella polyporoides* (Ryvarden et Iturr.) Zmitr. comb. nov. (MB 827472). – Basionym: *Tyromyces polyporoides* Ryvarden et Iturr., Mycologia 95(6): 1075, 2003.

XANTHOPORUS Audet, Mycotaxon 111: 451, 2010.

Type: *Polyporus peckianus* Cooke, 1879. Examples: *Xanthoporus peckianus* (Cooke) Audet, *X. syringae* (Parmasto) Audet.

«*Fragiliporiaceae*»-clade

FRAGILIPORIA Y. C. Dai, B. K. Cui et C. L. Zhao, Fungal Diversity 70: 121, 2015.

Type: *Fragiliporia fragilis* Y. C. Dai, B. K. Cui et C. L. Zhao, Fungal Diversity 70: 121, 2015. Monotypic.

Cerrena–Panus-group

CERRENA Gray, Nat. Arr. Brit. Pl. 1: 649, 1821.

Type: *Sistotrema cinereum* Pers., 1794. Examples: *Cerrena albocinnamomea* (Y. C. Dai et Niemelä) H. S. Yuan, *C. consors* (Berk.) K. S. Ko et H. S. Jung, *C. cystidiata* Rajchenb. et De Meijer, *C. unicolor* (Bull.) Murrill.

CYMATODERMA Jungh., Tijdschr. Nat. Gesch. Physiol. 7: 290, 1840.

Type: *Cymatoderma elegans* Jungh., 1840. Examples: *C. africanum* Boidin, *C. venezuelae* D. A. Reid. The genus needs a wide-range molecular testing.

IRPICIPORUS Murrill, Bull. Torrey bot. Club 32(9): 471, 1905.

Type: *Irpex mollis* Berk. et M. A. Curtis, 1849. Examples: *Irpiciporus litschaueri* (Lohwag) Zmitr. comb. nov. (MB 827473). – Basionym: *Spongipellis litschaueri* Lohwag, Arch. Protistenk. 75: 301, 1931; *I. pachyodon* (Pers.) Kotl. et Pouzar.

PANUS Fr., Epicr. syst. mycol.: 396, 1838.

Type: *Agaricus conchatus* Bull., 1787. Examples: *Panus aplacus* (Senthil. et S. K. Singh) Senthil., *P. brunneipes* Corner, *P. ciliatus* (Lév.) T. W. May et A. E. Wood, *P. conchatus* (Bull.) Fr., *P. fasciatus* (Berk.) Singer, *P. convivalis* Corner, *P. courtetianus* (Har. et Pat.) Njouonkou et Mossebo, *P. hirtiformis* (Murrill) Drechsler-Santos et Wartchow, *P. hookerianus* (Berk.) T. W. May et A. E. Wood, *P. lecomtei* (Fr.) Corner, *P. similis* (Berk. et Broome) T. W. May et A. E. Wood, *P. strigellus* (Berk.) Chardon et Toro, *P. tephroleucus* (Mont.) T. W. May et A. E. Wood, *P. velutinus* (Fr.) Overh.

PSEUDOLAGAROBASIDIUM J. C. Jang et T. Chen, Trans. Br. mycol. Soc. 85(2): 374, 1985.

Type: *Pseudolagarobasidium leguminicola* J. C. Jang et T. Chen, 1985. Examples: *P. acaciicola* Ginns, *P. belizense* Nakasone et D. L. Lindner, *P. calcareum* (Cooke et Massee) Sheng H. Wu, *P. conspicuum* (Pouzar) Nakasone, *P. leguminicola* J. C. Jang et T. Chen, *P. modestum* (Berk. ex Cooke) Nakasone et D. L. Lindner, *P. pronum* (Berk. et Broome) Nakasone et D. L. Lindner, *P. pusillum* Nakasone et D. L. Lindner, *P. venustum* (Hjortstam et Ryvarden) Nakasone et D. L. Lindner.

RADULODON Ryvarden, Can. J. Bot. 50(10): 2073, 1972.

Type: *Radulodon americanus* Ryvarden, 1972. Examples: *R. acaciae* G. Kaur, Avn. P. Singh et Dhingra, *R. americanus* Ryvarden, *R. erikssonii* Ryvarden, *R. indicus* Jyoti et Dhingra.

«*Hyphodermataceae /Meripilaceae/ Podoscyphaceae*»-group

ABORTIPORUS Murrill, Bull. Torrey bot. Club 31(8): 421, 1904.

Type: *Boletus distortus* Schwein., 1822. Examples: *Abortiporus biennis* (Bull.) Singer, *A. chocoensis* Læssøe et Ryvarden, *A. roseus* (D. A. Reid)

Masuka et Ryvarden, *A. zonatus* (Corner) T. Hatt.

BULBILLOMYCES Jülich, Persoonia 8(1): 69, 1974.

Type: *Kneiffia farinosa* Bres., 1903 ≡ *Bulbillomyces farinosus* (Bres.) Jülich, Persoonia 8(1): 69, 1974. Monotypic.

CLIMACOSYSTIS Kotl. et Pouzar, Česká Mykol. 12(2): 103, 1958.

Type: *Polyporus borealis* Fr., 1821. Examples: *Climacocystis borealis* (Fr.) Kotl. et Pouzar, *C. montana* B. K. Cui et J. Song.

DIPLOMITOPORUS Domański, Acta Soc. Bot. Pol. 39: 191, 1970.

Type: *Trametes flavescens* Bres. 1903. Example: *Diplomitoporus flavescens* (Bres.) Domański. In the premolecular period, quite a few species have been described from warm regions. Their generic affiliation still has not been verified.

HYPHODERMA Wallr., Fl. crypt. Germ. 2: 576, 1833.

Type: *Hyphoderma spiculosum* Wallr., 1833. Examples: *Hyphoderma bisetigerum* Boidin et Gilles, *H. cremeoalbum* (Höhn. et Litsch.) Jülich, *H. hallenbergii* Man. Kaur, Avn. P. Singh et Dhingra, *H. incrustatum* K.-H. Larss., *H. litschaueri* (Burt) J. Erikss. et Å. Strid, *H. medioburiense* (Burt) Donk, *H. mutatum* (Peck) Donk, *H. roseocremeum* (Bres.) Donk, *H. sacchari* (Burt) Nakasone, *H. setigerum* (Fr.) Donk, *H. transiens* (Bres.) Parmasto; etc.

HYPOCHNICIUM J. Erikss., Symb. bot. upsal. 16(no. 1): 100, 1958.

Type: *Thelephora bombycina* Sommerf., 1826. Examples: *Hypochnicium albostramineum* (Bres.) Hallenb., *H. austrosinense* W. M. Qin et L. W. Zhou, *H. bicystidiatum* Boidin et Gilles, *H. bombycinum* (Sommerf.) J. Erikss., *H. capitulatum* Boidin et Gilles, *H. caucasicum* Parmasto, *H. cremicolor* (Bres.) H. Nilsson et Hallenb., *H. cymosum* (D. P. Rogers et H. S. Jacks.) K. H. Larss. et Hjortstam, *H. cystidiatum* Boidin et Gilles, *H. eichleri* (Bres. ex Sacc. et P. Syd.) J. Erikss. et Ryvarden, *H. erikssonii* Hallenb. et Hjortstam, *H. flexibile* (G. Cunn.) Gorjón et Gresl., *H. guineense* Tellería, M. Dueñas, Melo et M. P. Martín, *H. horridulum* (Rick) Baltazar et Rajchenb., *H. huinayense* Tellería, M. Dueñas et M. P. Martín, *H. lundellii* (Bourdot) J. Erikss., *H. multiforme* (Berk. et Broome) Hjortstam, *H. novaezelandiae* (G. Cunn.) Gorjón et Gresl., *H. odontioidescens* Boidin et Gilles, *H. patagonicum* Gorjón et Hallenb., *H. pini* Y. Jang et J. J. Kim, *H. punctulatum* (Cooke) J. Erikss., *H. wakefieldiae* (Bres.) J. Erikss.

MERIPILUS P. Karst., Bidr. Känn. Finl. Nat. Folk 37: 33, 1882.

Type: *Boletus giganteus* Pers., 1794. Examples: *Meripilus applanatus* Corner, *M. giganteus* (Pers.) P. Karst., *M. maculatus* Corner, *M. sumstinei* (Murrill) M. J. Larsen et Lombard, *M. tropicalis* Guzmán et Pérez-Silva, *M. villosulus* Corner.

PHYSISPORINUS P. Karst., Bidr. Känn. Finl. Nat. Folk 48: 324, 1889.

Type: *Poria vitrea* Pers., 1796. Examples: *Physisporinus cinereus* (Núñez et Ryvarden) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. crocatus* (Pat.) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. eminens* (Y. C. Dai) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. furcatus* (Núñez et Ryvarden) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. lineatus* (Pers.) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. longicystidius* (P. K. Buchanan et Ryvarden) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. pouzarii* (Vampola et Vlasák) F. Wu, Jia J. Chen et Y. C. Dai, *Ph. resinosus* Ipulet et Ryvar-

den, *Ph. tibeticus* F. Wu, Jia J. Chen et Y. C. Dai, *Ph. vitreus* (Pers.) P. Karst.; etc.

PODOSCYPHA Pat., Essai Tax. Hyménomyc.: 70, 1900.

