



# The genera of Hyphomycetes – 2011 update

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## Key words

anamorphic fungi  
DNA barcoding  
moulds  
new genera  
new species

**Abstract** This supplement to the taxonomic monograph *The Genera of Hyphomycetes* summarises information on 23 accepted new genera and c. 160 species described in 2011. These include three dematiaceous genera (*Funbolia*, *Noosia*, *Pyrigemmula*, all related to *Dothideomycetes*), a bulbil-producing genus, *Spiroplana* (*Pleosporales*), and two endophytic genera, the sterile *Periglandula* (*Clavicipitaceae*), and the hyaline, sympodial *Micronematobotrys* (*Pyronemataceae*). Slow-growing, morphologically-reduced, darkly pigmented fungi continue to be the source of new taxa, including the new genus *Atramixtia* (*Dothioraceae*). Eight new genera of darkly pigmented chlamydospore-like anamorphs were described from marine or subtidal environments (*Glomerulispora*, *Halozoön*, *Hiogispora*, *Matsusporium*, *Moheitospora*, *Moleospora*, *Moromyces*), mostly associated with subclades of the *Lulworthiales*. Several genera that are morphologically similar to but phylogenetically distinct from genera of the *Capnodiales* (*Pseudopassalora*, *Scleroramularia*) were introduced, as well as segregates from the classical concepts of *Alternaria* (*Sinomyces*), *Chalara* and *Phialophora* (*Brachyalara*, *Infundichalara*, *Lasiadelphia*), and *Paecilomyces* (*Purpureocillium* for the former *Paecilomyces lilacinus* complex). In addition, in anticipation of the new nomenclatural rules, newly configured formerly-teleomorph genera were proposed as segregates from classical hyphomycete genera in the *Hypocreales*, namely *Acremonium* (*Cosmospora*), *Fusarium* (*Cyanonectria*, *Dialonectria*, *Geejayessia*, *Macroconia*, *Stylonectria*), and *Volutella* (*Pseudonectria*) and the *Trichocomaceae*, *Eurotiales*, *Penicillium* (*Talaromyces* for the former *Penicillium* subg. *Biverticillium*). Standardized generic mini-diagnoses are provided for the accepted new genera, along with details of distribution, substrates, numbers of new species and phylogenetic affinities within the *Dikarya*. GenBank accession numbers for ITS DNA-barcodes are provided where available. New information on generic concepts of previously recognised genera, phylogenetic relationships, and corrections of factual errors are also included. Only two newly described genera, *Fecundostilbum* and *Utrechtiiana*, seem to be synonyms of previously described genera.

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## INTRODUCTION

In April 2011, our book 'The Genera of Hyphomycetes' was published (Seifert et al. 2011). This was the first comprehensive overview of hyphomycete genera in more than 30 years, providing bibliographic data, illustrations, standardised generic diagnoses, synonymies, distribution and substrate information, teleomorph and synanamorph connections, and DNA barcode designations for more than 1 400 accepted genera. This paper provides updates to the 'Dictionary' section of this book, covering information published in the approximately 12 mo since the text was completed.

Changes to what will now be called the International Code of Nomenclature of Algae, Fungi and Plants will have a dramatic effect on the names used for hyphomycetes. The Article 59 debate, which had been brewing in various forms since the publication of 'The Whole Fungus' (Kendrick 1979, see also Seifert 2003) led to conflicting opinions among mycologists (Hawksworth et al. 2011, Gams et al. 2011). In August 2011, the International Botanical Congress voted for significant changes to the rules for fungal nomenclature (see Hawksworth 2011, Norvell 2011). The final Melbourne Code has not yet been published, and in this update we have just made minor alterations to our approach to naming hyphomycete genera, reflecting only changes already proposed in the cited literature. We will await the final wording, and the results of discussions at

conferences during 2012, before implementing major changes to the Dictionary as a whole.

These changes to nomenclature notwithstanding, 2011 was a relatively typical year in hyphomycete taxonomy. Twenty-five new genera were described, 23 of them accepted here. This is a similar rate to the period between 1980 and 2010, which saw the description of about 600 new genera. Several patterns are worth noting. Plant endophytes (Sun & Guo 2010, Steiner et al. 2011), and slow-growing, darkly pigmented fungi from arid substrates such as rocks and tree bark (Tsuneda et al. 2011), continue to be a source of new fungal biodiversity. Some of these fungi are essentially sterile or have very reduced sporulating micromorphology, but the provision of formal names is justified by their phylogenetic distinctiveness. Phylogenetic interpretation of chlamydospore-like morphs of marine and subtidal fungi led to the description of eight new, and the redefinition of three previously existing hyphomycete genera (Abdel-Wahab et al. 2010); it remains to be seen whether these genera will be useful in a single-name taxonomic system. The reconsideration of large, economically important genera in the *Dothideomycetes* (anamorphs similar to but phylogenetically distinct from those of *Capnodiales*, Crous et al. 2011), *Nectriaceae* (*Fusarium*, Gräfenhan et al. 2011, Schroers et al. 2011), *Pleosporaceae* (*Alternaria* complex, Wang et al. 2011), *Trichocomaceae* (*Paecilomyces*, Luangsa-ard et al. 2011; *Penicillium*, Samson et al. 2011), and morphologically reduced, phialidic hyphomycetes (*Chalara* and *Phialophora* sensu lato, Réblová & Gams 2011), resulted in the recognition of either new or redefined and resurrected genera.

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Of particular note in 2011, the continued epidemic of the North American bat *Myotis lucifugus* caused by the hyphomycete *Geomyces destructans* (Lorch et al. 2011) causes increasingly concern about the potential extinction of this animal host. The number of *Aspergillus* species known to produce the regulated mycotoxin aflatoxin (Varga et al. 2011) continues to increase. The continued importance of hyphomycetes as agents of plant disease, and diseases of humans, is illustrated by many new discoveries presented in the bibliography below.

We are pleased to note that the descriptions of virtually all new or newly segregated genera considered here were accompanied by supporting molecular phylogenetic data, generally ITS (internal transcribed spacer) barcodes or LSU (large subunit) sequences. New data for only four previously described genera, originally described without molecular data, were provided to allow these taxa to be placed in their phylogenetic context. We expect that this activity will accelerate with the official designation of the ITS as the fungal barcode (Schoch & Seifert 2011), which we hope will stimulate mycologists to recognise the value of publishing such data. Unfortunately, about 30 % of new species were described without molecular data of any kind; this seems to be a particularly serious problem in studies of dematiaceous hyphomycetes. We encourage hyphomycetologists to routinely include at least ITS barcodes in the description of new species. Even if no molecular context exists for some of these genera, the framework can be built one species at a time by the community of hyphomycete taxonomists, to the benefit of all.

This, and future, updates to 'The Genera of Hyphomycetes' will also appear on the website [www.generaofhyphomycetes.org](http://www.generaofhyphomycetes.org).

## THE UPDATE

The format of entries, abbreviations and conventions are explained by Seifert et al. (2011). The meanings of most of the abbreviations are self-evident, but the definitions of some warrant repetition here:

CDM: conidioma type, generally none, sporodochium or synnemata.

SET: setae accompanying conidiomata or conidiophores.

CPH: conidiophores.

CGC: conidiogenous cells.

CDA: conidia, in this update presented as amero (aseptate), didymo (1-septate), phragmo (transversely septate), dictyo (muriform), or bulbils.

A-anamorphs and B-anamorphs are described for genera with morphologically distinct synanamorphs.

### *Acremonium* Link 1809 : Fr.

Refs. Gräfenhan et al., *Stud. Mycol.* 68: 79–113. 2011 (revis. as *Cosmospora*, multigene). — Summerbell et al., *Stud. Mycol.* 68: 139–162. 2011 (revis., LSU, SSU). — Kiyuna et al., *Mycoscience* 52: 1–17. 2011 (n. sp., n. comb., would go to *Gliosmastix* sensu Summerbell et al. 2011). — Weisenborn et al., *Nova Hedwigia* 90: 457–468. 2010 (n. sp., similar to *Pseudogliomastix* but belonging to *Plectosphaerellaceae*, rDNA).

### *Acrodactys* M.B. Ellis 1971

Ref. G.Z. Zhao et al., *Mycol. Progr.* 10: 67–83. 2011 (n. sp., spp. from China).

### *Alternaria* Nees 1816 : Fr.

Refs. Gannibal, *Mycotaxon* 114: 109–114. 2011, '2010' (n. spp.). — Tóth et al., *Mycologia* 103: 94–100. 2011 (n. sp.). — Taralova et al., *Fungal Biol.* 115: 1163–1173. 2011 (modelling of conidiation apparatus).