Type: *Stereum surinamense* Lév., 1844. Examples: *Podoscypha aculeata* (Berk. et M. A. Curtis) Boidin, *P. bolleana* (Mont.) Boidin, *P. brasiliensis* D. A. Reid, *P. bubalina* D. A. Reid, *P. caespitosa* (Burt) Boidin, *P. corbiformis* (Fr.) D. A. Reid, *P. corneri* D. A. Reid, *P. crenata* (Lév.) Pat., *P. cristata* (Berk. et M. A. Curtis) D. A. Reid, *P. disseminata* Douanla-Meli, *P. elegans* (G. Mey.) Pat., *P. fulvonitens* (Berk.) D. A. Reid, *P. gillesii* Boidin et Lanq., *P. glabrescens* (Berk. et M. A. Curtis) Boidin, *P. involuta* (Klotzsch) Imazeki, *P. macrorhiza* (Lév.) Pat., *P. mellissii* (Berk. ex Sacc.) Bres., *P. moelleri* (Bres. et Henn.) D. A. Reid, *P. moselei* (Berk.) D. A. Reid, *P. multizonata* (Berk. et Broome) Pat., *P. nitidula* (Berk.) Pat., *P. nuda* Boidin, *P. obliqua* (Mont. et Berk.) Pat., *P. obliquula* (S. Ito et S. Imai) S. Ito, *P. ovalispora* D. A. Reid, *P. parvula* (Lloyd) D. A. Reid, *P. petalodes* (Berk.) Boidin, *P. philippinensis* D. A. Reid, *P. poilanei* Pat., *P. pusilla* (Berk.) Ryvarden, *P. ravenelii* (Berk. et M. A. Curtis) Pat., *P. replicata* (Lloyd) D. A. Reid, *P. sergentiorum* Maire, *P. thozetii* (Berk.) Boidin, *P. tomentipes* (Overh.) D. A. Reid, *P. ursina* Boidin et Berthet, *P. venustula* (Speg.) D. A. Reid, *P. vespillonea* (Berk.) Boidin et Lanq., *P. warneckeana* (Henn.) Ryvarden, *P. xanthopus-concinna* (Lloyd) D. A. Reid.

POUZAROPORIA Vampola, Česká Mykol. 46(1–2): 59, 1992.

Type: *Poria subrufa* Ellis et Dearn., 1897 ≡ *Pouzaroporia subrufa* (Ellis et Dearn.) Vampola, Česká Mykol. 46(1–2): 59, 1992. Monotypic.

RICKIOPORA Westphalen, Tomšovský et Rajchenb. in Westphalen, Rajchenberg, Tomšovský et Gugliotta, Fungal Biology 120(8): 1005, 2016.

Type: *Daedalea latemarginata* Rick in Rambo, 1960 ≡ *Rickiopora latemarginata* (Rick) Westph., Tomšovský et Rajchenb. in Westphalen, Rajchenberg, Tomšovský et Gugliotta, Fungal Biology 120(8): 1007, 2016. Monotypic.

SPONGIPELLIS Pat., Hyménomyc. Eur.: 140, 1887.

Type: *Boletus spumeus* Sowerby, 1799 ≡ *Spongipellis spumea* (Sowerby) Pat., Essai Tax. Hyménomyc.: 84, 1900. ?Monotypic.

References

Adanson M. Les champignons. Fungi. Sect. V // Familles des plantes. Paris, 1763. 1186 p.

Ames A. A. Consideration on structure in relation to genera of the Polyporaceae // Ann. Mycol. 1913. Vol. 11. P. 211–253.

Audet S. Antrodiopsis Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017a. No. 1. 1 p.

Audet S. Brunneoporus Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017b. No. 2. 1 p.

Audet S. Dentiporus Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017c. No. 3. 1 p.

Audet S. Flavidoporia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017d. No. 4. 1 p.

Audet S. Lentoporia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017e. No. 5. 1 p.

Audet S. Neoantrodia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017f. No. 6. 2 p.

Audet S. Resinoporia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017g. No. 7. 2 p.

Audet S. Rhizoporia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017h. No. 8. 1 p.

Audet S. Subantrodia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017i. No. 9. 1 p.

Audet S. Adustoporia Audet, gen. nov. // Mushrooms nomenclatural novelties. 2017j. No. 11. 1 p.

Audet S. Adustoporiaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018a. No. 12. 1 p.

Audet S. Amyloporiaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018b. No. 13. 1 p.

Audet S. Fibroporiaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018c. No. 14. 1 p.

Audet S. Lentoporiaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018d. No. 15. 1 p.

Audet S. Pycnoporellaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018e. No. 16. 1 p.

Audet S. Rhodoniaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018f. No. 17. 1 p.

Audet S. Sarcoporiaceae Audet, gen. nov. // Mushrooms nomenclatural novelties. 2018g. No. 18. 1 p.

Beauvois P. Flore d'Oware et de Benin, en Afrique. T. 1. Paris: Imprimerie de Fain jeune et compagnie,1804–1807. P. 74.

Berkeley M. J. Descriptions of exotic fungi in the collection of Sir W. J. Hooker, from memoirs and notes of J. F. Klotzsch, with additions and corrections // Ann. Nat. Hist. 1839. Vol. 3. P. 375–401.
Berkeley M. J. Supplement to descriptions of exotic fungi in «Annals of Natural History», vol. iii, pp. 322 and 375 // Ann. Mag. Nat. Hist. 1841. Vol. 7. P. 451–454.
Berkeley M. J. On Agaricus crinitus Linn., and some other species // Trans. Linn. Soc. 1846. Vol. 20. P. 109–113.
Berkeley M. J., Curtis M. A. Centuries of North American fungi // Ann. Mag. Nat. Hist. 1853. II. Vol. 12. P. 417–435.
Berkeley M. J., Curtis M. A. Centuries of North American fungi // Ann. Mag. Nat. Hist. 1859. III. Vol. 4. P. 284–296.
Berkeley M. J., Curtis M. A. Fungi Cubenses (Hymenomycetes) // Bot. J. Linn. Soc. 1869. Vol. 10. P. 280–392.
Berkeley M. J., Cooke M. C. The fungi of Brazil // J. Linn. Soc. 1876. Vol. 15. P. 363–398.
Binder M. Justo A., Riley R. [et al.] Phylogenetic and phylogenomic overview of the Polyporales // Mycologia. 2013. Vol. 105, N 6. P. 1350–1373.
Bolton J. An history of fungusses, growing about Halifax. Vol. 3. L., 1790. 138 p.
Bondartsev A. S. Polyporaceae of European part of USSR and Caucasus. Moscow–Leningrad, Academy of Science USSR, 1953. 1106 p. (in Russ.) [Бондарцев А. С. Трутовые грибы Европейской части СССР и Кавказа. М.; Л.: АН СССР, 1953. 1106 с.].
Bondartsev A. S., Bondartseva M. A. On the changes in the systematic position of the genus Aporpium // Botanicheskiy zhurnal. 1960. Vol. 45, N 11. P. 1693–1695 (in Russ.) [Бондарцев А. С., Бондарцева М. А. Об изменении систематического положения рода Aporpium // Ботанический журнал. 1960. Т. 45, вып. 11. С. 1693–1695].
Bondartseva M. A. Critical review of the newest systems of the family Polyporaceae // Botanicheskiy zhurnal. 1961. Vol. 46, N 4. P. 587–593 (in Russ.) [Бондарцева М. А. Критический обзор новейших систем семейства Polyporaceae // Ботанический журнал. 1961. Т. 46, № 4. С. 587–593].
Bondartseva M. A. On the anatomical criteria in the taxonomy of the aphyllophoraceous fungi // Botanicheskiy zhurnal. 1963. Vol. 48, N 34. P. 362–372 (in Russ.) [Бондарцева М. А. Об анатомическом критерии в систематике афиллофоровых грибов // Ботанический журнал. 1963. Т. 48, № 3. С. 362–372].
Bondartseva M. A. On the systematics of the genus Fibuloporia Bond. et Sing. // Novosti sistematiki nizshikh rasteniy. 1972. Vol. 9. P. 132–136 (in Russ.) [Бондарцева М. А. К систематике рода Fibuloporia Bond. et Sing. // Новости систематики низших растений. 1972. Т. 9. С. 132–136].
Bondartseva M. A. On taxonomy of polypores of tropical zone // Mikol. Fitopatol. 1973. Vol. 7, N 4. P. 370 (in Russ.) [Бондарцева М. А. К систематике трутовиков тропической зоны // Микология и фитопатология, 1973. Т. 7, вып. 4. С. 370].
Bondartseva M. A. Key to the Polyporaceae of Cuba // Mikol. Fitopatol. 1983a. Vol. 17, N 1. P. 13–21 (in Russ.) [Бондарцева М. А. Ключ для определения родов

трутовых грибов Кубы (Polyporaceae s. lato) // Микология и фитопатология. 1983. Т. 17, вып. 1. С. 13–21].
Bondartseva M. A. The system of Polyporaceae s. lato // Mikol. Fitopatol. 1983b.Vol. 17, N 4. P. 269–280 (in Russ.) [Бондарцева М. А. Система трутовых грибов (Polyporaceae s. lato) // Микология и фитопатология. 1983. Т. 17, вып. 4. С. 269–280].
Bondartseva M. A. The system of Polyporaceae s. lato) and principles of their classification. Dr. Sci. Thesis. Leningrad, Komarov Botanical Institute, 1983c. 558 p. (in Russ.) [Бондарцева М. А. Система трутовых грибов (Polyporaceae s. lato) и принципы их классификации. Дис. на соиск. уч. ст. докт. биол. наук. Л.: БИН АН СССР, 1983. 558 с.].
Bondartseva M. A. Definitorium fungorum Rossicum. Aphyllophorales 2. Albatrellaceae, Aporpiaceae, Boletopsidaceae, Bondarzewiaceae, Ganodermataceae, Corticiaceae (species porioideis), Lachnocladiaceae (species tubuliferae), Polyporaceae (genera poroidea), Poriaceae, Rigidoporaceae, Phaeolaceae, Fistulinaceae. Saint Petersburg, Nauka, 1998. 391 p. (in Russ.) [Бондарцева М. А. Определитель грибов России. Порядок афиллофоровые; Вып. 2. Семейства альбатрелловые, апорпиевые, болетопсиевые, бондарцевиевые, ганодермовые, кортициевые (виды с порообразным гименофором), лахнокладиевые (виды с трубчатым гименофором), полипоровые (роды с трубчатым гименофором), пориевые, ригидопоровые, феоловые, фистулиновые. СПб.: Наука, 1998. 391 с.].
Bondartseva M. A., Herrera S. Aphyllophorales of Cuba. I. Polyporaceae Cda. // Novosti sistematiki nizschikh rasteniy. 1979a. Vol. 16. P. 42–66 (in Russ.) [Бондарцева М. А., Эррера С. Афиллофоровые грибы Кубы. I. Сем. Polyporaceae Cda. // Новости сист. низш. раст. 1979a. Т. 16. С. 42–66].
Bondartseva M. A., Herrera S. Aphyllophorales of Cuba. II. Ganodermataceae Donk // Novosti sistematiki nizschikh rasteniy. 1979b. Vol. 16. P. 66–71 (in Russ.) [Бондарцева М. А., Эррера С. Афиллофоровые грибы Кубы. II. Сем. Ganodermataceae Donk // Новости сист. низш. раст. 1979. Т. 16. С. 66–71].
Bondartseva M. A. The genus Coriolopsis Murr. on Cuba // Mikol. Fitopatol. 1982. Vol. 15, N 5. P. 368–372 (in Russ.) [Бондарцева М. А., Эррера С. Род Coriolopsis Murr. на Кубе // Микология и фитпатология. 1982. Т. 15, вып. 5. С. 368–372].
Bondarzew von A., Singer R. Zur Systematik der Polyporaceae // Ann. Mycol. 1941. Vol. 39, N 1. P. 43–65.
Bourdot H., Galzin A. Hyménomycètes de France. Hetérobasidiés–Homobasidiés gymnocarpes. Sceaux, 1928 («1927»). 758 p.
Bresadola G. Omnia Bresadoliana Extracta in unum collecta (1881–1926). Gruppo Micologico G. Bresadola, Museo Tridentino di Scienze Naturali. Trento, 1979. 1055 p.
Bulliard P. Herbier de la France ou collection complete des plantes indigènes de ce royaume. Paris, 1780–1793. Pl. 1–603.
Cantino Ph. D., de Queiroz K. PhyloCode: A Phylogenetic Code of Biological Nomenclature. PhyloCode, 2003. 62 p.
Chen Y.-Y., Li H.-J., Cui B.-K. Molecular phylogeny and taxonomy of Fibroporia (Basidiomycota) in China // Phytotaxa. 2015. Vol. 203. P. 47–54.

Clémençon H. Cytology and Plectology of the Hymenomycetes / with assistance of V. Emmett and E. E. Emmett // Bibl. Mycol. 2004. Vol. 199. P. 1–488.
Clements F. E., Shear C. L. The genera of fungi. N. Y.: H. W. Wilson Co, 1931. 496 p.
Corner E. J. H. The fruitbody of Polystictus xanthopus Fr. // Ann. Bot. 1932a. Vol. 46. P. 71–101.
Corner E. J. H. A Fomes with two systems of hyphae // Trans. Brit. Mycol. Soc. 1932b. Vol. 17. P. 51–81.
Corner E. J. H. The construction of polypores — 1. Introduction: Polyporus sulphureus, P. squamosus, P. betulinus, and Polystictus microcyclus // Phytomorphology. 1953. Vol. 3. P. 152–167.
Corner E. J. H. A monograph of cantharelloid fungi. Oxford: Oxford Univ. Press., 1966. 255 p.
Corner E. J. H. The agaric genera Lentinus, Panus, and Pleurotus, with particular reference to Malasyan species // Beih. Nova Hedwigia. 1981. H. 69. P. 1–169.
Corner E. J. H. Ad Polyporaceas I. Amauroderma and Ganoderma // Beih. Nova Hedwigia. 1983. H. 75. P. 1–182.
Corner E. J. H. Ad Polyporaceas II and III. Polyporus, Mycobonia, and Echinochaete. Piptoporus, Buglossoporus, Laetiporus, Meripilus, and Bondarzewia // Beih. Nova Hedwigia. 1984. H. 78. P. 1–222.
Corner E. J. H. Ad Polyporaceas V. The genera Albatrellus, Boletopsis, Coriolopsis (dimitic), Cristelloporia, Diacanthodes, Elmerina, Fomitopsis (dimitic), Gloeoporus, Grifola, Hapalopilus, Heterobasidion, Hydnopolyporus, Ischnoderma, Loweporus, Parmastomyces, Perenniporia, Pyrofomes, Steccherinum, Trechispora, Truncospora and Tyromyces // Beih. Nova Hedwigia. 1989. H. 96. P. 1–218.
Corner E. J. H. Ad Polyporaceas VI. The genus Trametes // Beih. Nova Hedwigia. 1990. H. 97. 206 p.
Costa-Rezenda D. H. Taxonomia e filogenia preliminar de Amauroderma (Ganodermataceae, Polyporales). PhD thesis. Florianopolis, 2014. 122 p.
Cui D. Z., Zhao M., Yang H. I., Wang C. I., Dai H. B. Molecular phylogeny of Trametes and related genera based on internal transcribed spacer (ITS) and nearly completed mitochondrial subunit ribosomal DNA (mt SSU rDNA) sequences // African J. Biotechnology. 2011. Vol. 10. P. 18111–18121.
Dai Y.-C., Yuan H. S., Zhang X. Q., Wang Z. Systematic revisit of Sparsitubus (Basidiomycota, Aphyllophorales), an unusual cyphelloid polypore from China // Fungal Diversity 2007. Vol. 25. P. 37–47.
De A. B. Royoporus – a new genus for Favolus spathulatus // Mycotaxon. 1996. Vol. 60. P. 143–148.
Decock C., Ryvarden L. Perenniporiella gen. nov. segregated from Perenniporia, including a key to neotropical Perenniporia species with pileate basidiomes // Mycol. Res. 2003. Vol. 107, pt. 1. P. 93–103.
Donk M. A. Revision der Niederländischen Homobasidiomycetae-Aphyllophoraceae. II // Med. Bot. Mus. Herb. Rijksuiversiteit te Utrecht. 1933. N 9. S. 1–278.
Donk M. A. Notes on malesian fungi // Bull. Bot. Gdns. Buitenzorg. 1948. Vol. 17, N 4. P. 473–483.
Donk M. A. A conspectus of the families of Aphyllophorales // Persoonia. 1964. Vol. 3., pt. 2. P. 199–324.

Donk M. A. Notes on European polypores. I // Persoonia. 1966. Vol. 4, pt. 3. P. 337–343.
Donk M. A. On the typification of Hexagonia Pollini per Fr. // Taxon. 1969a. Vol. 18, N 6. P. 663–666.
Donk M. A. Notes on European Polypores. IV. On some species of Ganoderma // Proc. Koninkl. Nederl. Akad. Wet. Ser. C., Biol. a. med. sci. 1969b. Vol. 72, N 3. P. 272–282.
Donk M. A. Multiple convergence in the polyporaceous fungi // Evolution in the higher Basidiomycetes. Knoxville, 1971. P. 393–422.
Dounala-Meli C., Langer E. Ganoderma carocalcareus sp. nov., with crumbly-friable context parasite to saprobe on Anthocleista nobilis and its phylogenetic relationship in G. resinaceum group // Mycol. Progress. 2009. Vol. 8, issue 2. P. 145–155.
Ereshefsky M. The poverty of the Linnean hierarchy. A philosophical study of biological taxonomy. Cambridge: Univ. Press, 2004. 314 p.
Eriksson J., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 2: Aleurodiscus – Confertobasidium. Oslo: Fungiflora, 1973. P. 59–261.
Eriksson J., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 3: Coronicium – Hypoderma. Oslo: Fungiflora, 1975. P. 287–545.
Eriksson J., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 4: Hyphodermella – Mycoacia. Oslo: Fungiflora, 1976. P. 551–885.
Eriksson J., Hjorstam K., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 5: Mycoaciella – Phanerochaete. Oslo: Fungiflora, 1978. P. 891–1047.
Eriksson J., Hjorstam K., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 6: Phlebia – Sarcodontia. Oslo: Fungiflora, 1981. P. 1051–1276.
Eriksson J., Hjorstam K., Ryvarden L. The Corticiaceae of North Europe / With drawings by John Eriksson. Vol. 7: Schizopora – Suillosporium. Oslo: Fungiflora, 1984. P. 1281–1449.
Falck R. Die Lenzites-fäule des Coniferenholzes // A. Möller (ed.) Hausschwammforschungen, 3. Jena, 1909. S. 1–234.
Floudas D., Hibbett D. S. Revisiting the taxonomy of Phanerochaete (Polyporales, Basidiomycota) using a four gene dataset and extensive ITS sampling // Fungal Biol. 2015. Vol. 119. P. 679–719.
Fries E. M. Systema mycologicum, sistens fungorum ordines, genera et species, huc usque cognitas, quas ad normam methodi naturalis determinavit, disposuii atque descripsit. Vol. 1. Gryphiswald, 1821. 520 p.
Fries E. Systema mycologicum, sistens fungorum ordines, genera et species, huc usque cognitas, quas ad normam methodi naturalis determinavit, disposuii atque descripsit. Vol. 2. Gryphiswald, 1822. 274 p.
Fries E. Systema orbis vegetabilis. Pars I. Plantae homonemae. Lund: Typographia Academica, 1825. 374 p.
Fries E. M. Elenchus fungorum, sistens commentarium in Systema mycologicum, I. Gryphiswald, 1828. 238 p.