### *Arthrotrichys* Corda 1839

Ref. X.M. Niu & K.Q. Zhang, *Mycology (China)* 2: 59–78. 2011 (review *A. oligospora*).

### *Aspergillus* Micheli ex Link 1809 : Fr.

Refs. Horn et al., *Mycologia* 103: 174–183. 2011 (teleomorph *A. nomius*). — Varga et al., *Stud. Mycol.* 69: 1–18. 2011 (revis., n. spp., sect. *Nigri*, multigene). — Meijer et al., *Stud. Mycol.* 69: 19–30. 2011 (physiol. sect. *Nigri*). — Battaglia et al., *Stud. Mycol.* 69: 31–38. 2011 (physiol. sect. *Nigri*). — Samson et al., *Stud. Mycol.* 69: 39–56. 2011 (n. spp., sect. *Terrei*, multigene). — Varga et al., *Stud. Mycol.* 69: 57–80. 2011 (revis., n. spp., sect. *Flavi*, multigene). — Samson et al., *Stud. Mycol.* 69: 81–97. 2011 (n. spp., sect. *Usti*, multigene). — Perrone et al., *Fungal Biol.* 115: 1138–1150. 2011 (sect. *Nigri*, multigene, *A. awamori*).

### *Atromixtia* Tsuneda, M.L. Davey & Currah 2011 — Botany 89: 328 (323–336, fig. 1–25) / *A. arboricola* Tsuneda, M.L. Davey & Currah 2011

CDM: sporodochium- or sclerotium-like, dark. SET: none. CPH = CGC: sporangium-like, endoconidia, dark brown. CDA: amero, hyaline, yeast-like. B-anamorph: CGC: monoblastic, brown. CDA: amero or didymo, hyaline, yeast-like.

On branches (*Picea*): North America. One species. ITS barcode: HM347778.

Notes — Anamorphic *Ascomycota* (*Dothideales*). Compare with *Endoconidioma*, *Hormonema*, *Phaeotheca*, *Phaeothecoidea* and other so-called meristematic genera. Probably not distinct from *Hormonema*.

### *Aureobasidium* Viala & G. Boyer 1891

Ref. Crous et al., *Persoonia* 27: 20–45. 2011 (n. sp., n. comb., rDNA).

### *Bagadiella* Cheew. & Crous 2009

Ref. Crous et al., *Persoonia* 26: 124–127. 2011 (n. spp., rDNA).

### *Beauveria* Vuill. 1912

Ref. Rehner et al., *Mycologia* 103: 1055–1073. 2011 (revis., n. spp., multigene).

### *Brachyalara* Réblová & W. Gams 2011 — Fung. Diversity 46: 72 (72–75, fig. 3–16) / *B. straminea* Réblová & W. Gams 2011

CDM: none. SET: none. CPH: unbranched or sparingly branched, pale brown. CGC: (poly)phialides, pale brown. CDA: amero, hyaline, basipetal chains, schizo, dry.

On fungi (*Bulgaria*): Europe. One species. LSU: HQ609475.

Notes — Anamorphic *Ascomycota* (*Leotiomyces*). Compare with *Exochalara*, *Chalara* s.lat.

### *Calonectria* De Not. 1867 — Comment. Soc. Crittog. Ital. 2 (no. 3): 477 (no illus.) / *C. daldiniana* De Not. 1867 = *Calonectria pyrochroa* (Desm.) Sacc. 1878

= *Cylindrocladium* Morgan 1892, fide Lombard et al. 2010

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). For other references to this genus, see under *Cylindrocladium* in our book.

Refs. Lombard et al., *Stud. Mycol.* 66: 1–71. 2010 (n. spp., teleomorphs, key, multigene). — S.F. Chen et al., *Persoonia* 26: 1–12. 2011 (n. spp., teleomorphs).

**Capnobotryella** Sugiy. 1987

Ref. Sert et al., Mycol. Progr. 10: 333–339. 2011 (n. spp., rDNA).

**Catenulifera** Hosoya 2002

Ref. Hosoya et al., Mycol. Progr. 10: 239–248. 2011 (n. sp. as *Hyphodiscus*, rDNA).

**Catenulostroma** Crous & U. Braun 2007

Refs. Crous & Groenewald, Persoonia 26: 70–84. 2011 (n. sp., rDNA). — Crous & Carnegie, Persoonia 26: 148–149. 2011 (n. sp., rDNA).

**Ceratocladium** Corda 1839

Ref. Mena et al., Mycol. Progr. 10: 493–496. 2011 (n. sp., n. comb., key).

**Cercospora** Fresen. 1863

Refs. Nakashima et al., Mycoscience 52: 253–259. 2011 (illus.). — Montenegro-Calderón et al., Fungal Biol. 115: 1151–1162. 2011 (multigene, *C. rodmanii*). — Shival & Young, Persoonia 26: 110–111. 2011 (n. sp., rDNA).

**Chaetendophragma** Matsush. 1971

Ref. Chen & Tzean, Taiwania 54: 152–158. 2009 (record).

**Chalara** (Corda) Rabenh. 1844

Ref. Koukol, Fung. Diversity 49: 75–91. 2011 (n. spp., multigene).

**Chlamydopsis** Hol.-Jech. & R.F. Castañeda 1986

On decaying leaves (*Caesalpinia*, *Syzygium*): Caribbean, South America.

Ref. Silva & Grandi, Mycotaxon 114: 43–47. 2011, '2010' (emend.).

**Chloridium** Link 1809 : Fr.

Ref. Réblová et al., Fung. Diversity 46: 67–86. 2011 (n. comb., rDNA).

**Cirrenalia** Meyers & R.T. Moore 1960

Ref. Abdel-Wahab et al., Mycol. Progr. 9: 537–558. 2010 (n. spp.).

**Cladophialophora** Borelli 1980

Ref. Badali et al., Fungal Biol. 115: 1019–1029. 2011 (n. sp., multigene).

**Cladorrhinum** Sacc. & Marchal 1885

Refs. Park & Shin, Mycotaxon 116: 449–456. 2011 (n. sp., fungicolous). — Madrid et al., Mycologia 103: 795–805. 2011 (n. spp., LSU).

**Cladosporium** Link 1815 : Fr.

Refs. Crous & Groenewald, Persoonia 26: 70–84. 2011 (n. sp., rDNA). — Crous et al., IMA Fungus 2, 1: 49–64. 2011 (n. spp., LSU).

**Corynesporopsis** P.M. Kirk 1981

Refs. Castañeda et al., Mycotaxon 114: 407–415. 2011, '2010' (n. sp., key). — J. Ma et al., Mycotaxon 114: 423–428. 2011, '2010' (records).

**Cosmospora** Rabenh. 1862 — Hedwigia 2: 59 (tab. X II, figs. 1–5) / *C. coccinea* Rabenh. 1862

CDM: none. SET: none. CPH: unbranched or sparingly branched, (verticillate), hyaline. CGC: phialides, hyaline. CDA: amero, hyaline, slimy or in basipetal chains, schizo.

On fungi (*Hypoxylon* and other *Xylariaceae*, *Inonotus*, *Stereum*) on wood, and in soil, butter: Europe, North and South America. Seven or more species. ITS barcode: HQ897827 (CBS 341.70).

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Acremonium* and its segregates. This genus was redefined in a narrow sense by Gräfenhan et al. (2011) for some species formerly included in *Acremonium*.

Refs. (mostly as *Acremonium*): Gams, Cephalosporium-artige Schimmelpilze, 262 pp. 1971 (monogr., key, as *Acremonium*). — Gams & van Zaayen, Neth. J. Pl. Path. 88: 57–78. 1982 (as *Nectriopsis*). — Samuels et al., Hypocreales of the SE United States, p. 109. 2006 (illus.). — Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (revis., n. combs, multigene). — Summerbell et al., Stud. Mycol. 68: 139–162. 2011 (revis., n. combs., LSU, SSU).

**Cumulospora** I. Schmidt 1985

Refs. Abdel-Wahab et al., Mycol. Progr. 9: 537–558. 2010 (revis., key to similar genera).

**Cyanonectria** Samuels & Chaverri 2009 — Mycol. Progr. 8: 56 (49–58, fig. 2) / *C. cyanostoma* (Sacc. & Flageolet) Samuels & Chaverri 2009 ≡ *Nectria cyanostoma* Sacc. & Flageolet 1902

CDM: sporodochia, pale. SET: none. CPH: branched or verticillate, hyaline. CGC: phialides, hyaline. CDA: phragmo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo. OTHER: (chlamydospores).