Fries E. M. Index alphabeticus generum, specierum et synonymorum in Eliae Fries Systemate Mycologico ejusque supplement «Elencho Fungorum» enumeratiorum. Gryphiswald, 1832. 202 p.
Fries E. M. Flora Scanica. Uppsala, 1835. 347 p.
Fries E. M. Genera Hymenomycetum quorum novam expositionem. Diss. Acad. Uppsala, 1836. 136 p.
Fries E. M. Epicrisis Systematis Mycologici seu Synopsis Hymenomycetum. Uppsala, 1836–1838. 610 p.
Fries E. M. Summa vegetabilium Scandinaviae, seu enumeratio systematica et critica plantarum quum cotyledoniarum, tum nemearum inter mare occidentale et album, eidorum et nordkap, hactenus lectarum, indicata simul distributione geographica. Uppsala: Typographia Academica, 1846–1849. 572 p.
Fries E. M. Novae symbolae mycologicae in peregrinis terris a botanicis danicis collectae I. Uppsala, 1851. P. 17–136.
Fries E. Hymenomycetes Europaei sive epicriseos systematis mycologici. Uppsala, 1874. 755 p.
Furtado J. S. Ganoderma colossum and the status of Tomophagus // Mycologia. 1965. Vol. 57. P. 979–926.
Gams W. Report of the Committee for Fungi and Lichens: New Series, 2 // Taxon. 1992. Vol. 41, N 1. P. 99–108.
Gams W., Kuyper W. Elias Fries as sanctionning authority for fungal names // Acta Univ. Upsal. Symb. Bot. Ups. 1995. Vol. 30. P. 25–32.
Garcia-Sandoval R., Wang Z., Binder M., Hibbett D. S. Molecular phylogenetics of the Gloeophyllales and relative ages of clades of Agaricomycotina producing a brown rot // Mycologia. 2001. Vol. 103, N 3. P. 510–524.
Gillet C. C. Les champignons (Fungi Hyménomycètes) qui croissent en France Paris, 1878. 828 p.
Ginns J. Mollicarpus gen. nov. (Polyporaceae) // Mycotaxon. 1984. Vol. 19. P. 71–80.
Haight J. E., Laursen G. A., Glaeser J., Taylor L. Phylogeny of Fomitopsis pinicola: a species complex // Mycologia. 2016. Vol. 108. Issue 5. P. 925–938.
Han M.-L., Chen Y.-Y., Shen L.-L., Song J., Vlasák J., Dai Y.-C., Cui B.-K. Taxonomy and phylogeny of the brown-rot fungi: Fomitopsis and its related genera // Fungal Diversity. 2016. Vol. 80, Issue 1. P. 343–373.
Hansen L. On the anatomy of the Danish species of Ganoderma // Bot. Tidsskr. 1958. Vol. 54. P. 333–352.
Hansen L., Knudsen H. (eds.) Nordic macromycetes. Vol. 3: heterobasidioid, aphyllophoroid and gastromycetoid Basidiomycetes. Copenhagen: Nordsvamp, 1997. 445 p.
Hennicke F., Cheikh-Ali Z., Liebisch T., Macia-Vicenté J. G., Bode H. B., Piepenbring M. Distinguinshing commercially grown Ganoderma lucidum and Ganoderma lingzhi from Europe and East Asia on the basis on morphology, molecular phylogeny, and triterpenic acid profiles // Phytochemistry. 2016. Vol. 127. P. 29–37.
Hibbett D. S., Donoghue M. J. Progress toward a phylogenetic classification of the Polyporaceae through parsimony analysis of mitochondrial ribosomal DNA sequences // Can. J. Bot. 1995. Vol. 73, suppl. 1: sect. E–H. P. 853–861.
Hibbett D. S., Thorn R. G. Basidiomycota: Homobasidiomycetes // The Mycota. VII. Part B. Berlin: Springer-Verlag, 2001. P. 121–168.

Hibbett D. S., Binder M., Bischoff J. F. et al. A higher-level phylogenetic classification of the Fungi // Mycol. Res. 2007. Vol. 111, N 5. P. 509–547.
Hibbett D. S., Bauer R., Binder M., Giachini A. J., Hosaka K., Justo A., Larsson E., Larsson K.-Y., Lawrey J. D., Miettinen O., Nagy L. G., Nilsson R. H., Weiss W., Thorn R. G. Agaricomycetes // The Mycota. Systematics and evolution. Part A. VII. 2nd ed. Berlin: Springer-Verlag, 2014. P. 373–430.
Hjorstam K., Larsson K.-H., Ryvarden L. The Corticiaceae of North Europe. Vol. 1: Introduction and keys. Oslo: Fungiflora, 1987. P. 3–30.
Hjorstam K., Larsson K.-H., Ryvarden L. The Corticiaceae of North Europe. Vol. 8: Phlebiella; Thanatephorus – Ypsilonidium. Oslo: Fungiflora, 1988. P. 1450–1631.
Hughes K. W., Petersen R. H., Lickey E. B. Using heterozygisity to estimate a percentage DNA sequence similarity for environmental species' delimitation across basidiomycete fungi // New Phytol. 2009. Vol. 182. P. 795–798.
Imazeki R. Studies on Ganoderma of Nippon // Bull. Nat. Sci. Mus. Tokyo. 1939. Vol. 1. P. 29–52.
Imazeki R. A contribution to the fungous flora of Dutch New Guinea // Bull. Government Forest Exper. St. Meguro. 1952. Vol. 57. P. 87–128.
Jülich W. Higher taxa of Basidiomycetes // Bibl. Mycol. 1982a. Vol. 85. P. 1–485.
Jülich W. Notes on some Basidiomycetes (Aphyllophorales and Heterobasidiomycetes) // Persoonia. 1982b. Vol. 11. P. 421–428.
Jung P. E., Lee H., Wu Sh.-H., Hattori T., Tomšovsky M., Rajchenberg M., Zhou M., Lim Y. W. Revision of the taxonomic status of the genus Gloeoporus (Polyporales, Basidiomycota) reveals two new species // Mycological Progress. 2018. Vol. 18. P. 855–863.
Justo A., Hibbett D. S. Phylogenetic classification of Trametes (Basidiomycota, Polyporales) based on a five-marker dataset // Taxon. 2011. Vol. 60, N 6. P. 1567–1583.
Justo A., Miettinen O., Floudas D., Ortiz-Santana B., Sjökvist E., Linder D., Nakasone K., Niemelä T., Larsson K.-H., Ryvarden L., Hibbett D.L. A revised family-level classification of the Polyporales (Basidiomycota) // Fungal Biol. 2017. Vol. 121, N 9. P. 798–824.
Kalchbrenner C. Fungi MacOwaniani // Grevillea. 1881. Vol. 10, N 54. P. 52–59.
Karatygin I. V. The problems of macro-taxonomy // Mikol. Fitopatol. 1999. Vol. 33, N 3. P. 150–165 (in Russ.) [Каратыгин И. В. Проблемы макросистематики грибов // Микология и фитопатология. 1999. Т. 33, вып. 3. С. 150–165].
Karpov S. A. The construction of protists cell. Saint Petersburg: Tessa, 2001. 384 p. (in Russ.) [Карпов С. А. Строение клетки протистов. СПб.: ТЕССА, 2001. 384 с.].
Karsten P. A. Symbolae ad mycologiam fennica // Medd. Soc. Fauna Fl. Fennica. 1880. Bd. 5. P. 37–40.
Karsten P. A. Enumeratio Boletinearum, Polyporearum, Hydnearum, Thelephorearum et Clavariarum Fennicarum systemate novo dispositarum // Rev. Mycol. 1881. Vol. 3, N 9. P. 16–19.
Karsten P. A. Kritisk öfversigt af Finlands Basidsvampar (Basidiomycetes; Gastero- and Hymenomycetes) // Bidr. Känned. Finl. Nat. Folk. 1889. H 48. P. 1–482.
Kim S. Y. Phylogenetic classification of the Polyporaceae based on ribosomal RNA gene analyses. PhD thesis. Seoul, 1999. 228 p.

Kim S. Y., Jung S. Y. Phylogenetic relationships of the Aphyllophorales inferred from sequence analysis of nuclear small subunit ribosomal DNA // J. Microbiol. 2000. Vol. 38, N 3. P. 122–131.
Kirk P. M., Cannon P. F., Minter D. W., Stalpers J. A. Ainsworth and Bisby's Dictionary of the Fungi. Tenth ed. Wallingford: CAB International, 2008. 771 p.
Knudsen H. Taxonomy of the basidiomycetes in Nordic Macromycetes // Acta Univ. Upsal. Symb. Bot. Ups. 1995. Vol. 30. P. 169–208.
Kotlaba F., Pouzar Z. A new genus of the polypores – Pachykytopsora gen. nov. (Nový rod chorošovitých hub, dubovnice – Pachykytospora gen. nov.) // Česká Mykol. 1963. Vol. 17, N 1. P. 27–34.
Kotlaba F., Pouzar Z. Staining spores of Homobasidiomycetes in cotton blue and its importance for taxonomy // Feddes Repertorium. 1964. Vol. 69. P. 131–142.
Kotlaba F., Pouzar Z. Donkioporia Kotl. et Pouz., a new genus for Poria megalopora (Pers.) Cooke // Persoonia. 1973. Vol. 7, pt 2. P. 213–216.
Kreisel H. Die Systematische Stellung der Gattung Polyporus // Z. Pilzk. 1960. Vol. 26, N 2/3. P. 44–47.
Kreisel H. Grundzüge eines natürlichen Systems der Pilze. Jena: Gustav Fischer, 1969. 245 S.
Krüger D., Gargas A. The basidiomycete genus Polyporus – an emendation based on phylogeny and putative secondary structure of ribosomal RNA molecules // Feddes Rep. Vol. 115. P. 530–546.
Kuntze O. Revisio generum plantarum vascullariom omnium atque cellularium multarum secundum. Pars III. L. 1898. 576 p.
Kühner R. Notes sur la Lentinus variabilis Schulz. // Bull. Soc. Mycol. France. 1928. Vol. 44. P. 331–335.
Larsen M. J. Gilbertson R. L. Dendrocorticium and Dentocorticium, gen. nov. (Aphyllophorales, Corticiaceae) as segregates from Laeticorticium // Norw. J. Bot. 1974. Vol. 21. P. 223–226.
Lázaro é Ibiza B. Los Poliporaceos de la flora española // Rev. Acad. Sci. Madrid. 1916. T. 14. P. 734–759.
Li H., Cui B. Taxonomy and phylogeny of the genus Megasporoporia and related genera // Mycologia. 2013. Vol. 195, N 2. P. 368–383.
Li H. J., Cui B. K., Dai Y. C. Taxonomy and multi-gene phylogeny of Datronia (Polyporales, Basidiomycota) // Persoonia. 2014a. Vol. 32. P. 170–182.
Li H. J., Li X. C., Vlasák J., Dai Y.-C. Neofomitella polyzonata gen. et sp. nov., and N. fumosipora and N. rhodophaea transferred from Fomitella // Mycotaxon. 2014b. Vol. 129, N 1. P. 7–20.
Li H., Cui B. Taxonomy and phylogeny of the genus Megasporoporia and related genera // Mycologia. 2013. Vol. 195, N 2. P. 368–383.
Li H. J., Cui B. K., Dai Y. C. Taxonomy and multi-gene phylogeny of Datronia (Polyporales, Basidiomycota) // Persoonia. 2014. Vol. 32. P. 170–182.
Li H. J., Li X. C., Vlasák J., Dai Y.-C. Neofomitella polyzonata gen. et sp. nov., and N. fumosipora and N. rhodophaea transferred from Fomitella // Mycotaxon. 2014. Vol. 129, N 1. P. 7–20.
Linnaeus C. Flora lapponica exhibens plantas per Lapponiam crescentes, secundum systema sexuale collectas in itinere 1732 institutio. Additis synonymis, et Locis natalibus omnium, descriptionibus et figuris rariorum, viribus medicatis et

oeconomicis plurimarum. Amstelaedam: S. Schouten, 1737. [35] + 372 + [16] p.; 12 tab.
Linnaeus C. Species plantarum, exhibentes plantas rite cognitas ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas. T. 2. Holm: L. Salm, 1753. 1200 p.
Liu Sh.-L., Nakasone K. K., Wu Sh.-H., Dai Yu.-C. Taxonomy and phylogeny of Lopharia s. s., Dendrodontia, Dentocorticium and Fuscocerrena (Basidiomycota, Polyporales) // MycoKeys. 2018. Vol. 32. P. 25–48.
Lloyd C. G. Mycological writings (1898–1925). Vols 1–7. Cincinnati, 1925. 1364 p.
Locquin M. Une nouvelle technique d'étude des périspores amyloïdes; application au développement des spores de Fayodia bisphaerigera (Lange) Kühner // Bull. Mens. Soc. Linn. Lyon. 1943. 12(8–9): 110–112; 122–128.
Locquin M. Une nouvelle définition des Agaricales // Bull. Jard. Bot. l'État à Bruxelles. 1957. Vol. 27, N 4. P. 557–561.
Locquin M. Entaxie, taxotropie, néguentropie, valeur et qualité en taxonomie généralisée // Ark'All Communications. 1981. T. 7. P. 45–86.
Locquin M. Mycologie générale et structurale. Paris: Masson, 1984. 552 p.
Lyubishchev A. A. The problems of form, systematics and evolution of organisms. Moscow: Nauka, 1982. 278 p. (in Russ.) [Любищев А. А. Проблемы формы, систематики и эволюции организмов. М.: Наука, 1982. 278 с.].
McNeill J., Barrie F. R., Buck W. R., Demoulin V., Greuter W., Hawksworth D. L., Herendeen P. S., Knapp S., Marhold J., Prado J., Prud'Homme van Reine W. F., Smith G. F., Wiersema J. H., Turland N. J. International Code of Nomenclature for algae, fungi and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011) // Regnum Vegetabile 2012. Vol. 154. P. 1–140.
Micheli P. A. Nova plantarum genera juxta Tournefortii methodum disposita. Florentia, 1729. 234 p.; 108 tab.
Miettinen O., Larsson K.-H. Sidera, a new genus in Hymenochaetales with poroid and hydnoid species // Mycol. Progress. 2011. Vol. 10, N 2. P. 131–141.
Miettinen O., Spirin V., Vlasák J., Rivoire B., Stenroos S., Hibbett D. Polypores and genus concepts in Phanerochaetaceae (Polyporales, Basidiomycota) // MycoKeys. 2016. Vol. 17. P. 1–46.
Moncalvo J.-M., Wang H. H., Hseu R. S. Phylogenetic relationships in Ganoderma inferred from the internal transcribed spacers and 25S ribosomal DNA sequences // Mycologia 1995a. Vol. 87. P. 223–238.
Moncalvo J.-M., Wang H. F., Hseu R. S. Gene phylogeny of the *Ganoderma lucidum* complex based on ribosomal DNA sequences: comparison with traditional taxonomic characters // Mycol. Res. 1995b. Vol. 99. P. 1489–1499.
Moncalvo J.-M., Ryvarden L. A nomenclatural study of the Ganodermataceae // Synopsis Fungorum. 1997. Vol. 11. P. 1–113.
Montagne C., Berkeley M. J. Decades of fungi. Dec. III–VII. Australian fungi // London J. Bot. 1844. Vol. 4. P. 42–72.
Motato-Vásquez V., Grassi E. Gugliotta A. M., Robledo G. L. Evolutionary relationships of Bresadolia (Basidiomycota, Polyporales) based on molecular and morphological evidence // Mycol. Progress. 2018. Vol. 17, Issue 9. P. 1031–1048.