On twigs and leaves (*Buxus*): Europe. Two species. ITS barcode: FJ474076 (CBS 101734).

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Dialonectria*, *Fusarium*, *Fusicolla*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*.

Ref. Schroers et al., Stud. Mycol. 68: 115–138. 2011 (revis., n. sp., n. combs, multigene).

**Cylindrocladium** Morgan 1892

= *Calonectria* De Not. 1867, fide Lombard et al. 2010.

**Dactylella** Grove 1884

Refs. Y.D. Zhang et al., Mycotaxon 114: 259–261. 2011, '2010' (n. sp., misclassified). — H. Su et al., Cryptog. Mycol. 32: 177–183. 2011 (n. sp., ITS).

**Dendroclathra** Voglmayr & Delg.-Rodr. 2001 / *D. caeruleofusca* Voglmayr & Delg.-Rodr. 2001 = *D. lignicola* (Abdullah, Gené & Guarro) Voglmayr 2011

Caribbean, Europe. ITS barcode: EU873531.

Notes — Anamorphic *Ascomycota* (*Microascales*).

Ref. Voglmayr, Mycotaxon 116: 191–202. 2011 (n. comb., multigene).

**Devriesia** Seifert & N.L. Nick. 2004

Refs. Crous & Groenewald, Persoonia 26: 70–84. 2011 (n. sp., rDNA). — Crous et al., Persoonia 26: 140–141. 2011 (n. sp., rDNA).

**Dialonectria** (Sacc.) Cooke 1884 — Grevillea 12: 82 (109–111, no illus.) / *D. episphaeria* (Tode) Cooke, 1884 ≡ *Sphaeria episphaeria* Tode 1791

CDM: sporodochia, pale. SET: none. CPH: branched or verticillate, hyaline. CGC: phialides, hyaline. CDA: phragmo, hyaline,

falcate (with foot-shaped basal cell), slimy, schizo. OTHER: amero microconidia.

On fungi (ascomycete stromata) on angiosperms: Europe, North America. Two or more species. ITS barcode: HQ897811 (CBS 125494).

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Cyanonectria*, *Dialonectria*, *Fusarium*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*. This genus was redefined in a narrow sense by Gräfenhan et al. (2011) for some species formerly included in either *Nectria* subg. *Dialonectria*, the *Nectria episphaeria* group, or *Cosmospora* and their fusarium-like anamorphs.

Refs. (mostly as *Fusarium* or *Cosmospora*): Wollenweber & Reinking, Die Fusarien, Paul Parey, Berlin. 1935 (monogr., in German). — Gerlach & Nirenberg, Mitt. Biol. Bundesanst. Ld-u. Forstw. 209: 1–406. 1982 (pictorial atlas). — Samuels et al., Mycol. Pap. 164: 1–48. 1991 (revis. as *Nectria* subgen. *Dialonectria*). — Samuels et al., Hypocreales of the SE United States, p. 103. 2006 (illus.). — Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (revis., n. sp., multigene).

### **Dictyosporium** Corda 1836

Ref. White et al., Persoonia 26: 154–155. 2011 (n. sp., rDNA).

### **Drechslera** S. Ito 1950

Ref. Crous et al., Persoonia 27: 20–45. 2011 (n. sp. as *Pyrenophora*, multigene).

### **Ellisembia** Subram. 1992

Ref. J. Ma et al., Mycotaxon 114: 417–421. 2011, '2010' (n. spp.).

### **Exochalara** W. Gams & Hol.-Jech. 1976

Ref. Réblová et al., Fung. Diversity 46: 67–86. 2011 (rDNA).

### **Exophiala** J.W. Carmich. 1966

Refs. Crous & Groenewald, Persoonia 26: 70–84. 2011 (n. sp., synanamorph: *Cladophialophora*, rDNA). — W. Wang, Persoonia 26: 112–113. 2011 (n. sp., rDNA). — D.M. Li et al., Med. Mycol. 47, sp. issue: 101–109. 2009 (n. sp., rDNA). — Seyedmousavi et al., Fungal Biol. 115: 1030–1037. 2011 (n. sp., multigene). — Machouart et al., Fungal Biol. 115: 1038–1050. 2011 (rDNA introns).

*Fecundostilbum* D. Pramella & P.N. Chowdry 2009 — Indian Phytopathol. 62: 64 (64–68, fig. 1–17) / *F. saccharum* D. Pramella & P.N. Chowdry 2009

= *Leptoxyphium* Speg. 1918, fide Seifert based on protologue.

### **Fonsecaea** Negrone 1936

Synanamorphs. *Cladophialophora*, chlamydospores, fide Najafzadeh et al. 2011.

Ref. Najafzadeh et al., Fungal Biol. 115: 1066–1076. 2011 (n. sp., multigene).

### **Fraseriella** Cif. & A.M. Corte 1957

Notes — Anamorphic *Ascomycota* (*Onygenales*).

Ref. Pettersson et al., Fungal Biol. 115: 1100–1111. 2011 (rDNA, physiol., as *Xeromyces*).

*Funbolia* Crous & Seifert 2011 — Persoonia 26: 115 (114–115, illus.) / *F. dimorpha* Crous & Seifert 2011

CDM: none. SET: none. CPH: unbranched or sparingly branched, brown. CGC: sympodial, scars, brown. CDA: dimorphic, amero or phragmo, brown, single, dry, schizo.

On bark (angiosperm): North America. One species. ITS barcode: JR951136.

Notes — Anamorphic *Ascomycota* (*Dothideomycetes*). Compare with *Catenulisubulispora*, *Endophragmiella*, *Spadicoides*, *Thysanorea*.

### **Fusarium** Link 1809 : Fr.

Notes — The studies by Gräfenhan et al. (2011) and Schroers (2011) removed several phylogenetically disparate groups from *Fusarium*, resulting in the recognition of *Atractium*, *Cyanonectria*, *Dialonectria*, *Fusicolla*, *Geejayessia*, *Macroconia*, *Microcera* and *Stylonectria* as distinct genera.

Refs. O'Donnell et al., J. Clin. Microbiol. 46: 2477–2490. 2008 (*F. solani* complex, multigene). — O'Donnell et al., J. Clin. Microbiol. 48: 3708–3718. 2010 (multigene ID database, human and animal infections). — Balmas et al., Mycologia 102: 803–812. 2010 (spp. in Sardinia). — Summerell et al., Fung. Diversity 46: 1–27. 2011 (spp. in Australia). — Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (revis., generic concepts). — Schroers et al., Stud. Mycol. 68: 115–138. 2011 (revis., generic concepts). — Holtz et al., Canad. J. Plant Pathol. 33: 61–76. 2011 (multigene variation within *F. avenaceum*). — M.H. Li et al., Canad. J. Plant Pathol. 33: 168–178. 2011 (AFLP *F. oxysporum*). — van Hove et al., Mycologia 103: 570–585. 2011 (n. sp., teleomorph, multigene). — Scaufflaire et al., Mycologia 103: 586–597. 2011 (n. sp., teleomorph, multigene). — Elmer & Marra, Mycologia 103: 806–819. 2011 (n. sp., multigene). — Laurence et al., Fung. Diversity 49: 101–112. 2011 (n. sp., multigene).

### **Fusicladium** Bonord. 1851

Ref. Crous et al., Persoonia 27: 20–45. 2011 (n. sp., rDNA).

### **Fusicolla** Bonord. 1851

CDM: sporodochia, pale. SET: none. CPH: branched or penicillate, hyaline. CGC: phialides (or polyphialides), hyaline. CDA: phragmo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo. OTHER: (amero microconidia), (chlamydospores).

Notes — Compare with *Cyanonectria*, *Dialonectria*, *Fusarium*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*.

*Geejayessia* Schroers, Gräfenhan & Seifert 2011 — Stud. Mycol. 68: 124 (124–133, fig. 5, 6) / *G. cicatricum* (Berk.) Schroers 2011 ≡ *Sphaeria sanguinea* var. *cicatricum* Berk. 1837

CDM: sporodochia, pale. SET: none. CPH: branched or verticillate, hyaline. CGC: phialides, hyaline. CDA: phragmo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo.

On twigs and leaves (*Buxus*, *Celtis*, *Hoheria*, *Staphylea*): Australasia, Europe, North America. Five species. ITS barcode: HM626655 (CBS 125740).

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Cyanonectria*, *Dialonectria*, *Fusarium*, *Fusicolla*, *Macroconia*, *Microcera*, *Stylonectria*.

### **Geomyces** Traaen 1914

Notes — White-nose syndrome of bats in North America is caused by *G. destructans*.