Murrill W. A. A historical review of the genera of the Polyporaceae // J. Mycol. 1903. Vol. 9: P. 87–102.
Murrill W. A. The Polyporaceae of North America – IX // Bull. Torrey Bot. Cl. 1904. Vol. 31. P. 593–610.
Murrill W. A. The Polyporaceae of North America. XI. A synopsis of the brown pileate species // Bull. Torrey Bot. Club. 1905b. Vol. 32. P. 353–371.
Murrill W. A. Tomophagus for Dendrophagus // Torreya. 1905b. Vol. 5. P. 197.
Murrill W. A. North American Flora. IX. Polyporaceae, 1. N. Y., 1907. P. 1–71.
Murrill W. A. North American Flora. IX. Polyporaceae, 2. N. Y., 1908. P. 72–131.
Murrill W. A. Northern Polypores. 5. N. Y., 1914. 64 p.
Murrill W. A. Florida resupinate polypores // Mycologia. 1942. Vol. 34. P. 595–596.
Nagy L. G., Riley R., Tritt A., Adam C., Daum Ch., Floudas D., Sun H., Yadav J. S., Pangilinan J., Larsson K.-H., Matsuura K., Barry K., Labutti K., Kuo R., Ohm R. A., Bhattacharya S. S., Shirouzu T., Yoshinaga Y., Martin F. M., Grigoriev I., Hibbett D. Comparative genomics of early-diverging mushroom-forming fungi provides insights into the origins of lignocellulose decay capabilities // Mol. Biol. Evol. 2015. Vol. 334. P. 959–970.
Nikolaeva T. L. On the monographic study of some genera of Polyporaceae (Trametes, Daedalea, Lenzites) // Trudy Botanicheskogo AN SSSR. Ser. 2. Sporovye rasteniya. Issue 4. 1938. P. 377–341 (in Russ.) [Николаева Т. Л. К монографии некоторых родов из сем. Polyporaceae (Trametes, Daedalea, Lenzites) // Тр. Бот. инст. АН СССР. Сер. 2. Спор. раст. Вып. 4. 1938. С. 377–431].
Nilsson R. H., Kristiansson E., Ryberg M., Hallenberg N., Larsson K.-H. Intraspecific ITS variability in the kingdom Fungi as expressed in the international sequence databases and its implications for molecular species identification // Evolutionary Bioinformatics. 2008. Vol. 4. P. 193–201.
Núñez M., Ryvarden L. Polyporus (Basidiomycotina) and related genera // Synopsis Fungorum. 1995a. Vol. 10. P. 10–85.
Núñez M., Ryvarden L. Polypores, new to Japan 1. Species of Polyporus, with a note on P. hartmanni // Mycoscience. 1995b. Vol. 36. P. 61–65.
Núñez M., Ryvarden L. East Asian polypores 2. Polyporaceae s. lato // Synopsis Fungorum. 2001. Vol. 14. P. 170–522.
O'Brian H. E., Parrent J. L., Jackson J. A., Moncalvo J.-M., Vilgalys R. Fungal community analysis by large scale sequencing of environmental samples // Appl. Envir. Microbiol. 2008. Vol. 71. P. 5544–5550.
Ortiz-Santana D., Lindner D. L., Miettinen O., Justo A., Hibbett D. S. A phylogenetic overview of the antrodia clade (Basidiomycota, Polyporales) // Mycologia. 2013. Vol. 105, N 6. P. 1391–1411.
Palacio M., Robledo G. L., Reck M. A., Grassi E., Góes-Neto A., Drechsler-Santos E. R. (2017) Decrypting the Polyporus dictyopus complex: Recovery of Atroporus Ryvarden and segregation of Neodictyopus gen. nov. (Polyporales, Basidiomycota) // PLoS ONE. 2017. 12(10): e0186183. https://doi.org/10.1371/journal.pone.0186183.
Papp V., Dima B. New systematic position of Aurantiporus alborubescens (Meruliaceae, Basidiomycota), a threatened old-growth forest polypore // Mycol. Progress. 2018. Vol. 17, Issue 3. P. 319–332.

Parmasto E. H. Life forms of higher basidiomycetous fungi // Problems of the study on fungi and lichens: IV symposium of Baltc mycologists and lichenologists. Tartu, 1965. P. 64–68 (in Russ.) [Пармасто Э. Х. Жизненные формы высших базидиальных грибов // Проблемы изучения грибов и лишайников: IV симпоз. прибалт. микологов и лихенологов. Тарту, 1965. С. 64–68.].
Parmasto E. Conspectus systematis Corticiacearum. Tartu: Inst. Zool. Bot., 1968. 261 p.
Parmasto E. (Review) Jülich. Higher Taxa of Basidiomycetes. J. Cramer. Vaduz. 1981: 1–485 // Mikol. Fitopatol. 1983. Vol. 17, N 1. P. 73–74 (in Russ.) [Пармасто Э. W. Jülich. Higher Taxa of Basidiomycetes. J. Cramer. Vaduz. 1981: 1–485 // Микология и фитопатология. 1983. Т. 17, вып. 1. С. 73–74].
Patouillard N. Le genre Ganoderma // Bull. Soc. Mycol. France. 1889. Vol. 5. P. 64–80.
Patouillard N. T. Espèces critiques d'Hyménomycètes // Bull. Soc. Mycol. France. 1894. T. 10, N 2. P. 75–81.
Patouillard N. Essai taxonomique sur les familles et les genres des Hyménomycètes. Lons-le-Sannier, 1900. 184 p.
Paulet J.-J. Traité des champignons. Paris, 1812–1835. 629 pl.
Pegler D. N. The genus Lentinus: a world monograph // Kew Bulletin additional series X. L.: Her Majesty's stationary office, 1983. 281 p.
Pegler D. N., Young T. W. K. Basidiospore form in the British species of Ganoderma Karst. // Kew Bull. 1973. Vol. 28. P. 351–364.
Peintner U., Pöder R., Pümpel T. The iceman's fungi // Mycol. Res. 1998. Vol. 102. P. 1153–1162.
Persoon Ch. H. Neuer Versuch einer systematischen Eintheilung der Schwamme // Neues Mag. Bot. 1794. H. 1. S. 63–128.
Persoon Ch. H. Observationes mycologicae. Pars prima. Leipzig, 1796. 116 p.
Persoon Ch. H. Synopsis methodica fungorum. Gotting, 1801. 706 p.
Persoon Ch. H. Mycologia Europea seu completa omnium fungorum in variis europaeae regionibus detectorium enumeratio. I. Erlang: I. J. Palm, 1822. 355 p.; 12 tab.
Pilát A. Hymenomycetes novivel minus cogniti Cechoslovakiae II. // Acta Entomol. Musei Nationalis Pragae. 1953. Vol. 9. P. 1–109.
Pinto-Lopes J. Polyporaceae: Contribuiçao para a sua bio-taxonomia // Sep. Memórias Soc. Broteriana. 1952. Vol. 8. P. 1–195.
Pollini C. Horti et provinciae Veronensis plantae novae vel minus cognitae. Ticini, 1816. P. 35.
Psurtseva N. V., Zmitrovich I. V., Malysheva V. F. Taxonomy and developmental morphology of Rogersiomyces malaysianus comb. nov. (Cantharellales, Agaricomycetes) // Botany. 2016. Vol. 94. P. 579–592.
Quélet L. Enchiridion Fungorum in Europa media et praesertim in Gallia Vigentium. Lutetiae, 1888. P. 1–352.
Rajchenberg M. A taxonomic study of the Subantarctic Piptoporus (Polyporaceae, Basidiomycetes) II // Nordic J. Bot. 1995. Vol. 15, N 1. P. 105–119.
Rajchenberg M., Gorjón S. P., Pildain M. B. The phylogenetic disposition of Antrodia s. l. (Polyporales, Basidiomycota) from Patagonia Argentina // Aust. Syst. Bot. 2011. Vol. 24. P. 111–120.

Rea C. British Basidiomycetae. A handbook to the larger British fungi. Cambridge: Univ. Press, 1922. 799 p.
Redhead S. A., Ginns J. H. A reappraisal of agaric genera associated with brown rots of wood // Trans. Mycol. Soc. Japan. 1985. Vol. 26, N 3. P. 349–382.
Reichenbach H. G. L. Conspectus regni vegetabilis per gradus naturales evoluti. Pars prima. Inest clavis herbariorum hortorumque seu dispositio regni vegetabilis secundum classes, ordines, formationes, familias, tribus, genera et subgenera, adiecto indice locupletissimo generum, subgenerum, synonymorum et nomium francogallicorum. Lipsiae, 1828. 294 p.
Reid D. A. New or interesting records of Australasian Basidiomycetes: V // Kew Bull. 1963. Vol. 17, N 2. P. 267–308.
Reid D. A. A reappraisal of type and authentic specimens of Basidiomycetes in the van der Byl herbarium, Stellenbosch // South African J. Bot. 1973. Vol. 39, N 2. P. 141–178.
Ryvarden L. The genus Datronia in Fennoscandia // Svensk bot. Tidskr. 1964. Vol. 52. P. 501–511.
Ryvarden L. A critical checklist of the Polyporaceae in tropical East Africa // Norw. J. Bot. 1972. Vol. 19. P. 229–238.
Ryvarden L. New genera in the Polyporaceae // Norw. J. Bot. 1973. Vol. 20, N 1. P. 1–5.
Ryvarden L. Type studies in the Polyporaceae 3. Species described by Lars Romell // Svensk Bot. Tidskr. 1974. Bd 68. P. 273–284.
Ryvarden L. Studies in the Aphyllophorales of Africa. 2. Some new species from East Africa // Norw. J. Bot. 1975. Vol. 22. P. 25–34.
Ryvarden L. Type studies in the Polyporaceae. 6. Species described by W. J. Hooker // Norw. J. Bot. 1975. Vol. 22. P. 285–287.
Ryvarden L. Studies in Aphyllophorales of Africa 3. Three new polypores from Zaire // Bull. Jard. Bot. Nat. Belg. 1975. Vol. 45. P. 197–203.
Ryvarden L. Type studies in the Polyporaceae 4. Species described by J. F. Klotzsch // Mem. N. Y. Bot. Gard. 1976a. Vol. 28, N 1. P. 199–207.
Ryvarden L. Type studies in the Polyporaceae, 7. Species described by J. M. Berkeley from 1836 to 1843 // Kew Bull. 1976b. Vol. 31, N 1. P. 81–103.
Ryvarden L. Type studies in the Polyporaceae 8. Species described by E. Rostrup // Saertryk Bot. Tidsskr. 1976c. Vol. 71. P. 100–102.
Ryvarden L. The Polyporaceae of North Europe. Vol. 1: Albatrellus–Incrustoporia. Oslo: Fungiflora, 1976d. P. 1–214.
Ryvarden L. Type studies in the Polyporaceae. 10. Species described by J. M. Berkeley, either alone or with other authors, from 1844 to 1855 // Norw. J. Bot. 1977a. Bd 24. P. 213–230.
Ryvarden L. Some wood-inhabiting aphyllophoraceous fungi from Nepal // Khumb. Himal. 1977b. Vol. 6, N 3. P. 379–386.
Ryvarden L. Some wood-inhabiting aphyllophoraceous fungi from Nepal // Khumb. Himal. 1977b. Vol. 6, N 3. P. 379–386.
Ryvarden L. The Polyporaceae of North Europe. Vol. 2. Oslo: Fungiflora, 1978. P. 215–507.
Ryvarden L. Fuscocerrena, a new genus in the Polyporaceae // Trans. British Mycol. Soc. 1982. Vol. 79, N 2. P. 279–281.