Ref. Lindner et al., Mycologia 103: 241–246. 2011 (ITS, bat pathogen).

### **Geosmithia** J. Pitt 1979

Ref. Kolařík et al., Mycologia 103: 325–332. 2011 (n. sp., ITS).

**Glarea** Bills & Peláez 1999

On leaf litter, in soil and pond water: Europe, North and South America.

Notes — Anamorphic *Ascomycota* (*Helotiaceae*, *Helotiales*).

Ref. Peláez et al., *Mycology* (China) 2: 1–17. 2011 (multigene, metabolites).

**Gliomastix** Guég. 1905

Notes — Formerly considered a synonym of *Acremonium*, phylogenetic analysis suggest the distinctiveness of this genus. Only a small part of *Acremonium* sect. *Gliomastix* sensu Gams (1971) is formally recognized here so far.

Ref. Summerbell et al., *Stud. Mycol.* 68: 139–162. 2011 (revis., n. combs., LSU, SSU).

**Glomerulispora** Abdel-Wahab & Nagah. 2011 — *Mycol. Progr.* 9: 553 (553–554, fig. 12) / *G. mangrovis* Abdel-Wahab, Abdel-Aziz & Nagah. 2011

CDM: none. SET: none. CPH: ?unbranched, hyaline or pale brown, or = cgc. CGC: monoblastic or solitary thallic, hyaline or pale brown. CDA: dictyo or bulbils, brown, single, dry, schizo.

On wood in intertidal water: Asia. One species. LSU: GU252149.

Notes — Anamorphic *Ascomycota* (*Hypocreales*, TBM clade). Compare with *Cumulospora*, *Halenospora*, *Moleospora*, *Moromyces*, *Zalerion*.

**Graphium** Corda 1837

Ref. Lackner & de Hoog, *IMA Fungus* 2, 1: 39–48. 2011 (revis. *G. putredinis* complex in *Parascedosporium*, ITS).

**Halazoön** Abdel-Aziz, Abdel-Wahab & Nagah. 2011 — *Mycol. Progr.* 9: 545 (545–547, fig. 5) / *H. melhae* Abdel-Aziz, Abdel-Wahab & Nagah. 2011

CDM: none. SET: none. CPH = CGC: monoblastic or solitary thallic, brown. CDA: phragmo or helico (irreg), brown, single, dry, schizo.

On plant debris and wood in intertidal water (*Phragmites*): Europe, Middle East. Two species (one invalid Art. 33.4). LSU: GU252143.

Notes — Anamorphic *Ascomycota* (*Lulworthiales*). Compare with *Cirrenalia*, *Hydea*, *Matsusporium*, *Zalerion*.

**Hansfordia** S. Hughes 1951

Ref. X.L. Cheng et al., *Mycotaxon* 116: 431–436. 2011 (n. sp.).

**Heliocephala** V. Rao, K.A. Reddy & de Hoog 1984

= *Holubovaniella* R.F. Castañeda 1985, fide Heredia et al. 2011

Notes — Anamorphic *Ascomycota* (*Dothideomycetes*, *Micropellidaceae*).

Ref. Heredia et al., *Mycologia* 103: 631–640. 2011 (n. sp., key, LSU).

**Heteroconium** Petr. 1949

Ref. Y.D. Zhang et al., *Mycotaxon* 114: 315–318. 2011, '2010' (n. sp.).

**Hiogispora** Abdel-Wahab & Nagah. 2011 — *Mycol. Progr.* 9: 556 (556–557, no illus.) / *H. japonica* (Sugiy.) Abdel-Wahab & Nagah. 2011 = *Cirrenalia japonica* Sugiy. 1981

CDM: none or fasciculate. SET: none. CPH: unbranched or sparingly branched, pale brown. CGC: monoblastic or solitary thallic, hyaline or pale brown. CDA: dictyo, brown, single, dry, schizo. On bark (*Abies*): Asia. One species. LSU: GU252139.

Notes — Anamorphic *Ascomycota* (*Pleosporales*). Compare with *Cumulospora*, *Halenospora*, *Moromyces*, *Zalerion*.

Ref. Sugiyama, *Trans. Mycol. Soc. Japan* 22: 47–53. 1981 (n. sp., as *Cirrenalia*).

**Hirsutella** Pat. 1892

Refs. J.Y. Chen et al., *Mycotaxon* 115: 1–4. 2011 (teleomorph: *Ophiocordyceps* n. sp.). — Luangsa-ard et al., *Fungal Biol.* 115: 608–614. 2011 (teleomorph: *Ophiocordyceps* n. sp., multigene).

**Holubovaniella** R.F. Castañeda 1985

= *Heliocephala* V. Rao, K.A. Reddy & de Hoog 1984, fide Heredia et al. 2011

**Hydea** K.L. Pang & E.B.G. Jones 2011 — *Mycol. Progr.* 9: 549 (549–550, fig. 8) / *H. pygmea* (Kohlm.) K.L. Pang & E.B.G. Jones 2011 = *Cirrenalia pygmea* Kohlm. 1966

CDM: none. SET: none. CPH = CGC: monoblastic or solitary thallic, brown. CDA: helico, brown, single, dry, schizo.

On wood in intertidal water (*Rhizophora*): Pantropical. One species. LSU: GU252133.

Notes — Anamorphic *Ascomycota* (*Lulworthiales*). Compare with *Cirrenalia*, *Halazoön*, *Helicosingula*, *Slimacomycetes*, *Tropospora*.

Ref. Kohlmeier, *Ber. Deutsch. Bot. Ges.* 79: 27–37. 1966 (n. sp., as *Cirrenalia*).

**Hymenostilbe** Petch 1931

Ref. Luangsa-ard et al., *Fungal Biol.* 115: 608–614. 2011 (multigene).

**Hyphopolynema** Nag Raj 1977

Ref. Pinho et al., *Mycotaxon* 114: 55–59. 2011, '2010' (n. sp.).

**Infundichalara** Réblová & W. Gams 2011 — *Fung. Diversity* 46: 78 (78–80, fig. 42–48) / *I. microchona* (W. Gams) Réblová & W. Gams 2011<sup>1</sup> = *Chalara microchona* W. Gams 1976, *Stud. Mycol.* 13: 73. 1976

CDM: none. SET: none. CPH: unbranched or sparingly branched, pale brown, or = cgc. CGC: phialides with funnel-shaped collarettes, (pale) brown. CDA: amero, hyaline, basipetal chains, schizo, dry.

On fungi (*Fomitopsis*), wood (*Abies*, *Larix*, *Picea*, *Pinus*) and in soil: Europe, North America. One species. LSU: HQ609479.

Notes — Anamorphic *Ascomycota* (*Leotiomyces*). Compare with *Brachyalara*, *Exochalara*, *Chalara* sensu lato.

<sup>1</sup> The citation of the basionym in the protologue erroneously gave the wrong volume number; this does not affect the validity of the genus or the species name according to Art. 33.5. The correct data for the basionym is given here.

**Knufia** L.J. Hutchison & Unter. 1996

CDM: sporodochia, dark. CDA: acropetal chains.

Notes — Anamorphic *Ascomycota* (*Herpotrichiellaceae*, *Chaetothyriales*).

Refs. Tsuneda & Currah, Rep. Tottori Mycol. Inst. 42: 1–9. 2004 (n. sp.)  
— Tsuneda et al., Botany 114: 55–59. 2011, '2010' (n. sp., invalid n. combs.).

**Koorchaloma** Subram. 1953

Ref. Allegrucci et al., Mycotaxon 115: 175–181. 2011 (n. sp., key).

**Kylindria** DiCosmo, S.M. Berch & W.B. Kendr. 1983

Ref. Y.D. Zhang et al., Mycotaxon 114: 367–371. 2011, '2010' (n. spp., perhaps to be classified in *Monilochaetes*).

**Lasiadelphia** Réblová & W. Gams 2011 — Fung. Diversity 46: 82 (82–83, fig. 79) / *L. lasiosphaeriae* (W. Gams) Réblová & W. Gams 2011 ≡ *Phialophora lasiosphaeriae* W. Gams 1976 = *Lasiadelphia* anamorph of *Lasiosphaeria hispida* (Tode : Fr.) Clem. 1909

CDM: none. SET: none. CPH: unbranched or sparingly branched, hyaline or pale brown, or = cgc. CGC: (poly)phialides, pale brown. CDA: amero, hyaline, basipetal chains, schizo, dry.

On wood: Europe, North America. One species. ITS barcode: AY681203 (CBS 955.72).

Notes — Anamorphic *Ascomycota* (*Sordariales*). Compare with *Catenulifera*, *Lecythophora*, *Phialophora* and its segregate genera.