Ryvarden L. Type studies in the Polyporaceae. 16. Species described by J. M. Berkeley, either alone or with other mycologists from 1856 to 1886 // Mycotaxon. 1984. Vol. 20, N 2. P. 329–363.
Ryvarden L. Genera of polypores. Nomenclature and taxonomy // Synopsis Fung. 5. Oslo: Fungiflora, 1991. 363 p.
Ryvarden L. Neotropical polypores. Pt 1. Introduction, Ganodermataceae and Hymenochaetaceae // Synopsis Fung. 19. Oslo: Fungiflora, 2004. P. 1–229.
Ryvarden L. The genus Inonotus, a synopsis // Synopsis Fung. 2005. Vol. 21. P. 1–149.
Ryvarden L. Neotropical polypores. Pt 2. Polyporaceae. Abundisporus–Nigroporus // Synopsis Fung. 34. Oslo: Fungiflora, 2015. P. 233–443.
Ryvarden L. Neotropical polypores. Pt 3. Polyporaceae. Obba–Wrightoporia // Synopsis Fung. 36. Oslo: Fungiflora, 2016. P. 447–613.
Ryvarden L., Johansen J. A preliminary polypore flora of East Africa. Oslo: Fungiflora, 1980. 636 p.
Ryvarden L., Wright J. E., Rajchenberg M. Megasporoporia, a new genus of resupinate polypores. Mycotaxon. 1982. Vol. 16, N 1. P. 172–182.
Ryvarden L., Gilbertson R. L. European polypores. Part 1. Abortiporus–Lindtneria // Synopsis Fung. 6. Oslo: Fungiflora, 1993. P. 1–387.
Ryvarden L., Gilbertson R. L. European polypores. Part 2. Meripilus–Tyromyces // Synopsis Fung. 7. Oslo: Fungiflora, 1994. P. 388–743.
Ryvarden L., Stokland J., Larsson K.-H. A critical checklist of corticoid and poroid fungi of Norway // Synopsis Fung. 2003. Vol. 17. P. 1–109.
Ryvarden L., Melo I. Poroid fungi of Europe / with photos by T. Niemelä and drawings by I. Melo and T. Niemelä // Synopsis Fung. 31. Oslo: Fungiflora, 2014. 455 p.
Ryvarden L., Melo I. Poroid fungi of Europe / with photos by T. Niemelä and drawings by I. Melo and T. Niemelä // Synopsis Fung. 37. Oslo: Fungiflora, 2017. 430 p.
Saccardo P. A. (cum J. Cuboni et V. Manici) Sylloge fungorum: omnium hucusque cognitorum. Vol. VI: sylloge Hymenomycetum 2: Polyporeae, Hydneae, Thelephoreae, Clavarieae, Tremellineae. M. W., 1888. 928 p.
Sarkar A. Developmental anatomy and differentiation of tissue systems of Ganoderma lucidum (Leyss ex Fries) Karst. // Phyton. 1959. Vol. 13. P. 89–104.
Schäffer J. Ch. Fungorum qui in Bavaria et Palatinatu circa Ratisbonam nascuntur Icones. T. 4. Palm, 1774. 136 p.
Schroeter J. Die Pilze Schlesiens // F. Cohn. Kryptogamen-Flora van Schlesien, III. Breslau, 1888. S. 492.
Seelan J. S., Justo A., Nagy L. G., Grand E. A., Redhead S. A., Hibbett D. Phylogenetic relationships and morphological evolution in Lentinus, Polyporellus and Neofavolus, emphasizing southeastern Asian taxa // Mycologia. 2015. Vol. 107. P. 460–474.
Shear C. L. Mycological notes and new species // Bull. Torrey Bot. Club. 1902. Vol. 29. P. 449–457.
Shear C. L. Life histories and undescribed genera and species of fungi // Mycologia. 1923. Vol. 15, N 3. P. 120–131.
Singer R. Notes on taxonomy and nomenclature of the polypores // Mycologia. 1944. Vol. 36. P. 65–69.

Singer R. The Agaricales (Mushrooms) in modern taxonomy // Lilloa. 1951 («1949»). Vol. 22. 832 p.
Singer R. Fungi of Northern Brazil // Univ. Recife Inst. Micol. Publ. 1961. N 304. 26 p.
Singer R. The Agaricales in modern taxonomy. 2nd ed. Weinheim, 1962. 915 p.; 73 pl.
Singer R. The Agaricales in modern taxonomy. 3rd ed. Vaduz: J. Cramer, 1975. 912 p.; 81 pl.
Singer R. The Agaricales in modern taxonomy. 4th ed. Koenigstein: Koeltz Scientific Books, 1986. 981 p.
Smith B. J., Sivasithamparam K. Morphological studies of Ganoderma (Ganodermataceae) from the Australian and Pacific regions // Austral. Syst. Bot. 2003. Vol. 16. P. 487–503.
Snell W. H. Notes on boletes, V // Mycologia. 1936. Vol. 28. P. 463–475.
Sommerfelt S. C. Supplementum florae lapponicae. Christiania, 1826. 333 p.
Song J., Cui B.-K. Phylogeny, divergence time and historical biogeography of Laetiporus (Basidiomycota, Polyporales) // BMC Evolutionary Biology. 2017. Vol. 17. P. 102–114.
Sotome K., Hattori T., To-anun C., Salleh B., Kakishima M. Phylogenetic relationships of Polyporus and morphologically allied genera // Mycologia. 2008. Vol. 100. P. 603–615.
Sotome K., Hattori T., Ota Yu. Taxonomic study on a threatened polypore, Polyporus pseudobetulinus, and a morphologically similar species, P. subvarius // Mycoscience. 2011. Vol. 52. P. 319–326.
Sotome K., Akagi Y., Lee S. S., Ishikawa N. K., Hattori T. Taxonomic study of Favolus and Neofavolus gen. nov. segregated from Polyporus (Basidiomycota, Polyporales) // Fungal Div. 2013. Vol. 58. P. 245–266.
Spegazzini C. Fungi Guaranitici. Pugillus 1 // Anales de la Sociedad Científica Argentina. 1883. Vol. 16, N 6. P. 272–284.
Spirin W. A., Zmitrovich I. V., Malysheva V. F. Notes on Perenniporiaceae. St. Petersburg: All-Russian Institute of Plant protection, 2005. 67 p.
Spirin V., Vlasák J., Niemelä T. What is Antrodia sensu stricto? // Mycologia. 2013. Vol. 105, N 6. P. 1555–1576.
Steyaert R. L. Note on the nomenclature of fungi and incidently on Ganoderma lucidum // Taxon. 1961a. Vol. 10. P. 251–252.
Steyaert R. L. Genus Ganoderma (Polyporaceae). Taxa nova. I // Bull. Jard. Bot. l'État à Bruxelles. 1961b. Vol. 31. P. 69–83.
Steyaert R. L. Considération générale sur le genre Ganoderma et plus spécialement sur les espèses européenes // Bull. Soc. Roy. Bot. Belg. 1967. Vol. 100. P. 189–211.
Steyaert R. L. Species of Ganoderma and related genera mainly of the Bogor and Leiden herbaria // Persoonia. 1972. Vol. 7. P. 55–118.
Swann E. C., Taylor J. W. Higher taxa of Basidiomycetes: An 18S rRNA gene perspective // Mycologia. 1993. Vol. 85, N 6. P. 923–936.
Taylor D. L., McCormick M. K. Internal transcribed spacer primers and sequences for improved characterization of basidiomycetous orchid mycorrhizas // New Phytol. 2008. Vol. 177. P. 1020–1033.

Tedersoo L., Sanchez-Ramirez S., Kõljalg U., Bahram M., Döring M., Schigel D., May T., Ryberg M. Abarenkov L. High-level classification of the fungi and a tool for evolutionary ecological analysis // Fungal Diversity. 2018. Vol. 90, Issue 1. P. 135–159.
Teixeira A. R. The taxonomy of the Polyporaceae // Biol. Rev. 1962. Vol. 37. P. 51–81.
Téllez-Téllez M., Villegas E., Rodriguez A., Acosta-Urdapilleta M. L., O'Donovan A., Diaz-Godinez G. Mycosphere Essay 11: Fungi of Pycnoporus: morphological and molecular identification, worldwide distribution and biotechnological potential // Mycosphere. 2016. Vol. 7, Issue 10. P. 1500–1525.
Tomšovský M. Delimitation of an almost forgotten species Spongipellis litschaueri (Polyporales, Basidiomycota) and its taxonomic position within the genus // Mycol. Progress. 2012. Vol. 11, Issue 2. P. 415–424.
Tomšovský M. Sarcodontia crocea (Basidiomycota, Polyporales) is unrelated to Spongipellis // Phytotaxa. 206. Vol. 288, N 2. P. 197–200.
Tomšovský M., Homolka L. Mating tests among geographically separated collections of the Trametes versicolor (Fr.) Pilát (Basidiomycetes, Polyporales) group // Nova Hedwigia. 2004. Vol. 79, N 3–4. P. 425–431.
Tomšovský M., Menkis A., Vasaitis R. Phylogenetic relationships in European Ceriporiopsis species inferred from nuclear and mitochondrial ribosomal DNA sequences // Fungal Biol. 2010. Vol. 114, N 4. P. 350–358.
Torrend C. Les Polyporaceés du Brésil: Polyporaceés stipitées // Brotéria. 1920. Vol. 18, N 1. P. 121–142.
Walker J. F., Miller O. K., Horton J. L. Seasonal dynamics of ectomycorrhizal fungal assemblages on oak seedlings in the southeastern Appalachian Mountains // Mycorrhiza. 2009. Vol. 19. P. 123–132.
Welti S., Moreau P. A., Favel A., Courtecuisse R., Haon M., Navarro D., Taussac S., Lesage-Meessen L. Molecular phylogeny of Trametes and related genera, and description of a new genus Leiotrametes // Fungal Diversity. 2012. Vol. 55. P. 47–64.
Westphalen M. C., Rajchenberg M., Tomšovský M., Gugliotta A. M. A re-evaluation of Neotropical Junghuhnia s. lat. (Polyporales, Basidiomycota) based on morphological and multigene analyses // Persoonia. 2018. Vol. 41. P. 130–141.
Winter G. Pilze // Rabenhorst's Krypt.-Fl. Deutschl, Ősterreich und Schweiz. Zweite Aufl. Abt. 1. Leipzig, 1884. 56 S.
Woese C. R., Fox G. E. Phylogenetic structure of the prokaryotic domain: The primary kingdoms // Proc. Nat. Acad. Sci. U.S.A. 1977. Vol. 74, N 1. 5088–5090.
Wright J. E. The genus Phaeotrametes // Mycologia. 1966. Vol. 58. P. 529–540.
Wright J. E. Loweporus, a new genus of pore fungi // Mem. N. Y. Bot. Gdn. 1976. Vol. 28, N 1. P. 225–231.
Wu F., Yuan Y., Chen J. J., He S. H. Luteoporia albomarginata gen. et sp. nov. (Meruliaceae, Basidiomycota) from tropical China // Phytotaxa 2016. Vol. 263, N 1. P. 31–41.
Wu Z.-Q., Xu T.-M., Shen Sh., Liu X.-F., Luo K.-Y., Zhao Ch.-L. Elaphroporia ailaoshanensis gen. et sp. nov. in Polyporales (Basidiomycota) // MycoKeys. 2018. Vol. 29. P. 81–95.
Xu L. W., Zhao J. D. A new genus of Polyporaceae from China // Acta Microbiologica Sinica. 1980. Vol. 20. P. 236–239.

Yuan H.-Sh., Qin W.-M. Multiple genes phylogeny and morphological characters reveal Dextrinoporus aquaticus gen. et sp. nov. (Polyporales, Basidiomycota) from Southern China // Mycol. Progress. 2018. Vol. 17, Issue 6. P. 773–780.

Zhao C. L., Cui B. K., Steffen K. T. Yuchengia, a new polypore genus segregated from Perenniporia (Polyporales, Basidiomycota) based on morphological and molecular characters. Nord. J. Bot. 2013a. Vol. 31. P. 331–338.

Zhao C. L., Cui B. K., Dai Y.-C. New species and phylogeny of Perenniporia based on morphological and molecular characters // Fungal Divers. 2013b Vol. 58. P. 47–60.

Zhao C. L., He K. S., Wanghe K.-Y., Cui B.-K., Dai Y.-C. Flammeopellis bambusicola gen. et. sp. nov. (Polyporales, Basidiomycota) evidenced by morphological characters and phylogenetic analysis // Mycol. Progress. 2014. Vol. 13. P. 771–780.

Zhao Ch.-L., Cui B.-K., Song J., Dai Y.-Ch. Fragiliporiaceae, a new family of Polyporales (Basidiomycota) // Fungal Diversity. 2015. Vol. 70. P. 115–126.

Zhao C. L., Wu F., Dai Y.-C. Leifiporia rhizomorpha gen. et sp. nov. and L. eucalypti comb. nov. in Polyporaceae (Basidiomycota) // Mycol. Progress. 2016. Vol. 15. P. 799–809.

Zhao C.-L., Wu Z.-Q. Ceriporiopsis kunmingensis sp. nov. (Polyporales, Basidiomycota) evidenced by morphological characters and phylogenetic analysis // Mycol. Progress. 2017. Vol. 16. P. 93–100.

Zhou L.-W., Cao Y., Wu Sh.-H., Vlasák J., Li D.-W., Li M. J., Dai Y.-C. Global diversity of the Ganoderma lucidum complex (Ganodermataceae, Polyporales) inferred from morphology and multilocus phylogeny // Phytochemistry. 2015. Vol. 115. P. 7–15.

Zhou J.-L., Zhu L., Chen H., Cui B.-K. Taxonomy and phylogeny of Polyporus group Melanopus (Polyporales, Basidiomycota) from China // Plos One. 2016. Vol. 3. https://doi.org/10.1371/journal.pone.0159495.

Zmitrovich I. V. The Cornerian «Clavaria-hypothesis» and modern phylem of hymenomycetes // I Syezd mikologov Rossii. Tezisy dokladov. Moskva, 2002. P. 40 (in Russ.) [Змитрович И. В. «Clavaria-гипотеза» Корнера и современная филема гименомицетов // I Съезд Микологов России. Тезисы докладов. М., 2002. С. 40.].

Zmitrovich I. V. Phylogenesis and adaptatiogenesis of polyporaceous fungi (family Polyporaceae s. str.). Dr. Sci Thesis. Saint Petersburg: Komarov Botanical Institute, 2017. 364 p. (in Russ.) [Змитрович И. В. Филогенез и адаптациогенез полипоровых грибов (семейство Polyporaceae s. str.). СПб.: Ботанический институт им. В. Л. Комарова, 2017. 364 с.].

Zmitrovich I. V., Malysheva V. F., Spirin W. A. A new morphological arrangement of the Polyporales. I. Phanerochaetineae // Mycena. 2006. Vol. 6. P. 4–56.

Zmitrovich I. V., Wasser S. P., Ezhov O. N. A survey of species of genus Trametes Fr. (higher basidiomycetes) with estimation of their medicinal source potential // International Journal of medicinal Mushrooms. 2012. Vol. 14, N 3. P. 307–319.

Zmitrovich I. V., Malysheva V. F. Towards a phylogeny of Trametes alliance (Basidiomycota, Polyporales) // Mikol Fitopatol. 2013. Vol. 47, N 6. P. 358–380.

Zmitrovich I. V., Malysheva V. F. Nomenclatural novelties // Index Fungorum. 2014. no. 180. (Effectively published 24.07.2014).

Zmitrovich I. V., Malysheva V. F. Studies on Oxyporus. I. Segregation of Emmia and general topology of phylogenetic tree // Mikol. Fitopatol. 2014. Vol. 48, N 3. P. 161–171.
Zmitrovich I. V., Ezhov O. N., Khimich Yu. R. Niemelaea, a new genus of Meruliaceae (Basidiomycota) // Agriculture and Forestry. Podgorica. 2015. Vol. 61, Issue 4. P. 23–31.
Zmitrovich I. V., Kovalenko A. E. Lentinoid and polyporoid fungi, two generic conglomerates containing important medicinal mushrooms in molecular perspective // Int. J. Medicinal Mushrooms. 2016. Vol. 18, N 1. P. 23–38.
Zmitrovich I. V., Volobuev S. V., Parmasto I. H., Bondartseva M. A. Re-habilitation of Cerioporus (Polyporus) rangiferinus, a sib of Cerioporus squamosus // Nova Hedwigia. 2017. Vol. 105, issue 3–4. P. 313–328.

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Malysheva E. F. The genus Pluteus Fr. in Samara Region // Folia Cryptogamica Petropolitana. 2004. No 2. P. 3–56 (in Russ.). [Малышева Е. Ф. Род Pluteus Fr. в Самарской области. / под ред. С. П. Вассера. СПб.: Изд-во ВИЗР, 2004. 56 с. — Folia Cryptogamica Petropolitana. 2004. No 2].

Spirin W. A., Zmitrovich I. V., Malysheva V. F. Notes on Perenniporiaceae // Folia Cryptogamica Petropolitana. 2005. No 3. P. 3–67.

Marina L. V. Agaricoid basidiomycetes of the Visim reserve (Middle Urals) // Folia Cryptogamica Petropolitana. 2006. No 4. P. 3–102 (in Russ.) [Марина Л. В. Агарикоидные базидиомицеты Висимского заповедника (Средний Урал). / под ред. О. В. Морозовой. СПб.: Изд-во ВИЗР, 2006. 102 с. — Folia Cryptogamica Petropolitana. 2006. No 4].

Zmitrovich I. V. Epimorphology and tectomorphology of higher fungi // Folia Cryptogamica Petropolitana. 2010. No 5. P. 3–272 (in Russ.). [Змитрович И. В. Эпиморфология и тектоморфология высших грибов / под ред. С. П. Вассера. СПб., 2010. 272 с. — Folia Cryptogamica Petropolitana. 2010. No 5].

Zmitrovich I. V. Conspectus systematis Polyporacearum v. 1.0 // Folia Cryptogamica Petropolitana. 2018. No 6. P. 1–145.

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