**Lasioderma** Mont. 1845 — Ann. Sci. Nat., Bot. sér. 3, 4: 364 (illus. by Durieu & Montagne 1846) / *L. flavovirens* Durieu & Mont. 1845

= **Talaromyces** C.R. Benj. 1955, *nom. cons. prop.*, fide Llimona (pers. comm. to KAS)

Notes — Described as a hyphomycete genus by Montagne, but regarded a basidiomycete by von Höhnelt (1910), and subsequently compiled as such.

Refs. Durieu & Montagne, Expl. Sci. Algerie 1–4: 121–160, 1846 (tab. 20, fig. 4). — Höhnelt, Sber. Akad. Wiss. Wien 119: 393–394. 1910 (revis.).

**Lecythophora** Nannf. 1934

Ref. Damm et al., Persoonia 24: 60–80. 2010 (n. spp., teleomorphs).

**Leptographium** Lagerb. & Melin 1928

Ref. Jacobs et al., Mycol. Progr. 9: 69–78. 2010 (n. spp., multigene).

**Leptoxyphium** Speg. 1918

= *Fecundostilbum* D. Pramella & P.N. Chowdry 2009, fide Seifert based on the protologue

Ref. Crous & Shivas, Persoonia 26: 144–145. 2011 (n. sp., rDNA).

**Lomaantha** Subram. 1954

Ref. J. Ma et al., Mycologia 103: 407–410. 2011 (n. sp., key).

**Macroconia** (Wollenw.) Gräfenhan, Seifert & Schroers 2011 — Stud. Mycol. 68: 101 (101–103, no illus.) / *M. leptosphaeriae* (Niessl) Gräfenhan & Schroers 2011 ≡ *Nectria leptosphaeriae* Niessl 1886

= *Nectria* sect. *Macroconia* Wollenw., Angew. Bot. 8: 179. 1926

CDM: sporodochia, pale. SET: none. CPH: branched or verticillate, hyaline. CGC: phialides, hyaline. CDA: phragmo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo. OTHER: (amero microconidia), (chlamydoconidia).

On fungi (ascomycete stromata, *Leptosphaeria*) on angiosperms or herbaceous plants: Asia, Europe, North America. Five species. ITS barcode: HQ897810 (CBS 100001).

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Cyanonectria*, *Dialonectria*, *Fusarium*, *Fusicolla*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*. This genus was erected by Gräfenhan et al. (2011) for some species formerly included in *Cosmospora* and their fusarium-like anamorphs.

Refs. (mostly as *Fusarium* or *Cosmospora*): Wollenweber & Reinking, Die Fusarien, Paul Parey, Berlin. 1935 (monogr., in German). — Gerlach & Nirenberg, Mitt. Biol. Bundesanst. Ld-u. Forstw. 209: 1–406. 1982 (pictorial atlas). — Samuels et al., Mycol. Pap. 164: 1–48. 1991 (revis. as *Nectria* subgen. *Dialonectria*). — Samuels et al., Hypocreales of the SE United States, p. 106. 2006 (illus.). — J. Luo & W.Y. Zhuang, Fung. Diversity 31: 83–93. 2008 (n. sp.). — Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (revis., n. combs, multigene).

**Marchandiomyces** Diederich & D. Hawksw. 1990

Ref. Diederich et al., Mycologia 103: 525–533. 2011 (multigene, illus.).

**Mariannaea** G. Arnaud ex Samson 1974

Refs. Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (n. sp., multigene).

**Matsusporium** E.B.G. Jones & K.L. Pang 2011 — Mycol. Progr. 9: 550 (fig. 9) / *M. tropicale* (Kohlm.) E.B.G. Jones & K.L. Pang 2011 ≡ *Cirrenalia tropicalis* Kohlm. 1968

CDM: none. SET: none. CPH: ?unbranched, pale brown, or = cgc. CGC: monoblastic or solitary thallic, brown. CDA: helico, dark brown, single, dry, schizo.

On wood in intertidal water: Pantropical. One species. LSU: GU252141.

Notes — Anamorphic *Ascomycota* (*Lulworthiales*). Compare with *Cirrenalia*, *Halenospora*, *Helicosingula*, *Hydea*, *Slimacomyces*, *Troposporella*.

Ref. Kohlmeyer, Mycologia 60: 252–270. 1968 (n. sp., as *Cirrenalia*).

**Megacapitula** J.L. Chen & Tzean 1993

ITS barcode: JN128868 (GUFCC 15515).

Notes — Anamorphic *Ascomycota* (*Pleiosporales*).

Ref. Prabhugaonkar & Bhat, Mycosphere 2: 463–467. 2011 (ITS).

**Microcera** Desm. 1848

CDM: pale sporodochia or determinate synnemata. SET: none. CPH: branched, verticillate or penicillate, hyaline. CGC: phialides, hyaline. CDA: didymo or phragmo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo.

On scale insects (*Chrysomphalus*, *Eulecanium*, *Quadraspidiotus*, *Unaspis*), insect larvae, soil or plant debris: Cosmopolitan. Four species.

Notes — Compare with *Cyanonectria*, *Dialonectria*, *Fusarium*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*. The generic concept suggested in our book included the species segregated here into *Dialonectria*, *Fusicolla*, *Macroconia* and *Stylonectria*, and thus was much broader than eventually published by Gräfenhan et al. (2011); and the narrowed morphological and ecological concept is outlined here.

Ref. Gräfenhan et al., *Stud. Mycol.* 68: 79–113. 2011 (revis., n. sp., n. combs, multigene).

**Micronematobotrys** Xiang Sun & L.D. Guo 2010 — *Mycol. Progr.* 9: 569 (567–574, fig. 1) / *M. verrucosa* Xiang Sun & L.D. Guo 2010 (as '*verrucosus*')

CDM: none. SET: none. CPH: reduced, hyaline, or = cgc. CGC: sympodial, hyaline. CDA: amero, hyaline, single, dry, schizo. On twigs (*Ulmus*): Asia. One species. LSU: FJ025221.

Notes — Anamorphic *Ascomycota* (*Pyronemataceae*, *Pezizales*). Differs from *Molliardiomyces* by its less developed conidiophores and verrucose conidia.

**Minimelanolocus** R.F. Castañeda & Heredia 2001

Ref. Y.D. Zhang et al., *Mycotaxon* 115: 373–376. 2010 (n. sp.).

**Minutoexcipula** V. Atienza & D. Hawksw. 1994

CDA: didymo or phragmo.

Ref. Zhurbenko et al., *Mycosphere* 1: 213–222. 2010 (illus.).

**Moheitospora** Abdel-Wahab, Abdel-Aziz & Nagah. 2011 — *Mycol. Progr.* 9: 551 (551–552, fig. 10, 11) / *M. fruticosae* Abdel-Wahab, Abdel-Aziz & Nagah. 2011

CDM: none. SET: none. CPH: ?unbranched, hyaline or pale brown, or = cgc. CGC: monoblastic or solitary thallic, hyaline or pale brown. CDA: amero didymo or phragmo, brown, single, surrounded by a mucilaginous sheath, schizo.

On wood and plant debris (*Juncus*) in intertidal water: Middle East, North America. Two species. LSU: GU252145.

Notes — Anamorphic *Ascomycota* (*Hypocreales*, TBM clade). Compare with *Cirrenalia*, *Spegazzinia*, chlamydospores of *Devriesia*.

**Moleospora** Abdel-Aziz, Abdel-Wahab & Nagah. 2011 — *Mycol. Progr.* 9: 547 (547–549, fig. 7) / *M. maritima* Abdel-Aziz, Abdel-Wahab & Nagah. 2011

CDM: none. SET: none. CPH: ?unbranched, brown, or = cgc. CGC: monoblastic or solitary thallic, hyaline to pale brown. CDA: bulbil-like with helical initials, dark brown, single, dry, schizo.

On plant debris (*Phragmites*) in sea water: Middle East. One species. LSU: GU252137.

Notes — Anamorphic *Ascomycota* (*Lulworthiales*). Compare with *Cumulospora*, *Halenospora*.

**Moniliella** Stolk & Dakin 1966

= *Trichosporonoides* Haskins & J.F.T. Spencer 1967, fide Rosa et al. 2009

CDM: none. SET: none. A-anamorph: CPH: branched, (sub)-hyaline. CGC: polyblastic synchronous, minute scars or denticles, hyaline, vesiculate. CDA: amero, brown, single, dry, schizo. B-anamorph: CPH = CGC: mixed thallic-arthric and blastic acropetal, (sub)hyaline. CDA: amero, hyaline to brown, in branched or unbranched chains, ramoconidia, dry or yeast-like, schizo.

Ref. Rosa et al., *Int. J. Syst. Evol. Microbiol.* 59: 425–429. 2009 (synonymy, LSU, n. sp.).

**Monilochaetes** Halst. 1890

Ref. Réblová et al., *Fung. Diversity* 46: 67–86. 2011 (n. sp., rDNA).

**Moromyces** Abdel-Wahab, K.L. Pang, Nagah., Abdel-Aziz & E.B.G. Jones 2011 — *Mycol. Progr.* 9: 555 (555–556, fig. 14) / *M. varius* (Chatmala & Somrith.) Abdel-Wahab, K.L. Pang, Nagah., Abdel-Aziz & E.B.G. Jones 2011 = *Cumulospora varia* Chatmala & Somrith. 2004

CDM: none. SET: none. CPH = CGC: monoblastic or solitary thallic, hyaline or pale brown. CDA: dictyo or bulbils, brown, single, dry, schizo.

On wood in intertidal water: Asia. One species. LSU: EU848578.

Notes — Anamorphic *Ascomycota* (*Lulworthiales*). Compare with *Cumulospora*, *Glomerulispora*, *Halenospora*, *Moleospora*, *Moromyces*, *Zalerion*.

**Muscodor** Worapong, Strobel & W.M. Hess 2001

Ref. Suwannarach et al., *Mycotaxon* 114: 15–23. 2011, '2010' (n. sp., ITS).

**Myceliophthora** Costantin 1894

Ref. van der Brink et al., *Fung. Diversity* 2011 (multigene, AFLP, n. combs.).

**Neosporidesmium** Mercado & J. Mena 1988

Refs. J. Ma et al., *Mycol. Progr.* 10: 257–262. 2011 (n. spp., key). — Y.D. Zhuang et al., *Sydowia* 63: 125–130. 2011 (n. sp., tabular key).

**Neotyphodium** Glenn, C.W. Bacon & Hanlin 1996

Ref. Ghimire et al., *Mycologia* 103: 75–84. 2011 (interspp. hybrid).

**Noosia** Crous, R.G. Shivas & McTaggart 2011 — *Persoonia* 26: 139 (138–139, illus.) / *N. banksiae* Crous, R.G. Shivas & McTaggart 2011

CDM: none. SET: none. CPH = CGC: monoblastic or sympodial, short denticles, brown. CDA: dimorphic, amero or phragmo, brown, single, dry, schizo.

On leaves (*Banksia*): Australasia. One species. ITS barcode: JR951147.

Notes — Anamorphic *Ascomycota* (*Pleosporales*). Compare with *Catenulisubulispora*, *Endophragmiella*, *Spadicoides*, *Thy-sanorea*.

**Oidium** Link 1824

Refs. Desprez-Loustau et al., *Mycoscience* 52: 165–173. 2011 (ITS, as *Erysiphe*). — Seko et al., *Mycoscience* 52: 174–182. 2011 (ITS, as *Erysiphe*). — Braun, *Mycoscience* 52: 210–212. 2011 (review, as *Erysiphe*).

**Paecilium** Luangsa-ard, Hywel-Jones & Samson '2008' — In: Domsch, Gams & Anderson, *Compendium of Soil Fungi*, 2nd ed., p. 323 (323–324, fig. 227) / *P. lilacinum* (Thom) Luangsa-ard, Houbraken & Samson 2008 (sic.) *nom. nud.*

= *Purpureocillium* Luangsa-ard, Hywel-Jones, Houbraken & Samson 2011

**Paecilomyces** Bainier 1907

Ref. M. Chen et al., *Mycotaxon* 114: 25–32. 2011, '2010' (n. sp.). — J. He et al., *Mycotaxon* 115: 303–310. 2011 (n. sp., multigene).

**Paradendryphiopsis** M.B. Ellis 1976

Ref. Silvera-Simón et al., *Mycotaxon* 114: 473–479. 2011, '2010' (n. sp., key).

**Paradictyoarthrinium** Matsush. 1996

ITS barcode: JN128869 (GUFCC 15514).

Notes — Anamorphic *Ascomycota* (*Pleosporales*).

Ref. Prabhugaonkar & Bhat, *Mycosphere* 2: 463–467. 2011 (ITS).

**Parascedosporium** Gilgado, Gené, Cano & Guarro 2007

Ref. Lackner & de Hoog, *IMA Fungus* 2, 1: 39–48. 2011 (revis., n. comb., ITS).

**Passalora** Fr. 1849

Refs. Nakashima et al., *Mycoscience* 52: 253–259. 2011 (illus.). — Koike et al., *IMA Fungus* 2, 1: 7–15. 2011 (illus.). — F.Y. Zhai et al., *Mycotaxon* 116: 447–448. 2011 (n. comb.). — Crous et al., *Persoonia* 26: 130–131. 2011 (n. sp., rDNA).

**Penicillium** Link 1809 : Fr.

= *Eupenicillium* F. Ludw. 1892, fide Houbraken & Samson 2011

Notes — The long expected segregation of the former *Penicillium* subg. *Biverticillium*, recognizable by its symmetrical biverticillate conidiophores and lanceolate phialides, into a distinct genus was implemented by Samson et al. (2011), who transferred the accepted species to *Talaromyces*.

Refs. Houbraken et al., *Fung. Diversity* 44: 117–133. 2010 (revis. *P. citrinum* complex, n. spp., multigene). — Barreto et al., *Fung. Diversity* 49: 23–33. 2011 (n. sp., *P. glabrum* complex). — Houbraken et al., *IMA Fungus* 2, 1: 87–95. 2011 (multigene, *P. chrysogenum* complex). — Peterson et al., *IMA Fungus* 2, 2: 121–125. 2011 (n. sp.). — Nonaka et al., *Mycoscience* 52: 338–343. 2011 (n. sp.). — Houbraken & Samson, *Stud. Mycol.* 70: 1–51. 2011 (phylogenetic revision). — Houbraken et al., *Stud. Mycol.* 70: 53–138. 2011 (revis. sect. *Citrina*, multigene). — Rivera & Seifert, *Stud. Mycol.* 70: 139–158. 2011 (*P. sclerotiorum* complex, n. spp., multigene). — Samson et al., *Stud. Mycol.* 70: 159–184. 2011 (segregation of *Talaromyces*).

**Penidiella** Crous & U. Braun 2007

Ref. Crous & Groenewald, *Persoonia* 26: 70–84. 2011 (n. spp., rDNA).

**Periglandula** U. Steiner, E. Leistner & Leuchtm. 2011 — *Mycologia* 103: 1137 (1133–1145, fig. 1–3) / *P. ipomoeae* U. Steiner, E. Leistner & Leuchtm. 2011

Sterile, with synnema-like growths and chlamydozoospores.

On living leaves (*Ipomoea*, *Turbina*): Neotropical. Two species.

Notes — Anamorphic *Ascomycota* (*Clavicipitaceae*, *Hypocreales*). A sterile sister group to *Balansia*.

**Pesotum** J.L. Crane & Schokn. 1973

Ref. Grobbelaar et al., *Mycoscience* 52: 111–118. 2011 (multigene).

**Phaeodactylium** Agnihothr. 1968

Ref. Y.D. Zhuang et al., *Sydowia* 63: 125–130. 2011 (n. sp., tabular key).

**Phialophora** Medlar 1915

Ref. Y.-M. Wu & T.-Y. Zhang, *Mycotaxon* 115: 251–254. 2011 (n. spp., probably misclassified).

**Podosporium** Schw. 1832

Ref. Y.D. Zhang et al., *Mycotaxon* 114: 401–405. 2011, '2010' (n. sp.).

**Polythrinciopsis** J. Walker 1966 — *Austral. J. Bot.* 14: 195 (195–200, fig. 1–6, pl. 1) / *P. phragmitis* J. Walker 1966

CDM: none or clustered cph. SET: none. CPH: unbranched, hyaline or pale brown, or = cgc. CGC: sympodial, refractive scars, hyaline or pale brown. CDA: didymo (phragmo), hyaline or pale brown, single, dry, schizo.

On reeds (*Phragmites*): Australasia. One species.

Notes — Compare with *Fusicladium*, *Neoramularia*, *Pseudodidymaria*, *Polythrincium*. The genus was considered a synonym of *Polythrincium* by Seifert et al. (2011) following earlier opinions, but upon reconsideration, this synonymy seems unlikely.

**Pseudoacrodictys** W.A. Baker & Morgan-Jones 2003

Refs. G.Z. Zhao et al., *Mycol. Progr.* 10: 67–83. 2011 (spp. from China). — Y.D. Zhang et al., *Mycol. Progr.* 10: 261–265. 2011 (n. sp., key).

**Pseudocercospora** Speg. 1910

Ref. Nakashima et al., *Mycoscience* 52: 253–259. 2011 (n. comb.). — Crous & R.G. Shivas, *Persoonia* 26: 120–121. 2011 (n. sp., rDNA). — Phengsintham et al., *Mycosphere* 1: 205–212. 2010 (n. spp.).

**Pseudonectria** Seaver 1909 — *Mycologia* 1: 48 (48–49, no illus.) / *P. rousseliana* (Mont.) Wollenw. 1931 ≡ *Nectria rousseliana* Mont. 1851 ≡ *P. buxi* (DC.) Seifert, Gräfenhan & Schroers 2011

CDM: sporodochia or determinate synnemata, pale. SET: hyaline, unbranched, on cdm. CPH: branched or penicillate, hyaline. CGC: phialides, hyaline. CDA: amero, hyaline, slimy, schizo.

On leaves and twigs (*Buxus*): Europe, North America. One species.

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Volutella*.

Refs. (mostly as *Volutella*): Bezerra, *Acta Bot. Neerl.* 12: 58–63. 1963 (teleomorph). — Rossman et al., *Mycologia* 85: 685–704. 1993 (teleomorph). — Rossman et al., *Stud. Mycol.* 42: 161–164. 1999 (revis. teleomorphs). — Gräfenhan et al., *Stud. Mycol.* 68: 79–113. 2011 (revis., n. combs, multigene).

**Pseudopassalora** Crous 2011 — *Persoonia* 27: 41 (41–42, fig. 23) / *P. gouriqua* Crous 2011

CDM: none. SET: none. CPH unbranched, hyaline, or = cgc. CGC: mono- or polyblastic, hyaline. CDA: amero, brown, single, dry, schizo.

On leaves (*Protea*): Africa. One species. LSU: JN712565.

Notes — Anamorphic *Ascomycota* (*Pleosporales*). Compare with *Agrabeeja*, *Fusicladium*, *Passalora*, *Xiphomyces*.

**Pseudospiropes** M.B. Ellis 1971

Ref. Jian Ma et al., *Nova Hedwigia* 93: 465–473. 2011 (n. sp., key).

**Pseudovirgaria** H.D. Shin, U. Braun, Arzanlou & Crous 2007

Ref. Braun et al., *IMA Fungus* 2, 1: 65–69. 2011 (n. comb., ITS).

**Purpleocillium** Luangsa-ard, Hywel-Jones, Houbraken & Samson 2011 — *FEMS Microbiol. Lett.* 321: 144 (131–149, fig. 3) / *P. lilacinum* (Thom) Luangsa-ard, Houbraken, Hywel-Jones & Samson 2011 ≡ *Penicillium lilacinum* Thom 1910

= *Paecilium* Luangsa-ard, Hywel-Jones & Samson (listed in Domsch et al. 2007), *nom. nud.*



CDM: none. SET: none. CPH: verticillate or penicillate, hyaline. CGC: phialides, hyaline. CDA: amero, hyaline, in basipetal chains, dry, schizo.

In soil, on animals (humans, nematodes, insects) and other substrates: Cosmopolitan. One named species. ITS barcode: AY624189.

Notes — Anamorphic *Ascomycota* (*Ophiocordycipitaceae*, *Hypocreales*). Compare with *Nomuraea*, *Paecilomyces*.

Refs. (all as *Paecilomyces lilacinus*): Samson, *Stud. Mycol.* 6: 1–119. 1974 (monogr.). — Bissett, *Fungi Canadenses*, no. 156. 1979 (illus.). — de Hoog & Guarro, *Atlas clin. Fungi*, pp. 576–577. 1995; 2nd ed., pp. 794–809. 2001 (medically important spp.). — Tigano-Milani et al., *Microbiology* 141: 239–245. 1995 (tRNA fingerprinting). — Inglis & Tigano, *Genet. Mol. Biol.* 29: 132–136. 2006 (ITS). — Atkins et al., *FEMS Ecol.* 51: 257–264. 2006 (real-time PCR). — Domsch et al., *Compendium of Soil Fungi*, 2nd ed., pp. 322–323. 2007 (docum., as *Paecilium*). — Sung et al., *Stud. Mycol.* 57: 1–63. 2007 (multigene).

### ***Pyricularia* Sacc. 1880**

Ref. McKenzie et al., *Mycosphere* 1: 223–228. 2010 (n. sp., ITS).

### ***Pyriculariopsis* M.B. Ellis 1971**

Ref. Soares et al., *Mycol. Progr.* 10: 315–321. 2011 (n. sp.).

***Pyrigemula* D. Magyar & R. Shoemaker 2011** — *Mycol. Progr.* 10: 309 (307–314, fig. 2–4) / *P. aurantiaca* D. Magyar & R. Shoemaker 2011

CDM: none. SET: none. CPH unbranched, hyaline, or = cgc. CGC: mono, pore, brown. CDA: phragmo, disto, brown, single, dry, schizo.

On branches (*Acer*, *Betula*, *Elaeagnus*, *Fagus*, *Vitis*) and plant exudates: Europe. One species. ITS barcode: HM241692.

Notes — Anamorphic *Ascomycota* (*Chaetosphaeriaceae*, *Chaetosphaeriales*). Compare with *Bactrodesmiastrum*, *Janetia*, *Murogenella*, *Phragmopathula*.

### ***Rachicladosporium* Crous, U. Braun & C.F. Hill 2007**

Ref. Crous & Quaedvlieg, *Persoonia* 26: 132–133. 2011 (n. sp., rDNA).

### ***Racodium* Fr. 1829 : Fr.**

Ref. Hawksworth et al., *IMA Fungus* 2, 1: 71–79. 2011 (nomenclature).

### ***Ramichloridium* Stahel 1937 ex de Hoog 1977**

Ref. Shivas et al., *Australas. Pl. Pathol.* 40: 61–65. 2011 (n. sp.).

### ***Ramularia* Unger 1833**

Refs. Crous et al., *Persoonia* 27: 20–45. 2011 (n. spp., rDNA). — Koike et al., *IMA Fungus* 2, 1: 7–15. 2011 (illus.).

### ***Repetophragma* Subram. 1992**

Ref. Silvera-Simón et al., *Anales Jard. Bot. Madrid* 66 S1: 33–39. 2009 (n. sp., key). — Castañeda et al., *Mycosphere* 2, 3: 273–289. 2011 (n. sp., n. combs., key).

### ***Rhexoacrodictys* W.A. Baker & Morgan-Jones 2011**

Ref. G.Z. Zhao et al., *Mycol. Progr.* 10: 67–83. 2011 (spp. from China).

### ***Sarcinella* Sacc. 1877**

Ref. Hosagoudar, *Plant Pathol. Quarant.* 1, 2: 131–204. 2011 (n. sp., spp. in India, new family). — Hosagoudar & Rijju, *Mycosphere* 2: 157–160. 2011 (n. sp.).

### ***Sarocladium* W. Gams & D. Hawksw. 1976**

Notes — This genus was redefined by Summerbell et al. (2011) to incorporate *Acremonium strictum* and other well-known species.

Ref. Summerbell et al., *Stud. Mycol.* 68: 139–162. 2011 (revis., n. combs., LSU, SSU).

***Scleroramularia* Batzer & Crous 2011** — *Fung. Diversity* 46: 58 (53–66, fig. 1b, 8) / *S. pomigena* Batzer & Crous 2011

CDM: none. SET: none. CPH = CGC: sympodial, hyaline. CDA: amero, didymo or phragmo, hyaline, in branched acropetal chains, dry, schizo. OTHER: sclerotia in vitro.

On fruit (*Asimina*, *Malus*): Asia, Europe, North America. Five species. ITS barcode: FR716682.

Notes — Anamorphic *Ascomycota* (between *Pleosporales* and *Botryosphaeriales*). Distinguished from *Ramularia* by the formation of sclerotia and longer chains of conidia.

### ***Scytalidium* Pesante 1956**

Refs. H.-J. Kang et al., *Mycologia* 102: 1167–1184. 2010 (n. sp., n. combs, teleomorph: *Xylogone*). — Y.M. Wu & T.Y. Zhang, *Mycotaxon* 114: 205–210. 2011, '2010' (n. spp.).

***Sinomycetes* Yong Wang bis & X.G. Zhang 2011** — *Fungal Biol.* 115: 192 (188–195, fig. 2, 3) / *S. fusoides* Yong Wang bis & X.G. Zhang 2011

CDM: none. SET: none. CPH: unbranched or sparingly branched, brown, ?or = cgc. CGC: ?mono- or ?polytretic, sympodial, geniculate, brown. CDA: phragmo, brown, single, dry, schizo.

On leaves and seeds (*Daucus*, *Tamarix*): Asia, North America. Three species.

Notes — Anamorphic *Ascomycota* (*Pleosporaceae*, *Pleosporales*). Segregated from *Ulocladium* after molecular phylogenetic analysis, but paraphyly of *Alternaria* was not resolved.

### ***Spicellum* Nicot & Roquebert 1976**

= *Trichothecium* Link 1809 : Fr., fide Summerbell et al. 2011

***Spiroplana* Voglmayr, M.J. Park & H.D. Shin 2011** — *Mycotaxon* 116: 208 (203–216, fig. 2, 3) / *S. centripeta* Voglmayr, M.J. Park & H.D. Shin 2011

CDM: none. SET: none. CPH: unbranched or sparingly branched, (sub)hyaline. CGC: monoblastic, hyaline. CDA: bulbils, clathroid, with helical primary and secondary branches coiling inward, hyaline, single, dry, schizo.

On leaves (*Deutzia*, *Philadelphus*): Asia. Two species. ITS barcode: HQ696660.

Notes — Anamorphic *Ascomycota* (*Pleosporales*). Compare with *Clathrosporium*, *Dendroclathra*, *Illosporiosis*, *Spirosphaera*.

### ***Stachybotrys* Corda 1837**

Refs. Y.M. Wu & T.Y. Zhang, *Mycotaxon* 114: 459–462. 2011, '2010' (n. spp.). — Q.R. Li & Y.L. Jiang, *Mycotaxon* 115: 171–173. 2011 (n. sp.). — D.W. Li, *Mycotaxon* 115: 239–250. 2011 (n. sp.).

### ***Stemphylium* Wallr. 1833**

Ref. Y.F. Pei et al., *Mycol. Progr.* 10: 163–173. 2011 (n. spp., multi-gene).

**Stylonectria** Höhn. 1884 — Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1, 124: 52 (52–53, no illus.) / *S. applanata* Höhn. 1915

CDM: none or sporodochia, pale. SET: none. CPH: unbranched or sparingly branched, hyaline. CGC: phialides, hyaline. CDA: amero or didymo, hyaline, falcate (with foot-shaped basal cell), slimy, schizo. OTHER: sparse amero microconidia.

On fungi (ascomycete stromata, e.g. *Diatrype*, *Hapalocystis*, *Melogramma*) on trees (*Betula*, *Carpinus*, *Corylus*, *Ulmus*): Europe, North America. Four species.

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Nectriaceae*, *Hypocreales*). Compare with *Fusarium*, *Cyanolectria*, *Dialonectria*, *Geejayessia*, *Macroconia*, *Microcera*, *Stylonectria*. This genus was reintroduced by Gräfenhan et al. (2011) for some species formerly included in either *Nectria* subg. *Dialonectria* or *Cosmospora* and their fusarium-like anamorphs.

Refs. (mostly as *Fusarium* or *Cosmospora*): Wollenweber & Reinking, Die Fusarien, Paul Parey, Berlin. 1935 (monogr., in German). — Gerlach & Nirenberg, Mitt. Biol. Bundesanst. Ld-u. Forstw. 209: 1–406. 1982 (pictorial atlas). — Samuels et al., Mycol. Pap. 164: 1–48. 1991 (revis. as *Nectria* subgen. *Dialonectria*). — Samuels et al., Hypocreales of the SE United States, p. 108. 2006 (illus.). — Gräfenhan et al., Stud. Mycol. 68: 79–113. 2011 (revis., n. name, n. combs, multigene).

**Taeniolella** S. Hughes 1958

Ref. Zelski et al., Mycosphere 2: 593–600. 2011 (teleomorph: *Chaetorostrium*).

**Taifanglania** Z.Q. Liang, Y.F. Han, H.L. Chu & R.T.V. Fox 2009

Ref. Y.F. Han & Z.Q. Liang, Mycotaxon 112: 325–333. 2010 (n. spp.).

**Talaromyces** C.R. Benj. 1955 — Mycologia 47: 681 (681–685, no illus.) / *T. vermiculatus* (P.A. Dang.) C.R. Benj. 1955 = *Penicillium vermiculatum* P.A. Dang. 1907 = *Talaromyces flavus* (Klöcker) Stolk & Samson 1972

= *Penicillium* subg. *Biverticillium* Dierckx apud Biourge Cellule 33: 31. 1923.

Notes — Anamorphic and/or teleomorphic *Ascomycota* (*Trichocomaceae*, *Eurotiales*). We refer the reader to the monographs of *Penicillium* sensu lato in the Dictionary of Seifert et al. (2011), and to the section on teleomorphic species assigned to *Talaromyces* in the *Penicillium* entry.

Ref. Samson et al., Stud. Mycol. 70: 159–184. 2011 (revis., n. combs., typification).

**Thielaviopsis** Went 1893

Refs. Van Wyk et al., Fung. Diversity 46: 111–131. 2010 (n. spp.). — Nonaka et al., Mycoscience 52: 338–343. 2011 (n. sp. as *Ceratocystis*).

**Thozetella** Kuntze 1891

Ref. Barbosa et al., Mycotaxon 115: 327–334. 2011 (n. sp., key).

**Toxicocladosporium** Crous & U. Braun 2007

Ref. Crous & Groenewald, Persoonia 26: 70–84. 2011 (n. sp., rDNA).

**Trichoderma** Pers. 1794 : Fr.

Refs. Sadfi-Zouaoui et al., Canad. J. Microbiol. 55: 154–162. 2009 (spp. in Tunisia). — H.Q. Wu et al., Mycosystema 28: 342–348. 2009 (n. sp.). — De Respini et al., Mycol. Progr. 9: 79–100. 2010 (chemotaxonomy, MALDI-TOF mass spectrometry). — Chaverri et al., Mycologia 103: 139–151. 2011

(n. sp., multigene). — Jaklitsch, Fung. Diversity 48: 1–250. 2011 (monogr., European spp. *Hypocrea*, spp. with hyaline ascospores).

**Trichosporonoides** Haskins & J.F.T. Spencer 1967

= *Moniliella* Stolk & Dakin 1966, fide Rosa et al. 2009

**Trichothecium** Link 1809 : Fr.

= *Spicellum* Nicot & Roquebert 1976, fide Summerbell et al. 2011

Ref. Summerbell et al., Stud. Mycol. 68: 139–162. 2011 (revis., n. combs., LSU).

**Ulocladium** Preuss 1851

Ref. Y. Wang et al., Mycol. Progr. 8: 207–214. 2009 (n. sp., multigene).

**Uncispora** R.C. Sinclair & Morgan-Jones 1979

Ref. G.Z. Yang et al., Mycotaxon 116: 171–174. 2011 (n. sp.).

**Utrechtiana** Crous & Quaedvlieg 2011 — Persoonia 26: 153 (152–153, illus.) / *U. cibiessia* Crous & Quaedvlieg 2011 = *Deightonella roumegueri* (Cavara) Constant. 1983

= *Deightoniella* S. Hughes 1952, fide Mel'nik, Constantinescu, pers. comm. to WG

**Venustosynnema** R.F. Castañeda & W.B. Kendr. 1990

Ref. Castañeda et al., Mycotaxon 109: 275–288. 2009 (n. sp.).

**Xanthoriicola** D. Hawksw. 1973

Notes — Anamorphic *Ascomycota* (*Teratosphaeriaceae*, *Capnodiales*).

Ref. Ruibal et al., IMA Fungus 2, 1: 97–103. 2011 (LSU).

**Xenopolyscytalum** Crous 2010

= *Sphaeridium candidum* Fuckel 1870, fide Seifert

**Xylocladium** P. Syd. 1900

Ref. Y.M. Ju et al., Mycologia 103: 424–430. 2011 (n. sp. as teleomorph: *Xylaria*, multigene).

**Xylomyces** Goos, R.D. Brooks & Lamore 1977 / *X. chlamydosporis* Goos, R.D. Brooks & Lamore 1977 = *Xylomyces* anamorph of *Jahnula aquatica* (Kirschst.) Kirschst. 1936

Teleomorph. *Jahnula*, fide Sivichai et al. 2011.

Ref. Sivichai et al., Mycotaxon 116: 137–142. 2011 (teleomorph: *Jahnula*).

**Zygosporium** Mont. 1842

Ref. Manimohan & Mannethody, Mycosphere 2: 219–222. 2011 (n. sp.).

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